JAN NIKLAS LETZ

IMPORTANCE OF PHYSICAL HEALTH FOR EUROPEAN MILLENNIALS – IMPACT OF COVID-19 ON PERCEIVED IMPORTANCE OF PHYSICAL HEALTH IN THE FUTURE.

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Master's in Management

Area of specialisation: Healthcare Management

Supervisor:

Professor Lara Noronha Ferreira

UNIVERSITY OF ALGARVE

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Work Authorship Declaration

I declare to be the author of this work, which is unique and unprecedented. Authors and works consulted are properly cited in the text and are included in the listing of references.

Jan Niklas Letz

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ACKNOWLEDGEMENT

I want to thank the following people, without their help and support, completing a master's degree would have been much more difficult in times of a global pandemic. First and foremost, my supervisor, Professor Lara Noronha Ferreira, whose immediate and concrete assistance and calmness were precisely what I was looking for. In addition, I would like to thank everyone who made the master's in Management at the University of Algarve possible; it was a wonderful time. Special thanks go to my parents, whose unlimited support throughout my studies made it possible to succeed.

ABSTRACT

This work addresses the lack of knowledge about whether the Covid-19 pandemic will lead to a change in attitude toward physical health. The aim was to assess the impact on the perceived importance of physical health among European millennials. For this purpose, an online questionnaire was conducted. The items developed intended to measure the general importance of physical health, the specific perceived importance of physical health, and changes in attitudes towards physical health among the target group. The quality criteria of the questionnaire have been statistically verified. For data collection, a link to an online version of the questionnaire was initially sent to directly accessible persons of the respective target group, with the request to forward this link to further individuals belonging to the target group. This procedure led to a non-randomised sample in this research.

The final evaluation was based on a sample of 188 respondents, of which 116 were female, 70 male, and two respondents indicated non-binary as their gender. With 158 participants who grew up in Germany, the sample only represents a section of the European region. The following conclusions can be drawn from the data collected: Physical health is important for European millennials. The Covid-19 pandemic has a changing impact on attitudes. This study shows that physical health is important for European millennials and Covid-19 further increased this attitude.

While a tendency in the attitude toward the perceived importance of physical health can be observed, however, the trend is statistically not reliable. It is recommended to further develop the developed survey instrument to obtain more reliable data on the perceived importance of physical health and apply additional methods that would benefit the detection of the impact of the Covid-19 pandemic on this construct.

Keywords: *Covid-19, Covid-19 impact, physical health, attitude physical health, European millennials*

RESUMO

Acontecimentos extradordinários como uma pandemia global têm o potencial de provocar uma mudança duradoura, não só nos comportamentos e atitudes individuais, mas também na sociedade. Neste sentido, este trabalho tem como objetivo perceber se a pandemia de Covid-19 levará a uma mudança de atitude em relação à saúde física. O objectivo deste estudo foi avaliar o impacto sobre a percepção da importância da saúde física entre os *millenials* europeus. Para este efeito, foi desenvolvido e aplicado um questionário em formato eletrónico.

Para a recolha de dados, foi inicialmente enviado um link para uma versão online do questionário a pessoas directamente acessíveis do respectivo grupo-alvo através da rede social whatsapp, com o pedido de reencaminhar este link para outros indivíduos pertencentes ao grupo-alvo. Este procedimento conduziu a uma amostra não aleatória, mais precisamente a uma amostra de bola de neve. Consequentemente, isto tem um impacto directo sobre os métodos estatísticos utilizados e sobre a interpretação dos resultados. Foi obtida uma amostra final de 188 respondentes, dos quais 116 inquiridos eram do sexo feminino, 70 do sexo masculino, e dois inquiridos indicaram-se como não-binários. Com um total de 158 participantes que cresceram na Alemanha, a amostra representa apenas uma parte da região europeia. Os resultados permitiram concluir que a saúde física é importante para os *millenials* europeus e a pandemia de Covid-19 tem um impacto em mudança de atitudes. Este estudo mostra que a saúde física é importante para os *millenials* europeus e a Covid-19 aumentou ainda mais esta percepção.

Recomenda-se o desenvolvimento e melhoria do instrumento de inquérito proposto, de forma para obter dados mais fiáveis sobre a percepção da importância da saúde física, bem como a aplicação de métodos adicionais que beneficiariam a detecção do impacto da pandemia de Covid-19 sobre esta construção.

Palavras-chave: *Covid-19, impacto Covid-19, saúde física, atitude saúde física, milénios europeus*

RESUMO ALAGARDO

O vírus Sars-Cov-2, mais conhecido como Covid-19, atingiu rapidamente todos os cantos do globo. Várias medidas e regulamentos foram aplicados nos diferentes países de forma a minimizar os efeitos do vírus sobre a saúde da população. Estas medidas não só tiveram impacto nos factores primários da pandemia, tais como na propagação do vírus ou nas taxas de hospitalização relacionadas com a Covid-19, podendo ser observadas consequências de grande alcance em quase todas as áreas da vida da população mundial, quer seja económica, social ou de outras formas relativas à saúde. Este trabalho teve como objectivo fornecer uma visão geral sobre se os indivíduos europeus da geração *millenials* são susceptíveis de desenvolver ou se já desenvolveram uma mudança de atitude em relação à importância da saúde física devido à pandemia.

Para responder à questão da investigação, foi conduzido um questionário para avaliar a percepção da importância da saúde física entre o grupo-alvo definido. O acesso a uma versão online deste questionário foi inicialmente dado a 82 pessoas do grupo-alvo definido através da rede social Whatsapp. No decurso deste processo, foi solicitado o acesso a outras pessoas.

No desenvolvimento do questionário, foram seguidas várias fases para se obter uma construção operacional. A primeira etapa foi a especificação das características a serem investigadas, que, no caso deste trabalho, foi perceber a percepção da importância da saúde física e a influência da pandemia de Covid-19. Estas características não são geralmente consideradas iguais, podendo ser distinguidas entre características directamente verificáveis e hipotéticas. As características nas quais este trabalho se baseia pertencem às hipotéticas, tendo sido feita uma avaliação indirecta das características latentes. Para evitar possíveis manipulações, o objectivo foi colocar questões onde não possa haver julgamento pessoal, mas sim evidência do comportamento em determinadas situações. Uma vez concluída esta primeira fase, foi realizado um pré-teste com questões selecionadas a partir de um questionário desenvolvido para o efeito. Para este efeito, foram realizadas entrevistas a uma amostra mais pequena, que era semelhante, em termos de constituição, ao grupo-alvo final. A qualidade das questões criadas foi analisada através de medidas de estatística descritiva, prestando-se particular atenção à dificuldade das questões, ao poder discriminatório e às variações das questões. A informação assim obtida permitiu uma nova correcção ou ajustamento ao questionário final. Uma vez

concluída esta correcção, iniciou-se a fase final de recolha de dados, tendo sido realizado o inquérito.

Após a recolha de dados, o questionário foi testado quanto a critérios de qualidade em termos de fiabilidade através de medidas como o α de Cronbach e a dificuldade das questões, bem como a validade da construção através da realização de uma análise de factores. O questionário final compreendeu um total de 29 páginas, que inclui a página introdutória com as informações sobre a protecção de dados e o correspondente pedido de consentimento, seguido das informações demográficas sobre a idade e a origem, e de um conjunto de 24 perguntas dispostas em ordem aleatória. O questionário terminava com um novo pedido de consentimento para a recolha e utilização de dados, bem como um agradecimento ao inquirido e, mais uma vez, apresentada a disponibilidade de contactar o investigador.

A objectividade da análise dos dados recolhidos é garantida pela utilização do software IBM SPSS Statistics 20. O anonimato dos inquiridos impede qualquer possível influência na avaliação dos dados devido à identificação dos dados pessoais dos inquiridos. Além disso, foi adoptado um desenho de resposta quantitativa sob a forma de uma escala de Likert de cinco pontos, permitindo uma interpretação normalizada. Embora os resultados da dificuldade das questões fossem, na sua maioria, bons, a fiabilidade para todo o processo é aceitável, mas nas subclasses individuais foram aceitáveis na melhor das hipóteses e questionável em algumas. A validade do processo parece fiável na generalidade, podendo ser ainda melhorada, especialmente através da elaboração e revisão das questões realizadas.

A análise dos dados relativos ao objectivo do estudo produziu resultados interessantes. Assume-se que a saúde física tende a ser importante para os inquiridos e que estes vêem a pandemia de Covid-19 como um incentivo para a mudança de atitudes em relação à saúde física. Não se pode afirmar se existiu um aumento da percepção da importância da saúde física, uma vez que apenas é relatada uma fraca tendência positiva. Existe uma diferença significativa entre pessoas do sexo feminino e masculino ($p<,05$), com os inquiridos do sexo feminino a apresentarem um padrão de resposta positiva superior. Resumindo, pode ser observada uma relação entre a pandemia de Covid-19 e a mudança de atitudes. Embora não sejaclaro se as atitudes sobre a percepção da importância da saúde física estão a mudar, os resultados apoiam esta suposição. A questão da

investigação sobre se os *millenials* europeus têm uma mudança na perceção da importância da sua saúde física causada pela pandemia global da Covid-19 parece assim ser confirmada.

É evidente que a pandemia de Covid-19 causa mudanças de atitudes, também no que diz respeito às atitudes em relação à saúde física. No entanto, o impacto deste efeito foi apenas determinado em pequena medida neste estudo e necessita urgentemente de mais esclarecimentos. É necessário ter em atenção que este estudo se refere apenas à amostra inquirida, não oferecendo de forma alguma uma imagem completa dos *millenials* europeus. A amostra provém essencialmente de indivíduos que cresceram na Alemanha. Embora a parte teórica já trate dos pontos comuns da socialização das pessoas que cresceram na Europa, uma generalização seria inapropriada e enganadora.

Este estudo demonstrou que a saúde física é relevante para a amostra estudada e que a pandemia trouxe uma mudança de comportamentos. Este estudo contribuiu também para a compreensão da importância da saúde física dos *millenials* europeus, especialmente alemães. Em geral, o impacto da actual pandemia nos indivíduos e, em última análise, na sociedade é de grande relevância. No contexto científico, outras possibilidades de acção resultam das observações deste estudo. O facto de a pandemia de Covid-19 ter influenciado as atitudes sugere a importância de mais investigação noutras direções, tais como traços de personalidade ou de comportamento. Além disso, é aconselhável uma expansão para uma amostra mais diferenciada, especialmente no foco em diferentes nacionalidades, bem como no tamanho da amostra. Além disso, é necessária uma confirmação das tendências observadas, especialmente uma investigação mais profunda dos efeitos da pandemia de Covid-19 na perceção da importância específica da saúde física.

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ABBREVIATION LIST

Abbreviation	*Definition*
CA	Changing attitudes
E.g.	Exempli gratia (for example)
Et al.	et alii (and others)
IQR	Interquartile range
KMO	Kaiser–Meyer–Olkin (KMO) test
M	Mean
Mdn	Median
n	sample size
Nr.	Number
PH	Physical health
PI	Perceived importance
Pi	Item difficulty
SD	Standard deviation
WHO	World Health Organisation

1. INTRODUCTION

This thesis will investigate whether European millennials experience a change in the perceived importance of their physical health caused by the global Covid-19 pandemic. For this purpose, a questionnaire is developed in the course of this thesis, which, with the help of carefully formulated open questions and the approach of measuring implicit motives, is intended to cover the attitudes of the respondents from the defined target group, but also in a possible future use for other research purposes regarding the topic of the impact of the Covid-19 pandemic on attitudes towards physical health.

When writing this master's thesis, the world has been in a global pandemic for a good two years. In everyday life, the Sars-Cov-2 virus, more commonly known as Covid-19, has quickly reached the so distinctively globalised world after its first appearance in China in late 2019, early 2020. Since then, various measures and regulations have been applied in the countries of this world to minimise the health effects caused by the virus on the population. But these measures have not only impacted the primary factors of the pandemic, such as the spread of the virus or the hospitalisation rates in connection with Covid-19. Far-reaching consequences can be observed in almost all areas of the life of the global population, be it economically, socially, or in other ways concerning personal health. The data about the impact of the pandemic and the associated measures are becoming increasingly available.

At the same time, many questions remain open about the effects of the changes and measures on individuals' future feelings, actions, and behaviour. Changing behaviours and habits will also influence the behaviours of individuals in the economic context. The assumption that a pandemic will particularly affect attitudes towards health issues reinforces the relevance of examining potentially changing attitudes, especially regarding the economic significance for companies in the healthcare sector. Therefore, the title "*Importance of physical health for European millennials – impact of Covid-19 on perceived importance of physical health in the future*" arises from the interest in eventually occurring changes in combination with the omnipresent pandemic situation. It results, on the one hand, from the universal pandemic situation, the interest in behaviour and attitudes of the target group to be studied, and on the other hand, from the potential economic relevance and the associated connection to the master's program in Management with a specialisation in Healthcare Management.

This work aims to provide an overview of whether individuals belonging to the European millennial generation are likely to develop or have already developed a change in attitude towards the importance of physical health because of the pandemic. Therefore, a fundamental question is the importance of physical health for the group being studied. The findings on this serve as a reference for observing a possible change. Necessarily, before the question for a reason of a change in perception of importance can be considered, a change must first either be observed or denied. If then a difference in the perception of importance is found, it is compulsory to investigate whether this change can be related to the experiences of the Covid-19 pandemic or not. By following this process, the influence of Covid-19 on the perceived importance of physical health among European millennials in the future will be investigated and possible consequences and relevant changes for individuals and companies in the healthcare sector are identified.

This thesis comprises a total of seven superordinate chapters. This introductory chapter describes the current situation, the resulting problems, and the objectives of this thesis. After this introductory section, the second chapter describes the theoretical foundations on which this thesis is based. The current state of knowledge regarding the topic to be researched is presented. Of particular importance is the knowledge about the importance of physical health for European millennials. The results presented here will serve as a reference for the data generated in the further course through independent data collection. In addition, the working terms will be clearly defined based on the literature to delineate the study's framework and scope. Presenting the current state of research is necessary to formulate research questions that have not yet been answered to achieve scientific added value.

The third chapter covers the formulation of the research questions to be answered, resulting from the topic's choice and the current state of research. The formulation of the working hypotheses follows based on the research questions drawn upon the basis of the form of research, as already described.

The central part of the thesis takes place in Chapter Four. Here, the procedure for the questionnaire is explained, and the questionnaire itself is presented. This is followed by an explanation and presentation of the pre-test procedure of the developed questionnaire and the resulting corrections. The fourth section is concluded with a description of the survey conducted. The survey results are presented separately in chapter five, as well as

the statistical analysis. Regarding the research questions formulated at the beginning, the results presented in Chapter Five are discussed regarding their significance.

The summary, both the theoretical and practical part, takes place in the final consideration in Chapter Seven. Based on this, implications for research and practice are derived. Finally, the limitations of this concrete work and other research approaches are discussed.

2. THEORETICAL FOUNDATION

2.1 Definitions of terms

To better understand the contents of the work in general and a clear definition of the research field to be dealt with, clear definitions of the core terms are necessary. In particular, the title and the research questions are used as a guide to define the main terms included in this work. Often there are various definitions of different concepts and constructs that differ. A prior determination of a specific working basis is also essential to determine the scope of the concrete work. The following describes the operational definitions of the core concepts on which this work is based. The definitions used in relevant scientific publications are reviewed, compared, and finally selected. The subject matter of this master's thesis uses the terms discussed and defined in more detail below.

2.1.1 Physical health

Whether a person is considered healthy or not is compounded by several parameters that need to be thought of both independently and as a composite. Over the years, there have been a variety of definitions of health with different scopes. In 1948, the WHO defined health as *"a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."* ("WHO. Constitution of the World Health Organization," 2006, p. 1). Although this definition is no longer considered accurate today due to, among other things, the incidence of chronic diseases (Huber et al., 2011**)**, it nevertheless gives a first indication of the diversity of parameters that must be considered when formulating a holistic concept of health. The majority of relevant parameters are also described and developed again and again in the further course of the literature. Five generic health concepts, including physical health (E. Ware, 1987), are identified.

Furthermore, it is stated that health as a holistic concept can be regarded as a specific condition and must be understood as a dynamic process that can change under various influences (Leonardi, 2018). This thesis focuses on a particular sub-area of the holistic view of physical health. This sub-area of the overarching concept of health is also subdivided into different areas and has been considered with different approaches. Physical health has evolved from the ability to manage basic motor processes without the assistance of others (NCHS, 1981) to exceptional physical performance, including a variety of elements, also called physical fitness (Kyröläinen et al., 2010). In this thesis, the term physical health is to be used encompassing both essential physical integrity and performance, but, due to the young age of the test persons to be interviewed, it also allows for more intensive physical activities without hindering impairment with the appropriate preparation.

2.1.2 European millennials

The target group that will be examined in this thesis is described as European millennials. On the one hand, this requires the geographical classification of what is meant by European in this case and, on the other hand, a definition of which cohorts are assigned to the millennial generation. Europe is a continent, i.e. including all countries located between the Mediterranean, the North Cape, the Atlantic and the Urals. The European Union, consisting of 27 states, is often regarded as a synonym for Europe. Considering the expected distribution of participants and better representation, the term "European" is used in this thesis to refer to the European Union member states shown in Figure 1.

Austria	France	Malta
Belgium	Germany	Netherlands
Bulgaria	Greece	Poland
Croatia	Hungary	Portugal
Republic of Cyprus	Ireland	Romania
Czech Republic	Italy	Slovakia
Denmark	Latvia	Slovenia
Estonia	Lithuania	Spain
Finland	Luxembourg	Sweden

Figure 1: European Union, 2021

The second limitation of the group to be studied results from an age restriction. Birth cohorts are grouped into generations that are given a specific designation. In this case, it is the generation of "millennials". Although there are differences from time to time in the exact assignment of birth cohorts to this generation, a consensus has prevailed in the literature. According to this, people born between 1980 and 2000 belong to the millennial generation (DeBard, 2004; Hartman & McCambridge, 2011; McDonald, 2015). In this thesis, a European millennial is a person born between 1980 and 2000 in one of the 27 member states of the European Union, who may not have been born, but has grown up and is still a resident within one of these countries.

2.1.3 Covid-19

Covid-19 is also known as the SARS-CoV-2 virus, first reported in Wuhan, China, in December 2019. It is a highly infectious virus that usually causes fever, cough or tiredness but can also cause severe courses with life-threatening symptoms such as acute respiratory distress (Fauci et al., 2020). A pandemic situation due to this virus has been in effect since March 2020 ((*Coronavirus Disease (COVID-19) – World Health Organization*, 2021). Since then, the virus and the accompanying pandemic and its consequences have affected the lives of probably every person in Europe, if not the whole world, in various ways.

2.1.4 Perceived importance

Importance means that something has a great value or relevance for someone or something. Often the importance can be described or defined concretely based on comparative values. The term “perceived importance” is intended to distinguish itself from this distinctiveness. Instead, the focus here is on the personal feeling of the participating probands, without the necessity of a well-founded and detailed description or evaluation. In this case, perceived importance is thus the individually perceived importance that the respondent attributes to their physical health. Throughout this thesis, it is sufficient to determine a constant, increasing, or decreasing importance and hence there is no need to use a more firmly defined concept of importance. The word perceived was not chosen at random in this context. Instead, it is intended to emphasise the intention to measure intrinsic and not yet evaluated motives by formulating adequate items in the questionnaire. This distinguishes the choice of term, for example, from a formulation such

as "observed importance". In this case, an evaluation would have to be made simultaneously as an assessment by the respondent.

2.2 State of research

Various channels are used to research relevant studies and literature. In particular, the platform "google scholar" and the databases accessed via the university network like “b-on online knowledge library”, “PsycInfo”, “WebofScience”, “Jstor” and “SSRN” have to be mentioned. Terms used for research, individually or in combinations via commands “AND” as well as “OR”, are *"pandemic", "covid", "covid-19", "europe", "impact", "effect", "physical health", "perceived importance", "millennials", "questionnaire", "development"*.

Whether a source is used is subject to specific quality criteria. Attention is paid to whether the authors have academic titles or, for example, work in professions (e.g. Professor) in which solid scientific work is a fundamental principle. As far as the type of source is concerned, care is taken to avoid popular scientific literature as far as possible. The place of publication of the cited work is particularly relevant. If possible, the publication should occur within the framework of a scientific publication, for example, in journals. Care must be taken to ensure that the published articles in the specific journal are subject to peer review. In addition, an attempt is made to use the most recent work possible, which has a high impact compared to others. Finally, it is vital to check whether the present work is coherently argued, the methods appear to be appropriate and well applied, and scientific accuracy has been fulfilled (Misra & Muhammad-Bello 2021).

The impact of the Covid-19 pandemic on the perceived importance of physical health has not yet been addressed in relation to millennials or any other target group at the time of writing. The research objective on which this thesis is based emerges from this gap in the research. But literature shows evidence that decisive events such as the financial crisis or a pandemic can permanently change the characteristics of generations. Various pandemics have already occurred in the history of humanity, well-known pandemics such as the Spanish flu or the plague have caused millions of deaths (Belser & Tumpey, 2018). But increased mortality in the population is not the only effect a pandemic can have.

The consequences of a pandemic on the population are multifaceted and challenging to predict due to the many variables. Inglehart and Baker note that changes in the fundamental values of a society can be triggered by a shift in the economic situation

(Inglehart & Baker, 2000). The Covid-19 pandemic has had a significant impact on global markets worldwide as well as on domestic markets (Jonung & Röger, 2006; McKibbin & Fernando, 2020). Aassve and colleagues report effects on social trust triggered by the Spanish flu pandemic, providing further evidence of the multiple impacts that a pandemic can cause (Aassve et al., 2021). The plague pandemic is used worldwide, but also explicitly within Europe, as an explanation for changes in population behaviour and socioeconomic circumstances (Alfani, 2020; Álvarez Nogal et al., 2020).

The amount of research investigating the various impacts of the Covid-19 pandemic is steadily increasing. The main focus of research on Covid-19 are reports on the symptoms and consequences of infection with the virus. In addition to the virological research and the observation of physical symptoms, there are other relevant approaches. For example, a relevant influence on the mental health of individuals is attributed to the pandemic. The measures announced to combat the pandemic are held responsible for various effects. Increased stress, anxiety, depressive symptoms, and major depressive disorder, loneliness and frustration are reported (Kwong et al., 2020; Pfefferbaum & North, 2020). Quarantine phases in particular, tend to cause increased anxiety levels and reduced health-related quality of life (Ferreira et al., 2021).

For vulnerable persons, the circumstances of the pandemic are considered a catalyst of existing prevalence and a relevant cause of manifestation or emerging clinical manifestation of a psychological illness. In addition, help offers appear insufficiently developed (Cullen et al., 2020). In Europe in particular, there are reports of an increased need for psychological care with simultaneously occurring limitations due to the pandemic. A high need for support is also predicted for the future (Thome et al., 2021). These phenomena are also occurring more frequently among children and young people, triggered by very restrictive measures such as the long-lasting school closures at the beginning of the pandemic and the switch to a hybrid form of teaching between face-to-face and online methods.

But it is not only school that is considered necessary for a stable environment; extracurricular activities in sports clubs or other leisure activities also play a role in preventing not only mental illness. The long-term effects on mental health are still unclear. (Joyce Lee, 2020). But the prevalence of personality traits such as neuroticism, combined with the impact of the pandemic, leads to higher stress levels. Over an extended

period of time, this negatively affects physical and mental health (Sam Liu et al., 2021). Changes in the educational landscape not only bring about changes in the student´s social structure but also confront them with challenges in successfully completing the educational process, planning further steps such as starting a degree or an apprenticeship or generally shaping the near future. Impacts on the educational standards of a generation can also lead to reduced employment levels and thus hinder economic development (Daniel, 2020).

In addition to the negative effects, some approaches see the pandemic as a disruptive force that offers the opportunity for positive changes, especially in the European educational landscape (Grek & Landri, 2021). As already mentioned, the economic impact of the pandemic is immense. Deaths, work absences or closed businesses cause enormous financial damage. While these challenges exist in principle for all countries, to a greater or lesser extent depending on the structure of society and the economy, overcoming these problems only seems possible with international, transnational cooperation (Susskind & Vines, 2020).

The concept of perceived health is a highly individual construct. As shown in point 2.1.1, the term health is composed of different areas. This leads to a diverse approach in the scientific world. The economic threat posed by the pandemic gains new meaning with the finding that the *"People's economic satisfaction was the most powerful predictor of self-perceived health"* (Carlson, 1998, p. 1355). This observation has been confirmed in the further course of the research (Eikemo et al., 2008). There is evidence that among students, psychological well-being is the most relevant influence on perceived health in total, followed by physical activity, which requires a basic level of physical health (Piko, 2000). Additionally, a recent study found that perceived vulnerability to the coronavirus affects perceived health (Eder et al., 2021). Poor perceived physical health and the presence of depressive symptoms lead to poor self-rated health. This also shows the relevance of perceived physical health to the general well-being of an individual (Rantanen et al., 2019). The connection between physical health and the associated capability to carry out certain activities, which positively influence the well-being of individuals, is also reported (Paggi et al., 2016). This importance of physical activity for health perception is explicitly observed in a large and young European cohort, with nearly 50% under 44 years old (Abu-Omar & Rütten, 2008). Observed reductions in physical activity due to pandemic countermeasures among the general population and students, in

particular, could thus have a negative impact on physical health and well-being (Lukács, 2021).

Given the management-oriented master's programme, the question of the economic relevance of the topic of this thesis comes to mind. Knowledge about the future behaviour of potential customers offers the possibility to adapt and align the company and product strategy to the expected demand (Day, 1994, p.38). Studying customers and gaining knowledge about their attitudes and characteristics, also known as customer knowledge (Gibbert et al., 2002), is important for companies because this knowledge enables them to adapt their product portfolio faster and better, and ultimately more cost-effectively (Khosravi & Hussin, Ab Razak Che, 2014). The healthcare industry also faces the same challenges as other industries. Hence, it is also important to fully exploit the possibilities of knowledge management regarding customers to remain competitive (S. S. Liu & Lin, 2007). In conclusion, knowledge management allows future opportunities to be identified and, in combination with a willingness to innovate, gives the implementing company a competitive advantage (Fidel et al., 2015).

However, it is not only economic enterprises that benefit from a high level of knowledge. Awareness of future views and opinions is also elementary for political institutions to make targeted policies (Deloitte, 2021; Laver, 2005). It has been observed that political parties are predominantly oriented toward the attitudes of the mean voter than towards the specific supporters of the party itself. Therefore, a general analysis of a target group is of political importance (Ezrow et al., 2011). Changes in the orientation of political parties are attributed both to a change in the voters´ opinions and to changes in economic conditions. The pandemic fulfils both variables, which means that a change can be expected. This makes generating knowledge about the configuration of these variables all the more relevant (Adams et al., 2009). The healthcare sector is a market in which private commercial companies and political stakeholders are strongly represented. As a result, there is a great demand to be expected in this segment for forecasts of future views and opinions of potential new customers or already acquired customers and the expected future ideas of likely voters.

Looking at the perceived importance of physical health among millennials, it is striking that a substantial amount of previous research on Millennials and their views comes from the United States of America and deals with members of the generation in the States if

there is any research. There still seems to be a major knowledge gap, as previously reported by Deal and colleagues (Deal et al., 2010). Members of the millennial generation are considered more health-conscious than other generations, older or younger, and more conscious about the cost-benefit ratio of health services (Cheng, 2019; Fronstin & Elmlinger, 2017**;** Lloyd et al., 2013). While the top three concerns in the Deloitte Global Millennial Survey 2019 (Deloitte China, 2021) were climate change, income inequality and unemployment, the Deloitte Global Millennial Survey 2021 shows a very different picture. Here, health status has moved up to the top of the list of top concerns, in front of unemployment and climate change (Deloitte, 2021).

Since this thesis involves the design of a questionnaire, it is necessary to search for already published, related questionnaires. Even if no specific matching questionnaires can be found, questionnaires that are at least in part close to the variables to be investigated give a reference for eventually usable items. On the one hand, these include measurements of the importance of physical health, applicable to the corresponding age group of the millennials. On the other hand, methods that aim to measure perceived importance, preferably in health content. Worth mentioning are the *Global Physical Activity Questionnaire (GPAQ)* (GPAQ, 2002), the *European Health Interview Survey (EHIS)* (Eurostat, 2022a), the *International Physical Activity Questionnaire Short Form (iPAQ-SF)* (Craig et al., 2003), the *EQ-5D-3L (The EuroQol Group, 1990)*, the EQ-5D-5L (Herdman et al., 2011) and the *Psychosocial and spatial analysis of LGBT tobacco use* (Joseph Lee & Boynton, 2019).

3. RESEARCH QUESTION / HYPOTHESES

Summarising the literature presented, a broad overview of the current state of research is presented and in the course of this, gaps in knowledge are identified. The research question attached to this thesis has not yet been addressed. A pandemic can be a stimulus for change in many ways. The mental health of many people is affected by the Covid-19 pandemic. It has been shown that this also affects physical health over a more extended period of time. Despite these and other problems, opportunities are also interpreted. It turns out that perceived health is a multifaceted construct that needs to be captured at different levels. Perceived physical health has an impact on general well-being. Physical activity is described in connection with physical health. The research topic of this thesis

is of economic, social, and political importance. Millennials may be exceptionally responsive to changes in this area due to their greater interest in health issues. The question of relevance results from the economic and social significance described above, supported by the sheer size of the potentially affected group. In 2020, almost 118,000,000 people in Europe, and thereby a good 26% of the total population of Europe, belonged to the cohorts assigned to the millennial generation (*Eurostat*, 2022b).

Based on the literature review and the gaps in scientific knowledge identified in connection with the current life situation, the following research question emerges for this thesis:

Do European millennials experience a change in the perceived importance of their physical health caused by the global Covid-19 pandemic?

This research question addresses the relevance of the topic by examining whether the group of millennials, who, on the one hand, represents a sizeable potential target group in the economic context and on the other hand a relevant group of stakeholders within a society and the political challenges that might occur. A change in the attitudes of the group under study could impact these fields, and thus the need for deeper analysis is created, and narrowed down in a target-oriented way with the help of the research question.

In addition to this research question, the empirical research approach of this thesis requires the formulation of hypotheses. These are tested for their integrity and from a statistical perspective with the help of statistical hypotheses, named null hypothesis (H0) and alternative hypotheses (H1). This procedure aims to either verify or falsify the formulated hypotheses or the basic assumptions of the thesis. The research question and hypotheses result from the theoretical background and the associated literature work. To increase the accuracy, the formulation of the hypothesis emphasised a directional formulation with a conditional connection.

Based on the state of research presented in section 2.2, the following working hypothesis is derived for this thesis:

The pandemic experiences have been leading to an increased perceived importance of physical health among the participants.

The statistical hypotheses look like the following:

H0 – There is no correlation between pandemic experiences and increased perceived importance of physical health.

H1 – There is a correlation between pandemic experiences and increased perceived importance of physical health.

In this hypothesis, the pandemic experiences are the independent variable, and the perceived importance is the dependent variable. The basic assumption of this thesis is the existence of relevance of physical health for the group being studied. Although this is assumed based on the literature research, it will be specifically tested with the help of the questionnaire. Following this literature research, the working hypothesis is formulated to the extent that physical health is believed to be important. Due to the complexity of the issue under investigation, it is necessary to implement additional stages. To answer the working hypothesis and thereby the research question, it is required to consider all the different aspects that are involved. This is done by examining the sub hypotheses presented below. Only when the individual components have been answered, a profound answer can be given to the main research question with all its implications.

How important is physical health?

Significant importance of physical health is noted among the participants.

H0 – Physical health is not considered to be important by the participants.

H1 – Physical health is considered to be important by the participants.

Regardless of whether the pandemic is a precursor for a change in the attitudes of the test subjects, it is first necessary to determine whether there has been a change at all. Regarding the extent to which people's lives have been affected in the last two years and how dominant discussions about health have been in public discourse, a change in attitude seems likely, also based on the literature presented. It also seems reasonable to assume

an increase in perceived importance, which leads to formulating the following sub hypothesis.

Is there a change in the perceived importance of physical health?

There is an increase in the perceived importance of physical health.

H0 – There is no change in the participants' attitude towards their physical health.

H1 – There is a change in the participants' attitude towards their physical health.

Following this, it will be determined whether the pandemic can be seen as the origin of any changes in attitudes that may have occurred. According to the summarised literature, it can be assumed that a pandemic can undoubtedly influence the attitudes of affected individuals, which results in the following hypothesis.

Is the pandemic a cause for changing attitudes towards physical health?

The pandemic is seen as a precursor for changing attitudes towards physical health.

H0 – No impact on personal attitudes is attributed to the pandemic.

H1 – The pandemic is claimed to be a reason for changing attitudes.

To be able to answer these sub hypotheses and as a result the working hypothesis, which is a prerequisite for answering the research question, it is necessary to formulate suitable items for the questionnaire. These must be able to survey the questions and provide reliable conclusions for evaluating the hypotheses. The methodology of the questionnaire will be discussed in more detail in the following section.

4. METHODOLOGY

This chapter entails two sections. The first section presents the theoretical basis of the survey instrument used, an online questionnaire. It also summarises the data analysis methods used in the further course of the paper.

The target population comprises the persons defined as european millennials. This means individuals who grew up in one of the 27 member states of the european Union listed under point 2.1.2, even if they were not necessarily born there, and who still live there today. Theoretically, these are up to 118,000,000 people. Due to the size of this

population, a sample of the total population must be used. The sample comprises a final 188 people belonging to the formulated target group. Of these, 61.70% are female and 37.20% male. Of the 27 possible member states, 10 nationalities are represented, whereby with 158 test persons out of 188 total participants, persons with a German background are clearly overrepresented. This group is followed by the group of Italian participants with a number of 12 persons. The sample is thus to be seen as a segment of the entire target population, which is interpreted against the background of the expected, in its basic features similar western socialisation.

4.1 Survey instrument online questionnaire

A questionnaire will be conducted to assess the perceived importance of physical health among the defined target group to answer the research question. Meaningful questionnaires are bound to scientific quality requirements. A questionnaire can be used as an instrument for recording specific attitudes and characteristics and their degree or type in the subject under investigation (Lavrakas, 2008). Often, these are not directly observable characteristics, which are to be revealed with the help of operationalisation of the characteristics in the items. The scientific quality requirements to which a psychological questionnaire is submitted can essentially be categorised into objectivity, reliability, and validity. Objectivity refers to the objectivity of conducting, evaluating and interpreting the test. It checks whether different persons conducting the test will achieve the same results. Reliability describes the accuracy of measurement. The validity examination, divided into visual, content, criteria and construct validity, covers the accuracy of the applied construct (*GESIS - Leibniz Institute for the Social Sciences*, 2022).

In developing a questionnaire, several stages build on each other to produce an operational construct. The first step is the specification of the characteristics to be investigated. In this thesis, these are the perceived importance of physical health and the influence of the Covid-19 pandemic. However, characteristics are not generally regarded as equal; a difference is between directly ascertainable and latently hypothetical characteristics is made. The characteristics on which this thesis is based belong to the second category. This makes it necessary to assess these latent characteristics indirectly. When evaluating the results, it must also be considered that the characteristics are so-called states, which can change over time and are multidimensional. To prevent possible

manipulation, the aim is to design the items so that characteristics are not queried through personal judgements but behaviour in situations.

When designing the questionnaire, aspects such as the restricted content of the topic and the heterogeneity of the target group, despite age and regional restrictions, are taken into account. Regarding the number of items used, various aspects must be considered. A significant number of items usually reduces measurement errors and an adequate mean score. This has a direct positive influence on the reliability of the results. However, special attention must be paid to the length of the questionnaire. Not only is there a danger of decreasing validity due to decreasing concentration or motivation, but there is also an increased risk of the test persons not completing the questionnaire and thus losing valuable data. Since several characteristics are to be recorded by perceived performance and the influence of the pandemic, separate items must be created for each characteristic (Moosbrugger & Kelava, 2020).

In the following, the schematic is presented, which is used as a guideline for creating the questionnaire. Special considerations and the exact steps and correction steps will be discussed in more detail in the following chapters assigned to the individual chapters. The definition of the construct to be measured has already been done. At the beginning of the item development, the decision is made whether the items should be formulated as questions or statements. In this questionnaire, statements are prepared. These offer the advantage that answer alternatives can be given, and more straightforward analysis is possible. The next step is to decide on a type of response dimension. The items are created based on the rational construction principle. They are derived from theories and assumptions presented in the literature section, and corresponding emotions or behavioural tendencies are assumed. The formulation must be clear and understandable, fully capture the characteristic under investigation and leave no room for interpretation. Suggestive questions must be avoided, and the answer options must always be interpretable and suitable to the given item (Osterlind, 2002). To respond to the statements appropriately, a response design is used that encompasses the dimensions from rejecting to agreeing.

After the items have been created, the first revision phase takes place, in which the items created are checked for plausibility and comprehensibility and corrected or removed if necessary. Once this phase is completed, a pre-test with selected items from the developed

questionnaire is conducted. For this purpose, a smaller sample is interviewed, which should be similar in constitution to the final test group. With the help of descriptive statistics, particulary item difficulty, discriminatory power and item variances, the quality of the items created is checked. If necessary, the information gained here will result in a further round of corrections or adjustments to the final questionnaire. Once this correction is complete, the final data collection phase begins, and the survey is conducted.

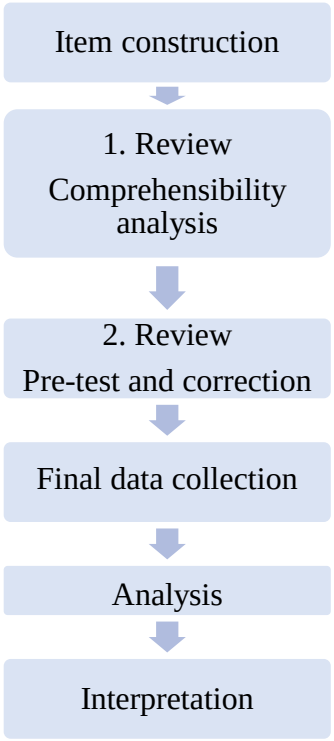

Figure 2: Questionnaire development process (own diagram)

4.2 Data analysis methods

This section presents and explains the methods used in the course of this to analyse and evaluate the data collected through the questionnaire. The statistical evaluation and analysis of the data are carried out with the statistical software programme SPSS 20, developed by IBM. Data collection is based on responses to the developed questionnaire, published using the soScisurvey.de online tool. The data collection is initiated by sending a link that redirects to the questionnaire published online to a certain number of known people who meet the demographic requirements. By redistributing the link, the sample is expanded. Due to this procedure, the sampling is a non-probability sample. After generating a sufficient amount of data, it is necessary to analyse it. For this, data cleaning is needed first. Incomplete or incorrect data sets are removed. This is followed by an analysis of the data set.

On the one hand, descriptive statistics are presented. On the other hand, explorative statistical methods are used to show correlations. Finally, the research question and the hypotheses of the thesis are tested using inferential statistical methods. A concluding interpretation, discussion and evaluation of the results concludes the quantitative research part of the thesis (Moosbrugger & Kelava, 2020).

All datasets that were not filled out entirely by the respondents were removed during data cleaning. In this case, complete means the double declaration of consent for the use of data, stating demographic information such as age and country of growing up, and answering all items. In one case, a missing answer is replaced by the average response of all subjects on that item, more details on this particular case are explained in chapter six. Apart from this, incomplete data sets are not used or filled in. As a basic descriptive evaluation, the ratio of female, male and non-binary subjects is presented by a Pie chart. The distribution of the test persons in different countries of growing is visualised with the help of a bar chart. Exploratory analyses regarding differences between an independent variable based on the country are not conducted, given the small number of probands with a country-specific background other than German.

As described, a Likert scale is used as the response options for the items. There are different views on whether the Likert scale data are interval or ordinal scale. While interval-scaled data allow a more expansive repertoire of statistical applications, ordinal-scaled data require descriptive analyses based on the median instead of the mean and the interquartile ranges instead of a standard deviation. Although there are approaches that define a Likert scale as interval-scaled, this thesis assumes an ordinal scale, since it cannot be assumed that the respondents interpret the distances between the answer options as regular and constant (Göb et al., 2007). However, the sum of all subjects per item in comparisons of subscales or factors are regarded as interval-scaled, since a regular and constant distance between each value is guaranteed. This allows the application of the statistical analyses explained in more detail in the following and comparison methods like mean and standard deviation.

When using the online tool soScisurvey, the answer options of a Likert scale are given values counting from one onwards. To calculate the item difficulty, it is necessary that the least agreeing answer option is set to a value of zero. The Likert scale used includes the response options strongly disagree (1), disagree (2), neither agree nor disagree (3),

agree (4) and strongly agree (5). These values need to be changed to strongly disagree (0), disagree (1), neither agree nor disagree (2), agree (3), strongly agree (4). The item difficulty calculation is a way to check the items whether they evoke very conforming reactions and therefore cannot contribute to the differentiation between different individuals. This is done with the help of the equation below. It adds up the values of this one item across all participants and divides this sum by the number of participants. Then this value gets multiplied by 100 to score the item difficulty. Scores between 0.25 (25%) and 0.75 (75%) are considered to be suitable (Moosbrugger & Kelava, 2020, p. 81).

$$P_i = \frac{\bar{x}_i}{\max(x_i)} \cdot 100$$

In the course of the analysis, possible significant differences between male and female test persons are examined. The *Mann-Whitney-U test* is used for this purpose. This test thus examines differences in the dependent variable, for example the scale totals, to the two independent groups of the gender groups male and female. The condition is an ordinal scale level of the dependent variable, two independent groups as independent variables, as well as independent observations. Finally, the observations should not be normally distributed but should be mutually similar in expression. For interpretation, the p-value is considered. After defining a significance level, in this case oriented towards the usual value of 0.05, a p-value below this threshold indicates statistical significance. (Nachar, 2008). This similarity in shape is measured using the *Kolmogorov-Smirnov test*, which compares the distribution of two data sets. To check this assumption, a *Kolmogorov-Smirnov two-sample test* is carried out but with the standardised data. If the values are above a p-value of the specified threshold $p>0.05$, it is assumed that the data are similar and statements about the medians are possible (Hemmerich, 2022).

To check the reliability of the questionnaire and in particular the integrated scales, *Cronbach's alpha* is calculated. This is a measure of the internal consistency of a scale. *Cronbach's alpha* can assume values between -1 and 1. When calculating with the help of the programme SPSS from IBM, further relevant information is presented. The discriminatory power of the items is indicated, whereby items with a discriminatory power lower than .30 should be removed from the scale. Additionally, the column *Cronbach's alpha if item deleted* is also regarded and scales are adjusted if necessary.

Values at of >.8 considered good, >.7 considered acceptable, of >.6 considered questionable and >.5 considered poor (Blanz, 2021).

Factor analysis is carried out to check the structure of the items and the predefined subscales. To justify this, the Kaiser-Meyer-Olkin test is computed in advance. A value of .60 is considered necessary to proceed with the factor analysis (Kaiser & Rice, 1974). Since the factor analysis shows a considerable number of factors, it is crucial to identify the relevant ones. One parameter for this is the Kaiser-Guttmann criterion, which states that only factors with an eigenvalue >1 should be considered. This observation is supplemented by a graphical representation of the eigenvalues within the framework of a scree plot (Guttman, 1954). After defining a fixed number of factors, the factor analysis is carried out using this set. By evaluating the output of the rotated component matrix, the observed items are assigned to the factors on which they load highest. The basis of the rotation is a varimax rotation. The assignment of items to factors follows specific guidelines. Factor loadings below ± .20 are not considered. Cross-loadings are regarded if an item loads on more than one factor with more than ±.30. If the difference between the loadings is more than ±.20, the item is assigned to the factor with the higher loading. In the case of a less clear differentiation, it is necessary to exclude the item or make a theoretically sound manual classification (Larsen & Warne, 2010). Considering the attribution of variables to factors and the number of factors identified, the original structure of the questionnaire and the subscales developed will be re-evaluated and assessed. The assessment of the sub hypotheses, through the answering of which the research hypothesis and thus finally the research question is answered, is carried out through an interpretation of the data acquired through the questionnaire. Response tendencies in the items that are assigned to subscales belonging to the sub hypotheses are evaluated and interpreted.

4.3 QUESTIONNAIRE DEVELOPMENT

The final questionnaire comprises a total of 29 pages, including the introductory page with the information on data protection and the corresponding request for consent. This is followed by the demographic information on age and origin. This is followed by 24 items arranged in random order, classified according to the corresponding three subscales of *physical health*, *perceived importance* and *changing attitudes* in the following analysis. The questionnaire concludes with another request for consent to the collection and use of

data, and a final page for the purpose of thanking the respondent and again point out the possibility of contacting the researcher. The entire wording of the questionnaire used can be found in the appendix.

The computer-administered questionnaire is divided into four sections. In the beginning, an introduction and a note of anonymity are given, followed by instructions for the participants. Then the relevant demographic data are asked for, specifically the place of origin and location of living, as well as age and gender. Finally, the actual survey is carried out with the developed items, which are also randomly arranged across characteristics to avoid response tendencies. In the end, the participants are thanked for their full participation and given contact information in case of further questions.

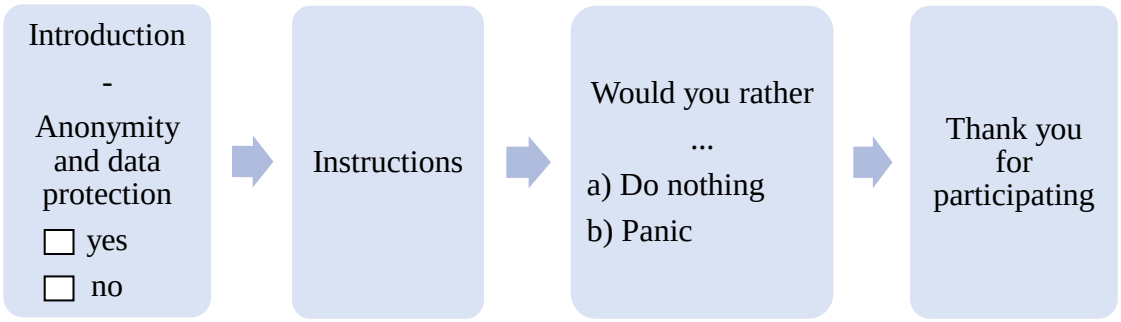

Figure 3: Structure questionnaire (own diagram)

The third step is the logical central and essential part of the outcome and quality of the questionnaire. Consequently, this part requires the greatest attention and care. For this thesis, a questionnaire is being developed that can be completed by the test persons independently online. This makes it possible to achieve a sufficiently large sample in the context of this work, as well as the possibility of acquiring potential participants in the whole defined Europe-wide area. To obtain the respondents´ attitudes, statements are primarily written to which the respondents express their agreement or disagreement based on a five-part Likert scale. No existing questionnaires could be found for the constructs relevant here. Nevertheless, questionnaires that follow a similar design offer guidance in formulating suitable items.

The Likert Scale used is described in the following display:

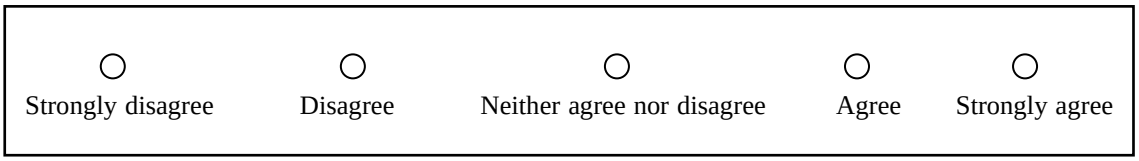

Figure 4: Likert scale

The five-part Likert scale is generally accepted as more practical for the respondent and provides a higher internal consistency (Østerås et al., 2008). Although a four-part scale has the advantage of a clear tendency, this pressure increasingly leads to non-responses (Chyung et al., 2017). To keep the participants motivated and thus achieve a high completion rate, the focus is on the quality of the items and a short completion time. The aim is a completion time of about 10 minutes, which is well reached. To resume the previous division of the main hypothesis into sub hypotheses, the items of the questionnaire are allocated to the hypotheses whose constructs the items are supposed to survey. This does not include the following general question. For this item, the respondents directly self-assess themselves regarding the research topic and not indirectly measure their attitudes. The items developed are listed below in their original formulation and quantity. The development towards the final questionnaire is presented in the following chapters.

General question

1. The experience of the corona pandemic has made my physical health more important to me than before.

How important is physical health?

Significant importance of physical health is noted among the participants.

H0 – physical health is not considered to be important by the participants.

H1 – physical health is considered to be important by the participants.

1. My physical health is important to me.
2. I try to eat healthy food.
3. It annoys me when I am physically limited, for instance due to injuries.
4. Being dependent on the help of others due to physical limitations is a terrifying thought for me.
5. I do enough exercise to help my health.
6. I take care of my physical health.
7. I am interested in the topic of physical health and possibilities for improving it.
8. It is advisable to personally take additional measures for sufficient medical care (i.e. additional insurances).

9. I try to avoid situations that could be dangerous to my physiological constitution.

Is there a change in the perceived importance of physical health?

There is an increase in the perceived importance of physical health.

H0 – There is no change in the participants' attitude towards their physical health.

H1 – There is a change in the participants' attitude towards their physical health.

1. My physical health has become more important to me.
2. Since the beginning of the pandemic, I have been doing more sport than before.
3. I am increasingly interested in health topics.
4. I increasingly notice unhealthy or health-harmful behaviour among my friends or other people.
5. The number of conversations about physical health has increased.
6. I have started to point out unhealthy behaviours to my friends.
7. Since the beginning of the pandemic, I have taken additional measures to secure my medical care.
8. I have become more cautious and intend to avoid injuries or infections.
9. I have the feeling that I should have a medical check-up more often.

Is the pandemic a cause for changing attitudes?

The pandemic is seen as a precursor for changing attitudes.

H0 – No impact on personal attitudes is attributed to the pandemic.

H1 – The pandemic is claimed to be a reason for changing attitudes.

1. The pandemic has changed my attitude towards my physical health.
2. I am more careful in my everyday life because the reports of crowded hospitals make me anxious.
3. I think I will continue to behave differently in the future than I did before the outbreak of corona pandemic.
4. I like some of the changes that have occurred during the pandemic.
5. I make my decisions considering the possible impact on the collective society.
6. Incidents like a pandemic can lead to a transformation of society.
7. I have noticed a shift in the attitudes of friends and other people since the start of the pandemic.

The data collection is conducted with the help of the online tool of SoSci Survey (*SoSci Survey*, 2022), both the pretest and the final data collection. The tool offers the possibility to formulate items and to choose from a variety of possible answer formats. This way, the intended form of the Likert scale can be used, as well as demographic information and declarations of consent can be requested. The items mentioned above are entered into the system and coded, to be able to make an identification in the following data analysis.

The questionnaire consists of 8 separate categories. First, there is the category *Seriousness&Consent* (SC) with the instructions and the consent to participate. The second category, *Sociodemographics* (DE), collects demographic information on gender, age and origin. Categories three, four, five and six include the specific items. Category three (QU) contains the general question of whether the Covid-19 pandemic´s experience has made my physical health more important to a person than before. This question is in its own category because it is difficult to categorise it under one of the sub hypotheses. Category four, *Importance physical Health* (PH) includes the items that make up the nine items (PH 01-09) of the first sub hypothesis, "How important is physical health?". The fifth category, *perceived importance* (PI), combines the nine items (PI 01-09) of the subhypothesis, "is there a change in the perceived importance of physical health?" The sixth category contains the items of the sub hypothesis, "is the pandemic a cause for changing attitudes?". This category is called *changing attitudes* (CA) and comprises seven items (CA 01-07). Finally, there is category seven *Finish* (FI), a final repeated request for consent, and category eight (AG), which contains the text modules displayed to respondents in the case of non-consent or the wrong age.

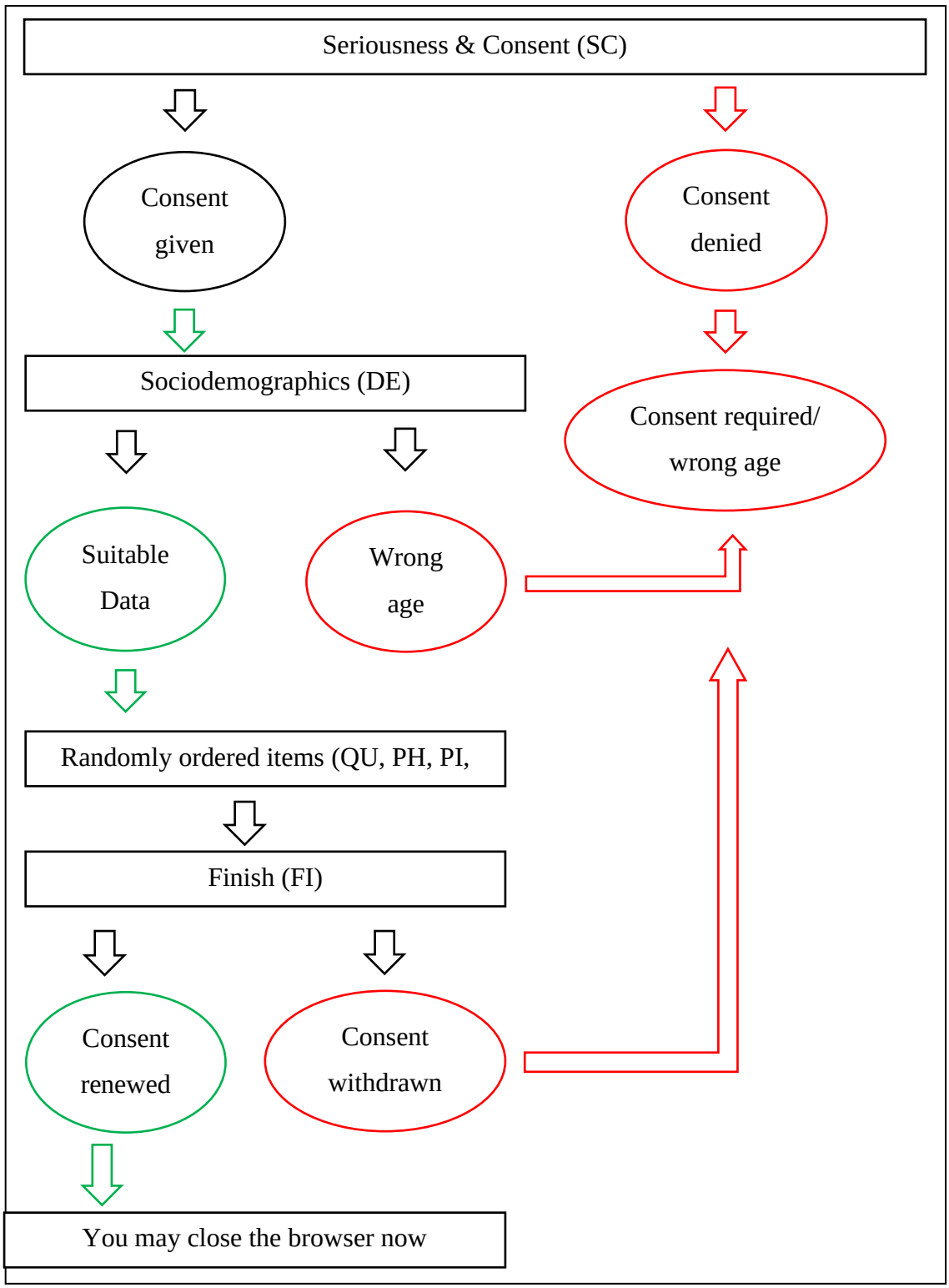

Figure 5: Questionnaire flow chart (own diagram)

4.3.1 Pre-test of the questionnaire and correction

A correct design of the questionnaire does not ensure that the participants will adequately understand the questions. One step to ensure valid data collected by a questionnaire is a pretest. The results of this pretest deliver data to check for several parameters. The distribution of the variables is analysed and significant tendencies in the response behaviour can be detected through skewed or one-sided response distributions. But not only tendencies toward the opposite poles are undesirable. An accumulation of neutral answers also indicates a lack of clarity of the question or problems of understanding. The sample of the pretest should be drawn from the final population field being investigated (Boynton, 2004). The pretest has an integrated comment function that allows the participants to formulate comments and suggestions. As a good sample size for the empirical pretesting of a questionnaire, approximately a sample of up to 30 participants can be assumed (Perneger et al., 2015).

For evaluating the data generated in the conducted pretest, several procedures are applied with the software SPSS. Descriptive statistics of the individual items are generated. Attention is paid to skewness or other recognisable tendencies in the response behaviour for specific items or regarding the questionnaire. Furthermore, internal consistency is checked with *Cronbach's alpha*. This requires a reassessment of the randomised items to their respective constructs, respectively to their scales. Based on any feedback via the comment function, adjustments can be made in the formulation of the items for better understanding or more significant differentiation within the formulation of the items.

An online link allowing access to the questionnaire created via the above-mentioned online tool was sent to chosen contact persons. The aim was to have participants from different European countries. A total of 26 questionnaires were filled in during the pretest, of which 20 were processed entirely and authorised for usage. Countries of origin are Belgium, Finland, Germany, Poland, Portugal and Spain. A set of notes and comments were made by the participants. No comments dealing with spelling or grammar issues are cited in Table 1, but comments on content are summarised and evaluated. A complete overview of all comments and notes can be found in the original wording in the appendix of this thesis. The items concerned are presented with the number and keywords for readability. The entire questionnaire used for the pretest can be found in the appendix of this thesis.

Table 1

Notes from the pretest

Item	Comments/Notes	Evaluation/Adaptation
Page 1 – SC01 *You are being invited...*	"What will this data ultimately be used for?" "GDPR and data privacy should be mentioned here" "swap the order of No and Yes"	Introductory text will be adapted and the suggestions included. The recommendation will be implemented.
Page 3 – DE01, DE08 *To which gender identity do you most identify?* *In which country did you grow up?*	Blue colour in the background is irritating. "there might be several countries respondents grew up in"	Background colours cannot be changed, a single comment on this does not justify using another tool for this reason. The wording is adapted to ask in which country the main period of growing up was spent
Page 4 – PH06 *I take care of my physical health.*	"Physical health and taking care of it could be interpreted in many different ways. Maybe give some examples or be more precise?"	The feeling of taking care for something is highly individual for each person and can have a similar importance, despite different expressions. Hence the open-ended formulation.
Page 5 – CA02 *I am more careful in my everyday life because the*	More careful yes, but for different reasons than full hospitals"	The original formulation seems to be too precise and to miss the reality of the

reports of crowded hospitals make me anxious.		respondents. The item will be rephrased. *I am more cautious in everyday life out of fear of the possible effects or consequences of an infection with the Covid-19 virus.*
Page 7 – CA07 *I have noticed a shift in the attitudes of friends and other people since the start of the pandemic.*	"Covid-19 pandemic hasn´t been explicitly mentioned yet…?"	Item will be rephrased. *I have noticed a shift in the attitudes of friends and other people since the start of the Covid-19 pandemic.*
Page 9 – PH09 *I try to avoid situations that could be dangerous to my physiological constitution.*	"What do you mean with physiological constitution?"	Different wording. *I try to avoid situations that could be dangerous to my physical condition.*
Page 11 – QU01 *The experience of the corona pandemic has made my physical health more important to me than before.*	"Corona or Covid?"	Covid-19. *The experience of the Covid-19 pandemic has made my physical health more important to me than before.*
Page 13 – PH05 *I do enough exercise to help my health.*	"physical health or mental health? possibly define or both as individual questions (if that is important at all)"	Change phrasing to physical health. *I do enough exercise to help my physical health.*

Page 16 – PI03 *I am increasingly interested in health topics*	"Only physical or also mental health?" "Do you mean if I am more conscious now than before the pandemic?"	Rephrasing Item. *I am increasingly interested in physical health topics.* Item is intended to measure latent changes in attitudes, therefore no explicit mention of a possible reason for the change.
Page 17 – PH01 *My physical health is important to me.*	(The question could be asked much sooner - no idea why - it's a feeling)	Because of randomised order irrelevant.
Page 18 – PI07 *Since the beginning of the pandemic, I have taken additional measures to secure my medical care.*	"Isn´t this more of a binary yes/no question?" "Yes, but not because of covid. Maybe specify"	Phrasing of the item needs to be changed so that a answer can be weighted. Since other reasons for health changes continue to exist, a new formulation with specific reference to the Covid-19 pandemic is needed here. *The beginning of the Covid-19 pandemic was a reason for me to implement additional measures to secure my medical care.*
Page 19 – PI04 *I increasingly notice unhealthy or health-*	**"My friends or other people- not precise enough"**	Specify "other people"

harmful behaviour among my friends or other people.		
Page 20 – PH04 *Being dependent on the help of others due to physical limitations is a terrifying thought for me.*	Response tendencies are very pronounced	Rephrasing *Being dependent on the help of others due to physical limitations is a displeasing thought for me.*
Page 24 – PI01 *My physical health has become more important to me.*	"Do you mean during the pandemic?" "Since when?" "physiological or physical?"	If reference is made here to the Covid-19 pandemic, this item is too similar to item QU01. The objective of this item was to ask about a change in importance without referring to the pandemic as a pervasive influence. A temporal reference will be included. *My physical health has become more important to me in the past years.* All items are rewritten to the term "physical"
Page 25 – PH02 *I try to eat healthy food.*	Too easy to answer	Rephrasing *I try to eat healthy food most of the time.*
Page 28 – PI02 *Since the beginning of the pandemic, I have been*	"Same question than before?"	See page 13, but p.13 is general, p.28 more specific.

doing more sport than before.		
Page 30 – FI01 *You have answered all questions, thank you for your time! Can I still use your data in anonymous form for scientific purposes?*	"Really necessary?" Higher risk of loosing data	In the pretest, there were no dropouts after the questionnaire had already been completed. Thus, this question is being maintained out of courtesy and correctness.

As can be seen from the table, adjustments are made to some items according to the respondents' comments. The questionnaire with these adjustments is then used for the revision round of the pretest. The complete questionnaire used, including the adjustments, can be found in the appendix.

Hereinafter follows the presentation of the statistical tests and analyses in terms of their impact on the items. The processing time in the pretest phase is within the acceptable range of slightly above six minutes, in the following presented as seconds (M = 366; Mdn = 376). The maximum processing time of 542 seconds (nine minutes) was also within the predicted time range. The minimum processing time of 80 seconds must be considered with caution. In summary, the targeted processing time of a maximum of ten minutes appears to be attainable. The gender representation among the test persons is balanced by nine females, ten males and one non-binary person. A tabular presentation can be found in the appendix in Tables 1A and 2A. Data from the Items are considered ordinal data.

It is important to mention here that the response options of the items are recoded in value from previously strongly disagree (1), disagree (2), neither agree nor disagree (3), agree (4), strongly agree (5), to strongly disagree (0), disagree (1), neither agree nor disagree (2), agree (3), strongly agree (4). This allows, among other things, the calculation of the item difficulty by using the mean value in the further course, following the assumption that the sum score for the total scales can be regarded as interval scaled.

The recoded items are given the name suffix *_rev*. As expected, the available data do not show a normal distribution in the response design. In general, the median for the items is

balanced, with a positive tendency (*Mdn* = 3). Exceptions are the items PI02, PI07 and CA02. Here, a distinct negative trend to answer is visible (*Mdn* < 2).

Table 2

Descriptive statistics pretest

			Range	
Item	***n***	***Mdn***	**possible**	**actual**
QU01_rev- general question	20	2	0-4	1-4
PH01_rev-PH is important to me	20	3	0-4	1-4
PH02_rev-Healthy food	20	3	0-4	1-4
PH03_rev-Annoying Injuries	20	3.5	0-4	2-4
PH04_rev-Dependence on others	20	3	0-4	0-4
PH05_rev-exercise extent	20	3	0-4	0-4
PH06_rev-care of physical health	20	3	0-4	2-4
PH07_rev-Interest in improving	20	3	0-4	0-4
PH08_rev-additional measures	20	2	0-4	1-4
PH09_rev-dangerous situations	20	3	0-4	0-4
PI01_rev-PH more important	20	2	0-4	1-4
PI02_rev-more sport since begin	20	1.5	0-4	1-4
PI03_rev-Interest in health topics	20	2	0-4	1-4
PI04_rev-noticing unhealthy	20	2	0-4	1-4
PI05_rev-Nr of conversations	20	3	0-4	0-4
PI06_rev-pointing out behaviour	20	2	0-4	0-4

PI07_rev-amount of additional measures	20	1	0-4	1-4
PI08_rev-increased caution	20	2	0-4	1-4
PI09_rev-medical check up	20	2	0-4	1-4
CA01_rev-attitude physical health	20	2	0-4	1-4
CA02_rev-crowded hospitals	20	1	0-4	0-4
CA03_rev-Continue behaviour	20	2.5	0-4	0-4
CA04_rev-liking changes	20	3	0-4	0-4
CA05_rev-collective society	20	3	0-4	1-4
CA06_rev-pandemic society	20	3	0-4	1-4
CA07_rev-shift attitudes friends	20	3	0-4	1-4

The item difficulty scores ranged from 36.25% to 83.75%. Except for the items PH01_rev (78.75%), PH03_rev (83.75%), PH06_rev (77.50%) and CA06_rev (80%), all items are within the tolerated range. The results of PH01_rev and PH06_rev are tolerated for the time being because of the advantages of a larger number of items for the whole questionnaire. The items PH03_rev and CA06_Rev require further critical analysis. (Mummendey & Grau, 2014). There seems to be a very positive response tendency for these items with less variance within the response behaviour.

Table 3
Item difficulty pretest

Item	*n*	*M*	*Pi*		Item	*n*	*M*	*Pi*
QU01_rev- general question	20	1.80	45.00		PI04_rev-noticing unhealthy	20	1.85	46.25
PH01_rev-PH is important to me	20	3.15	78.75		PI05_rev-Nr of conversations	20	2.70	67.50
PH02_rev-Healthy food	20	2.95	73.75		PI06_rev-pointing out behavior	20	1.75	43.75
PH03_rev-Annoying Injuries	20	3.35	83.75		PI07_rev-amount of additional measures	20	1.90	47.50
PH04_rev-Dependence on others	20	2.55	63.75		PI08_rev-increased caution	20	2.05	51.25
PH05_rev-exercise extent	20	2.45	61.25		PI09_rev-medical check up	20	2.15	53.75
PH06_rev-care of physical health	20	3.10	77.50		CA01_rev-attitude physical health	20	1.95	48.75
PH07_rev-Interest in improving	20	2.85	71.25		CA02_rev-crowded hospitals	20	1.45	36.25
PH08_rev-additional measures	20	2.15	53.75		CA03_rev-Continue behaviour	20	2.25	56.25
PH09_rev-dangerous situations	20	2.45	61.25		CA04_rev-liking changes	20	2.55	63.75
PI01_rev-PH more important	20	2.35	58.75		CA05_rev-collective society	20	2.45	61.25
PI02_rev-more sport since begin	20	1.75	43.75		CA06_rev-pandemic society	20	3.20	80.00
PI03_rev-Interest in health topics	20	2.25	56.25		CA07_rev-shift attitudes friends	20	3.00	75.00

The next step is carrying out a reliability analysis. Therefore, the items are grouped into their scales and *Cronbach's alpha* is calculated. The first scale, *Physical health*, includes items PH01_rev to PH09_rev, N = 9. *Cronbach's alpha* for this scale is α = .782. Of note in this scale is the impact of items PH03_rev and PH09_rev. Not only do these items have a low corrected item-total correlation of .085 and .187 but removing them would also increase the *Cronbach's alpha* value for this scale up to α = .803. Still, it is the decision to allow these items for revision. PH09 will be rephrased after comments from the pretest and for item PH03, it is to be checked whether the extremely distinct response tendency can be observed again. The second scale *perceived importance*, including the items PI01_rev to PI09_rev (N = 9), scored slightly below the target value of α = .680. The removal of items would result in a poorer value of α, except for items PI05_rev and PI09_rev. For both items the change from α = .680 to a maximum α = .699 is negligible. For this reason, the revision round is also carried out with all nine items of the *perceived importance* scale.

The item selection for the third scale, *changing attitudes* scores a value for *Cronbach's alpha* for all items from CA01_rev to CA07_rev (N = 7) of α = .778. Data shows that removing item CA05_rev causes an increase to α = .814. This, together with the background of the comments collected, leads to the decision to remove item CA05 from the questionnaire. Although the critical items mentioned in the individual scales are also below the critical value for the corrected item-total correlation, they will, apart from CA05, nevertheless be approved for the revision round. Together with the results obtained there, they are re-evaluated for the final data collection. For the overall scale (N = 26), the Cronbach's alpha value is α = .862. Again, the impression is confirmed that there are hardly any items whose removal would be beneficial regarding the reliability regarding the whole questionnaire.

Table 4
Cronbach´s alpha pretest

Subscales	***n***	**Items**	**α**
Physical health	20	9	0.782
Perceived importance	20	9	0.68
Changing attitudes	20	7	0.778
Overall scale	20	26	0.862

* The overall scale includes 26 items due to the inclusion of item QU01, which is not assigned to any subscale.

Detailed representations of the effects of the individual items within the subscales in the context of the pretest can be found in Tables 3A, 4A, 5A and 6A in the appendix.

The pretest revealed some necessary changes to be tested again in a revision round before deciding on the most suitable merge for the final data collection. Adjustments to the wording of the items can be seen in the table above and are closely based on the comments and remarks of the test persons. There is no necessity for corrections because of the item difficulty. The items from the physical health scale are retained, despite insufficient partial selectivity and edited by rephrasing. Item CA05 is removed directly. In general, the data analyses are promising, and the questionnaire can continue to be used in its fundamental form. The adapted version for the revision round can be found in the appendix of this thesis. A new questionnaire is incorporated into the online tool and then released to new participants for processing in the same administration procedure.

4.3.2 Revision round

As for the preparation of the pretest, a link with access to the online available and modified questionnaire is sent to new probands. Once again, some comments have been added. Content-related statements are presented and analysed below. The complete overview of all comments can be found in the appendix.

Table 5

Notes from the revision round

Item	Comments/Notes	Evaluation/Adaptation
Page 1 – SC01 *You are being invited...*	"A bit too long. Perhaps shorten the explanation of the topic."	Some want more explanation, others less. Overall, little criticism. Will not be revised.
Page 10 – PI05 *Frequency of conversations…*	Do you mean conversations in general (i.e. overall discourse) or the conversations that I personally have had since the start of Covid?	Valid point. Questionnaire is about personal attitudes, so personal reference should be made. Item will be rephrased. *The frequency of the conversations I have about physical health has increased since the beginning of the Covid-19 pandemic.*
Page 19 – PI06 *Pointing out behaviour..*	Don't know if relevant, but does it might make a difference if we talk about health in terms of either physical or mental health. The impact of Covid might have been of mental nature for many, but is this what you're after in this survey? Perhaps good to be specific here.	It is not to be assumed that predominantly mentally harmful behaviour is pointed out. If behaviours are so notable, it can be assumed that there is also a physical manifestation.

The revision round is also subject to the same statistical analyses as the pretest. The processing time in the revision round is slightly shorter and less varied. On average, the editing time decreased to below six instead of slightly over six minutes (M = 353; Mdn = 350). One reason for this may be the reduced number of comments written and the resulting shorter processing time. Again, the maximum processing time of 9 minutes (547 seconds) was within the predicted time range. The suspicious minimum processing time from the pretest of 80 seconds is replaced by a minimum processing time of 134 seconds (over two minutes). This is still a concise processing time but acceptable. Therefore, it can be assumed that the target processing time will not be exceeded at all but rather tendentially undercut. This can be seen as positive regarding the finishing rate in the final data collection. The gender representation among the test persons is again balanced with ten females to twelve males. The corresponding tables can be found in the appendix under Tables 7A and 8A.

Again, analyses are carried out to evaluate the questionnaire used for the revision round. Response options of the items are once more recoded in value from previously strongly disagree (1), disagree (2), neither agree nor disagree (3), agree (4), strongly agree (5), to strongly disagree (0), disagree (1), neither agree nor disagree (2), agree (3), strongly agree (4). As in the pretest, the available data do not show a normal distribution in the response behaviour. The median for the items has a positive tendency (Mdn = 3). Exceptions are the items PI02 and PI06. Here, a neutral value is shown (Mdn = 2). For better readability and due to the minor differences, the tabular overview is not included in the text but can be found in the appendix in Table 9A.

The item difficulty scores for the revision round score from 34% to 81.75%. Outside the tolerated range of 25% to 75% are the Items PH01_rev (81.75%), PH07_rev (76%), PI05_rev (76%) and CA06_rev (79.50%). Items that stand out in the pretest are PH01_rev, PH03_rev and CA06_rev. While PH03_rev remains within the threshold values in the revision round, item CA06_rev falls outside the threshold again, as does PH01_rev. Removing item CA06, however, would further reduce the item range of the scale changing attitudes, after CA05 has already been removed after the pretest. Table 6 compares the items with a critical item difficulty value in the pretest and revision round. For a complete overview of the item difficulty values in the revision round, please refer to Table 10A in the appendix.

Table 6

Comparison of critical item difficulty values between pretest and revision round

	PH01_rev	**PH07_rev**	**PI05_rev**	**CA06_rev**
Pretest	78.75%	71.25%	67.50%	80%
Revision round	81.75%	76%	76%	79.50%
Changes after pretest	No changes	No changes	No changes	No changes

Next is the re-analysis of *Cronbach's alpha*. The first scale, *Physical health*, includes items PH01_rev to PH09_rev, N = 9. *Cronbach's alpha* for this scale is α = .478. Of note in this scale is the impact of item PH08_rev. Not only does this item have a negative corrected item-total correlation of -.180 but removing it would increase the *Cronbach's alpha* value for this scale up to α = .547, which is still not enough of an increase but the most significant. In the revision round, only four of the nine items of the physical health scale have a corrected item-total correlation value of more than .300 (PH01_rev, PH03_rev, PH06_rev, PH07_rev). All items of the scale that now fall below the threshold have reached a sufficient value in the analysis after the pretest, apart from item PH09_rev, which again does not get a sufficient value. While item Ph01_rev shows irregularities in item difficulty, it has a relevant meaning for the reliability of its associated scale, as the removal of this item would cause *Cronbach's alpha* to fall further to α = .370.

The second scale *perceived importance*, including the items PI01_rev to PI09_rev (N = 9) has an acceptable value of α = .782. Only the removal of the item PI03_rev would increase *Cronbach's alpha* from α = .782 to α = .805. While the reliability value for this scale is improved overall, the key figures for the individual items show inconsistency. No clear picture of a conspicuous item emerges.

The corrected item selection for the third scale, *changing attitudes*, shows no improval. The value for *Cronbach's alpha* for all items from CA01_rev to CA07_rev (N = 6),

excluding CA05, is α = .607, which is a decent decrease compared to the pretest round with all seven Items. In the revision round, item CA02_rev is below the threshold of the item-total correlation (.131) and its removal would improve *Cronbach's alpha* slightly to α = .641. *Cronbach's alpha* value for the overall scale (N=25). is α = .775.

Table 7
Comparison of critical item difficulty values between pretest and revision round

Subscales	***n***	**Items**	**α**
Physical health	22	9	0.478
Perceived importance	22	9	0.783
Changing attitudes	22	6	0.607
Overall scale	22	25	0.775

* The overall scale includes 25 items due to the inclusion of item QU01, which is not assigned to any subscale and as a result of the removal of item CA05.

Detailed representations of the effects of the individual items within the subscales in the context of the revision round can be found in Tables 11A, 12A, 13A and 14A in the appendix.

The small sample sizes and the resultant negative effects on the reliability measurements must be accounted for in the evaluation and the resulting conclusions for the final data collection. The differences between the analyses of the pretest and the revision round may on the one hand indicate statistical randomness, considering the not very extensive changes between the underlying survey instruments. On the other hand, however, this may also be a sign of weaknesses in validity and reliability. After analysing the pretest and the revision round, three items stand out as not having met the requirements similarly in both rounds. Item PH01_rev scored too high in item difficulty both times. However, this is to be expected given the wording of the item and the background of scientific knowledge about the topic. In addition, the removal of this item in both rounds would have resulted in a deterioration of *Cronbach's alpha* for its scale from (N = 9) α = .778 to α =727 and from α = .478 to .370. The same applies to item CA06_rev. Likewise, the item difficulty is too great in both examinations; at the same time, removing the item would have meant deterioration of *Cronbach's alpha* for the scale concerned from α = .778 to α = .759 and from .607 to .356. The case is somewhat clearer for item PH09_rev. In both runs, the removal of this item would have meant an improvement in reliability for the scale concerned, from α = .782 to α = .803 and from α = .478 to α = .534. Additionally, in both cases, the limit value of the item-total correlation has not been reached.

As a consequence of the combined findings from the pretest and revision round, adjustments are made to the questionnaire for the final data collection. The item PH09 is removed. Item CA06 is removed, Item CA05 is included again to ensure that the item battery for the scale changing attitudes does not become too small. Item PH01 is maintained. While there are weaknesses in item difficulty, these are explainable and do not contradict the quality of the study of the relevant construct. In general, it is assumed that there is evidence of correct measurement behaviour of the developed questionnaire. Weaknesses in the validations may become obsolete with the acquisition of an adequate sample size.

4.3.3 Survey

The online link to the questionnaire was initially sent on March 30, 2022 to 82 people from the target group via the messenger service Whatsapp. In the course of this, forwarding to known persons of the corresponding age from the home country or other European countries was kindly asked for. The data collection ended on April 1, 2022. According to the field report statistics, most responses were received by March 22, 2022. Especially the 82 persons initially reached were also reflected in the processing figures in the first two days. For this reason and due to the further positive progress, a new reminder was not issued. 253 people started the questionnaire, 188 of whom completed it in full. This is equivalent to a completion rate of 74.31 %. 65 persons stopped the questionnaire during the processing. Out of these, seven persons dropped out after the first request for consent to use the data. 25 additional persons dropped out after the demographic questions, additional 21 persons during the first three items of the questionnaire. Only twelve further participants dropped out afterwards before reaching the final page. No respondent refused to consent again to the use of data at the end of the questionnaire. For this reason, no subsequent modifications were made. The data analysis that follows in section five refers exclusively to the completed questionnaires.

5. RESULTS

The analysis of the collected data is carried out with the help of the statistical program SPSS Statistics 20 from IBM. The online tool SoSciSurvey allows the collected data to be exported in SPSS as an SPSS syntax file. The tool enables prior data cleaning, whereby

only fully completed data sets are included in the collective data set to be downloaded. This results in 197 data sets. However, this also consists of the data records that are correctly discontinued after, for example, a negative answer to the required age structure. For better clarity, the adjustment is thus carried out within the SPSS programme and all data sets are downloaded. This involves a total of 255 data sets. After excluding all data sets that were not wholly processed, there is a sample of N=188. For one person, a technical error seems to have occurred (Case 477) and the item on page 24 is not answered, but the questionnaire is completely filled out before page 24 (Item PH02) and also afterwards. Here, the overall median of all respondents for this item is added manually as an answer (Mdn = 3). As in the pretest and the revision round evaluation, the variables were recoded. The original data set assigns the following values to the variables: strongly disagree (1), disagree (2), neither agree nor disagree (3), agree (4), strongly agree (5) and not answered (-9). The values of the recoded items are changed to strongly disagree (0), disagree (1), neither agree nor disagree (2), agree (3), strongly agree (4) and not answered (-9). In the further assessment, it is always the recoded items referred to, recognisable by the suffix_rev.

The evaluation starts with a descriptive presentation of the socio-demographic characteristics. For all included data sets, it can be assumed that the corresponding person was born between 1980 and 2000 or in these years. The survey also provides information on the gender and origin of the respondents. Of the 188 respondents who completed the questionnaire, 116 are female (61.70%), 70 are male (37.20%) and two (1.10%) do not feel they belong to either gender.

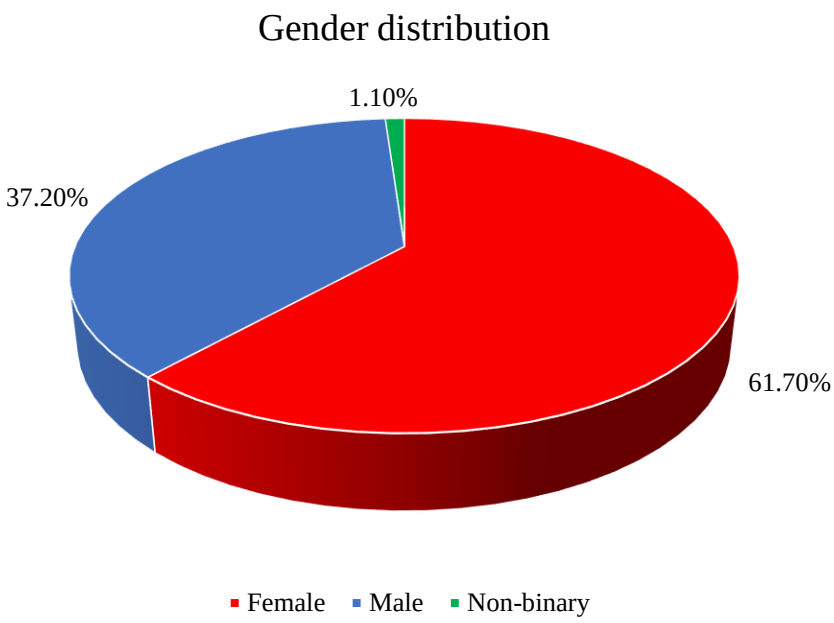

Figure 6: Gender distribution pie chart

People from ten different European countries took part in the survey. By far, the strongest fraction is participants from Germany (n=158). Thus 84% of the participants at least grew up in Germany. The second strongest group are people with an Italian background (n=12). Also represented are Spain (n=5), Portugal (n=4), Finland (n=3), France (n=2), Croatia, Estonia, Luxembourg and the Netherlands (each n=1).

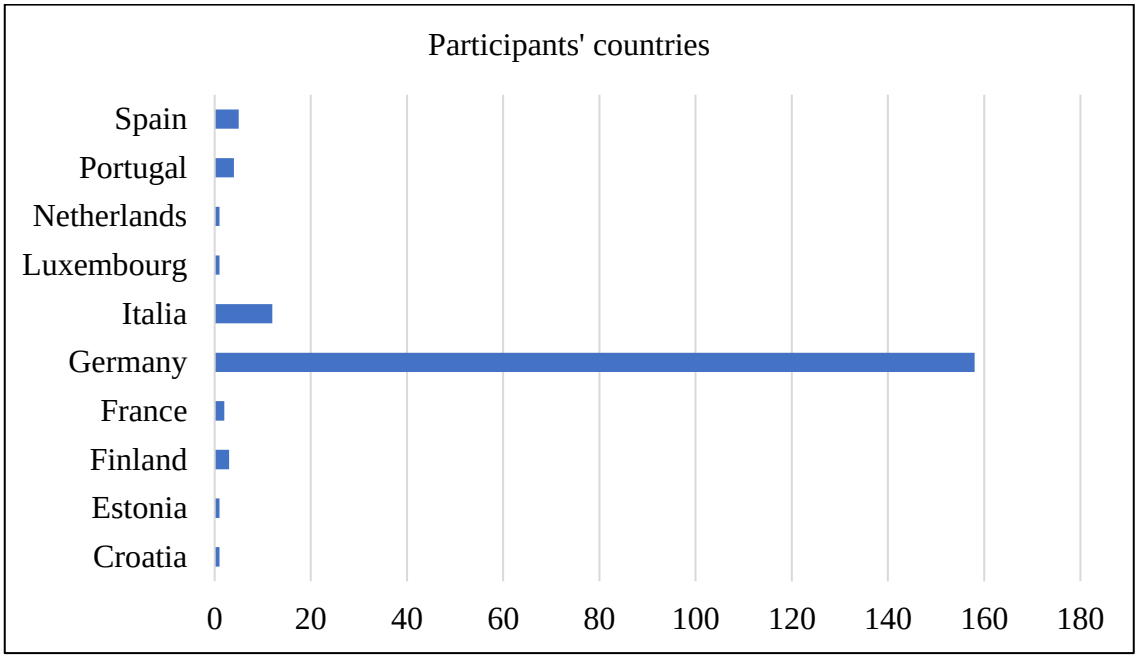

Figure 7: Participants´ countries bar chart

The tendency of the respondents to answer the individual items can be seen in the median values, frequencies and percentages. These descriptive values are used because of the ordinal classification of the individual item scores. For 14 of 24 items, the median shows a positive response tendency, equivalent to the response variant *Agree* (Mdn = 3). Eight items, with a median of two, show a neutral response behaviour in the sense of *Neither agree nor disagree*. Only two items, PI02_rev and PI06_rev, are answered negatively on average with *Disagree* (Mdn = 1). Of all 24 items, 21 are responded to at least once with each answer option. This does not apply to the three items PH01_rev, PH04_rev and PH07_rev. Here, the answer option *Strongly disagree* (0) is not selected once. Item QU01_rev needs to be considered separately. The wording "The experience of the Covid-19 pandemic has made my physical health more important to me than before". This item is the only one intended to directly capture the respondents' self-assessment concerning the research question. The response behaviour for this item is balanced and shows only a slight positive tendency (Mdn = 2, Sum = 398).

More information about the distribution of the given answers is provided by looking at the interquartile range, and in more detail by looking at the values of the first and third quartiles. None of the items has an IQR value higher than two. This is equivalent to the finding that for none of the items did the majority of the respondents select all answer options, but the dispersion is concentrated around the median. For nine items, the median lies between the first and third quartile. A symmetrical distribution can be observed here (QU01_rev, PH04_rev, PH05_rev, PH08_rev, PI04_rev, PI05_rev, PI07_rev, PI09_rev, CA01_rev). For 13 other items, an asymmetrical distribution around the median occurs (PH01_rev, PH02_rev, PH03_rev, PI01_rev, PI02_rev, PI03_rev, PI06_rev, PI08_rev, CA02_rev, CA03_rev, CA04_rev, CA05_rev, CA07_rev). For two items, the calculation of the IQR results in a value of zero. This is not equivalent to no distribution at all, but it appears to be very small (PH06_rev, PH07_rev).

Further conclusions about the response behaviour can be drawn from the sum scores of the individual items. With 188 data sets used, the possible sum scores range between zero with 188 selected answer options *Strongly disagree* (0) and 752 with 188 times selected answer options *Strongly agree* (4). A score of 376 represents the midpoint when *Neither agree nor disagree* (2) is selected 188 times. The highest sum scores and thus the highest agreement have the items PH03_rev (Sum = 623), PH01_rev (Sum = 612) and PH07_rev (Sum = 564). The items PI06_rev (Sum = 288), PI02_rev (Sum = 319) and PI07 (Sum =

351) received the lowest agreement. The result of the item QU01_rev, which states *"The experience of the Covid-19 pandemic has made my physical health more important to me than before"*, must be mentioned here, as it is the item that directly asks the research question of the respondents and cannot be assigned separately to a subscale. This item shows a neutral response behaviour with a value of *Mdn* = 2 and a sum score of 398, which is only slightly above the theoretical mean sum score of 376.

Table 8
Descriptive statistics final data

			Range			Percentiles		
Item	***n***	***Mdn***	**possible**	**actual**	**IQR**	**25%**	**75%**	**Sum**
QU01_rev- general question	188	2	0-4	4	2	1	3	398
PH01_rev-PH is important to me	188	3	0-4	3	1	3	4	612
PH02_rev-Healthy food	188	3	0-4	4	1	2	3	511
PH03_rev-Annoying Injuries	188	3	0-4	4	1	3	4	623
PH04_rev-Dependence on others	188	3	0-4	3	2	2	4	557
PH05_rev-exercise extent	188	2	0-4	4	2	1	3	427
PH06_rev-care of physical health	188	3	0-4	4	0	3	3	551
PH07_rev-Interest in improving	188	3	0-4	3	0	3	3	564
PH08_rev-additional measures	188	2	0-4	4	1	1	3	426
PI01_rev-PH more important	188	3	0-4	4	1	2	3	497
PI02_rev-more sport since begin	188	1	0-4	4	2	1	3	319
PI03_rev-Interest in health topics	188	2	0-4	4	1	2	3	438
PI04_rev-noticing unhealthy	188	2	0-4	4	2	1	3	413
PI05_rev-Nr of conversations	188	3	0-4	4	1.75	2	3.75	506
PI06_rev-pointing out behavior	188	1	0-4	4	1	1	2	288
PI07_rev-amount of additional measures	188	2	0-4	4	2	1	3	351
PI08_rev-increased caution	188	3	0-4	4	1	2	3	446
PI09_rev-medical check up	188	2	0-4	4	2	1	3	429

CA01_rev-attitude physical health	188	2	0-4	4	2	1	3	377
CA02_rev-crowded hospitals	188	3	0-4	4	1	2	3	503
CA03_rev-Continue behaviour	188	3	0-4	4	1	2	3	437
CA04_rev-liking changes	188	3	0-4	4	1	2	3	470
CA05_rev-collective society	188	3	0-4	4	1	2	3	468
CA07_rev-shift attitudes friends	188	3	0-4	4	1	2	3	461

The calculated item difficulty for 11 items is between 40 and 60 per cent. With 11 other items within the threshold values of 25 and 75 per cent, 22 of 24 items are described with a satisfactory item difficulty. Items PH01_rev (81.38%) and PH03_rev (82.85%) stand out with values above the threshold. Item PI06_rev has reached the lowest value (38.30%). The complete overview can be found in Table 15A in the appendix.

The structure of the subscales is particularly important. Here, the mean of all items assigned to the subscale is considered to determine a tendency. The sum score itself is not comparable without adjustments, as the three different subscales include different numbers of items. Thus, the average sum score of the items belonging to a subscale is calculated. The first subscale, *physical health* (N = 8), shows an overall positive response tendency (M = 2.84, SD = .47). Of all three subscales, this subscale has not only the highest mean score but also the highest sum score (Sum = 533.88). The second subscale, *perceived importance* (N = 9), shows the weakest positive tendency overall (M = 2.18, SD = .52). This is also reflected in the sum score (Sum = 409.67). The third subscale *changing attitudes* (N = 6) shows the second strongest positive tendency of all three subscales (M = 2.41, SD = .55. Sum = 452.67).

Table 9

Descriptive statistics subscales final data

Subscale	***n***	***M***	***SD***	**Sum**
Physical health (8)	188	2.84	.47	533.88
Perceived Importance (9)	188	2.18	.52	409.67
Changing attitudes (6)	188	2.41	.55	452.67

The Mann-Whitney-U test detects significant differences in response behaviour between male and female subjects. The distribution of the two groups is comparable, p>.05. The distribution of the means differed between both groups, except for the subscale *physical*

health. There was a statistically significant difference between male and female groups in subscale perceived importance U = 2966.00, Z = -3.083, p < .005, in subscale changing attitudes U = 3035.500, Z = -2.897, p < .005 and in the overall scale U = 3014.00, Z = -2.941, p < .005. In the statistically significant scales, the group of female subjects has higher mean rank scores. Tables 16A and 17A in the appendix provide further insight.

Table 10

Mean scores female/male final data

Subscale	**Gender**	**n**	**Mean rank**
Physical health	Female	116	95.31
	Male	70	90.31
Perceived importance	Female	116	102.93
	Male	70	77.87
Changing attitudes	Female	116	102.33
	Male	70	78.86
Overall scale	Female	116	102.52
	Male	70	78.56

* n=186, because non-binary are not included (n=2)

The reliability testing of the pre-developed subscales with the original item distribution shows values of *Cronbach´s alpha* between .60 and .69 for individual subscales. The subscale *changing attitude*s reaches the lowest value of α = .60 (N = 6). The second subscale *perceived importance* reaches a value of α = .65 (N = 9), while the last of the three subscales, *physical health*, achieves the highest value of all subscales by α = .69 (N = 8). The overall scale understandably exceeded this due to the larger number of items with a value of α = .79 (N = 8). A tabulated presentation of the values can be found in the appendix in Tables 18A, 19A and 20A.

In addition, factor analysis is performed. An exploratory factor analysis is performed rather than a confirmatory factor analysis, as the correlations of the items are suspected but not theoretically clearly definable. Various steps are necessary to carry out the factor analysis. The Kaiser-Meyer-Olkin sample adequacy measure is good (KMO = .742) and permits the performance of factor analysis. All items of the three subscales are included, item QU01_rev is also analysed to search for potential classification. The calculation of

the communalities shows a variance explained by the factors of over .50 for all items, except item PI09_rev, with an explained variance of .46. Nevertheless, this item is not excluded due to the slight deviation, a table with an overview of the communalities of all items and the results of the KMO-test can be found in the appendix named Table 22A and Table 21A.

The Kaiser criterion and a scree plot determine the number of factors. It should be considered that the theoretical basis of the applied questionnaire has identified three main factors, expressed by the three subscales. A total of eight factors have eigenvalues of over 1.0. However, the factors from the fifth onwards only have eigenvalues very close to 1.0. Together with the impression given by the scree plot, another procedure with four factors is set for further analysis. The four-factorial solution scores an acceptable value with a variance resolution of 44%. The decision for a four-factor solution contradicts the previous theoretical consideration but is advisable due to the data situation.

Table 11

Initial Eigenvalues

Component	Total	% of Variance	Cumulative %
1	4.456	18.567	18.567
2	2.784	11.601	30.168
3	1.798	7.491	37.660
4	1.520	6.334	43.994
5	1.222	5.094	49.087
6	1.151	4.794	53.882
7	1.057	4.403	58.284
8	1.036	4.318	62.602

Extraction Method: Principal Component Analysis.

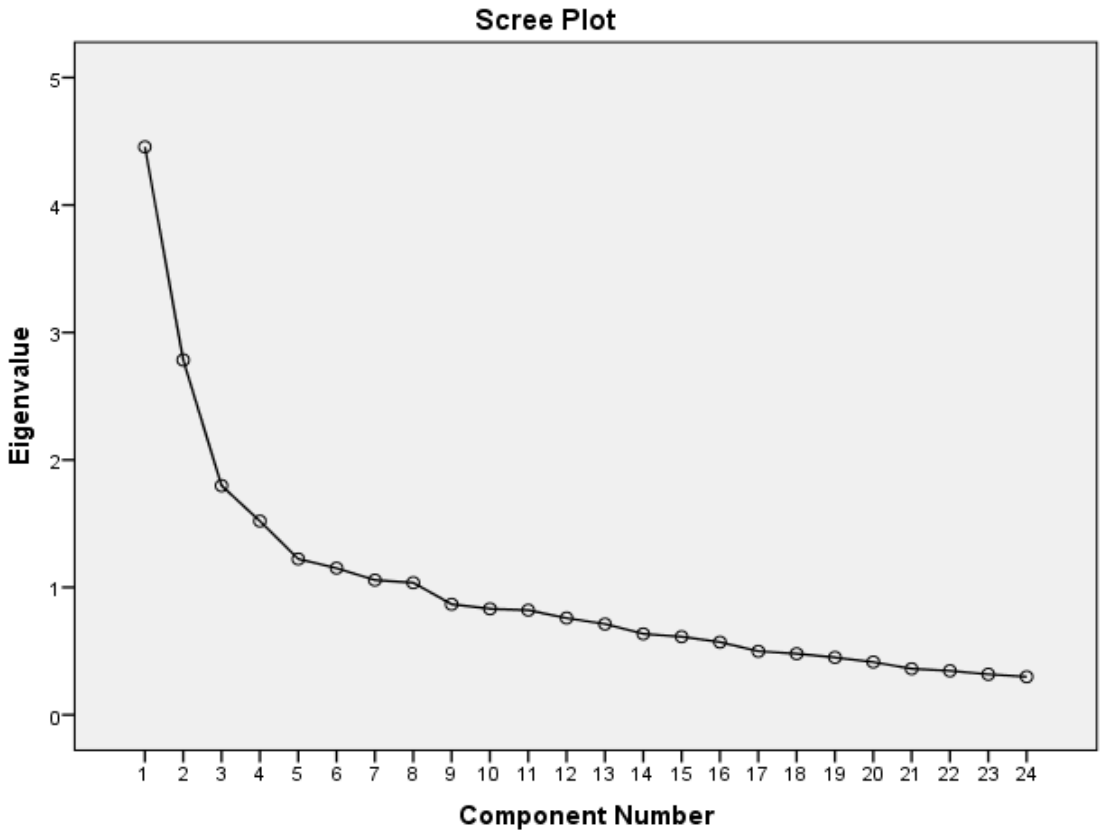

Figure 8: Scree plot final data

After conducting the factor analysis with four factors and a varimax rotation, the factor loadings are analysed. In the following table, factor loadings smaller than .40 are removed and the items are sorted by their loading power. A complete overview can be found in the appendix at Table 23A. For item PI03_rev, cross loading is observed between factor one and factor three. For item CA07_rev, there is cross loading between factor two and factor three, while item PI09_rev loads on both factor three and factor four.

Factor 1 comprises six of the eight items of the *physical health* subscale. Factor 2 includes five out of six items of the subscale *changing attitudes*. Factor 3 contains six of the nine items of the subscale *perceived importance*. Items from each predefined subscale load onto the fourth factor with the items PH03_rev, PH04_rev, CA02_rev and PI09_rev. Despite the cross loadings in three cases, no items are removed for a renewed factor analysis. In the case of item PI03_rev, "*I am increasingly interested in physical health topics*", a loading on factor 1, which primarily includes the items of the *physical health* subscale, seems plausible due to the wording. However, an allocation to factor 3, which mainly comprises the items of the subscale *perceived importance*, also seems justifiable in terms of content and is therefore carried out manually. The item CA07_rev, "*I have*

noticed a lasting shift in health habits of friends and other people I know since the start of the Covid-19 pandemic", loads both on factor 2, where the majority of the items of the subscale *changing attitudes* are gathered, and on factor 3, which is mainly assigned to the subscale *perceived importance*. It seems logical that a sustained change in behaviour goes hand in hand with a reassessment of importance. Due to the preciese wording of the item, it is nevertheless decided to assign the item to factor 2, which mainly comprises the items of the subscale *changing attitudes*.

Item PI09_rev, "*I have the feeling that I should have a medical check-up more often.*", is classified under factor 4, which was not theoretically considered before. Together with the items PH03_rev - "*It annoys me when I am physically limited, for instance due to injuries*", PH04_rev - "*Being dependent on the help of others due to physical limitations is a displeasing thought for me*" and CA_02_rev - "*I have become more cautious in everyday life out of fear of the possible effects or consequences of an infection with the Covid-19 virus*", this results in a content-consistent subscale of injury or medical care, a further definition is required. After the final, partly manual allocation of all variables to a respective factor, the results are shown in Table 12. Based on the analyses carried out, the item QU01_rev is assigned to factor 1.

Table 12

Item affiliation after factor analysis

	Factor			
Item	**1**	**2**	**3**	**4**
QU01_rev	x			
PH01_rev	x			
PH02_rev	x			
PH05_rev	x			
PH06_rev	x			
PH07_rev	x			
PH08_rev	x			
CA01_rev		x		
CA03_rev		x		
CA04_rev		x		
CA05_rev		x		
CA07_rev		x		
PI01_rev		x		
PI02_rev		x		
PI08_rev		x		

PI03_rev			x	
PI04_rev			x	
PI05_rev			x	
PI06_rev			x	
PI07_rev			x	
PH03_rev				x
PH04_rev				x
CA02_rev				x
PI09_rev				x

The new arrangement of the items into different factors requires a recalculation of the summation scales to analyse the results of this new structure regarding the research question. This requires a further reliability analysis beforehand. In the case of factor 1, it is noticeable that the addition of the item QU01_rev reduces the reliability of this factor and thus of the subscale from $\alpha = .71$ (N = 6) to $\alpha = .63$ (N = 7). This again speaks for a consideration of factor 1 detached from item QU01_rev. For factor 2, a reliability value of $\alpha = .68$ (N = 8) is observed, no possible increase in the value is indicated by removing an item. Factor 3 shows a value of $\alpha = .63$ (N = 5), by removing item PI05_rev, the value would increase to .65. Due to the small difference, this is not carried out. The newly discovered factor 4 has the lowest reliability value of $\alpha = .52$ (N = 4). The complete overview of the data in the reliability analysis can be found in the appendix in Tables 24A, 25A, 26A and 27A.

The first factor, again excluding QU01_rev (N = 7), shows an overall positive response tendency (M = 2.74, SD = .54, Sum = 515.17). The second factor (N = 8) shows a positive tendency as well (M = 2.31, SD = .54, Sum = 434.38). The third factor (N = 5) shows the weakest positive tendency of all four factors (M = 2.12, SD = .63. Sum = 399.20). Factor 4 not only has the highest mean score, but also the highest sum score (M = 2.81, SD = .58, Sum = 528.00). Summarising the scores of all items and looking at the sum and mean scores of these aggregations does not lead to any major differences between the two variants. In the original variant of the pre-established subscales, the mean score is M = 2.48, with SD = .38 and a sum of Sum = 465.40. The values for the composite after factor analysis are M = 2.50, SD = ,38, Sum = 469.19. A summary and comparison of the descriptive statistics can be found below in Table 13.

Table 13

Descriptive statistics final data/ after factor analysis

Factors	n	M	SD	Sum
Factor 1	188	2.74	.54	515.17
Factor 2	188	2.31	.54	434.38
Factor 3	188	2.12	.63	399.20
Factor 4	188	2.81	.58	528.00
Subscales				
Physical health	188	2.84	.47	533.88
Perceived Importance	188	2.18	.52	409.67
Changing attitudes	188	2.41	.55	452.67
Total_factors	188	2.50	.38	469.19
Total_subscales	188	2.48	.38	465.40

For renewed analysis, the Mann-Whitney-U test again is performed to detect significant differences in response behaviour between male and female subjects using the new computed factors, respectively scales. The distribution of the two groups is comparable, $p>.05$. The distribution of the means differed between both groups, except for factor 1 and factor 4. There was a statistically significant difference between male and female groups in factor 2 $U = 2950.500$, $Z = -3.130$, $p < .005$, in factor 3 $U = 2875{,}500$, $Z = -3.346$, $p < .005$ and whilst combining all variables of all factors $U = 3126.00$, $Z = -2.626$, $p < .01$. Again, in the statistically significant factors, the group of female subjects has higher mean scores.

The final aim of this thesis is to answer the research question: "Do European millennials experience a change in the perceived importance of their physical health caused by the global Covid-19 pandemic?". The working hypothesis on this is:

"*The pandemic experiences have been leading to an increased perceived importance of physical health among the participants."*

H0 – There is no correlation between pandemic experiences and increased perceived importance of physical health.

H1 – There is a correlation between pandemic experiences and increased perceived importance of physical health.

In order to answer this adequately, three sub hypotheses were formulated, to which subscales with correspondingly formulated items were assigned to compose the questionnaire. The first of them asks how important physical health is and reads “Significant importance of physical health is noted among the participants.”. The subscale *physical health* is assigned to this sub hypothesis and, according to the interpretation of the factor analysis, also factor 1. The results for this subscale in the responses of all test respondents show a tendency towards the verbalised response option agree in the corresponding items. Even taking into account the standard deviation, the response tendency remains positive. This picture is supported by the findings resulting from the factor analysis and the subsequent recalculation of the data. It is thus assumed that physical health tends to be important for the test persons studied.

The second sub hypothesis states " There is an increase in the perceived importance of physical health.". The evaluation of the items of the corresponding subscale shows less of a tendency than with the first sub hypothesis. The answers tend to be in the middle with a marginally positive trend, whilst the standard deviation also yields a negative trend. This impression is reinforced when looking at the data calculated according to the factor analysis. It therefore seems to be questionable to assume an increase in the perceived importance of physical health. The final sub hypothesis says "The pandemic is seen as a precursor for changing attitudes towards physical health.". These results should be viewed with caution due to weaknesses in the scale´s reliability. The evaluation of the items measuring this construct shows a positive tendency in the response behaviour. However, it is also true here that the standard deviation of the answers can reverse the tendency from positive to negative. Nevertheless, in this case, due to the higher means, it is assumed that the respondents see the Covid-19 pandemic as a trigger for changing attitudes.

The findings that physical health is important and that the Covid-19 pandemic triggers changing attitudes align with the theoretical state of knowledge. However, no statement can be made about whether there is an increase in the perceived importance of physical health. Only a weak positive tendency can be reported here. The observation that female test persons generally achieve higher mean values seems plausible against the background of basic gender-specific research on risk-taking and awareness.

6. DISCUSSION

The discussion of the results is based on the quality criteria of objectivity, reliability and validity. The hypotheses developed in chapter three are tested with the help of the results.

Since the data collection was conducted online without an experimenter, the implementation objectivity is not influenced by possible Rosenthal effects. The objectivity of the analysis of the collected data is guaranteed using the IBM SPSS Statistics 20 software. The anonymity of the test persons prevents any possible influence on the evaluator by identifying the personal data of the test person. In addition, a quantitative response design in the form of a five-point Likert scale was preferred over a qualitative response design, as this enables a standardised interpretation.

The reliability of the developed questionnaire is tested by looking at the item difficulties and the *Cronbach's alpha* results of the subscales. The item difficulty calculations for the final questionnaire generally show promising results, with 11 items having a medium item difficulty of between 40% and 60%, thus providing a high level of information content. Furthermore, an additional 11 items are within the set limits of 25% and 75% and contribute to the good overall picture. The lowest value of item difficulty for item PI06_rev of 38.30%. With no pronounced rejection, it is in line with the established theoretical background and the expected importance of topics concerning physical health.

At the same time, this item was processed with less agreement from the respondents, as expected, since the formulation "*I have started to point out unhealthy behaviours to my friends*" represents a socially challenging situation.t It is this generally assumed positive significance that can also be seen as the reason for the item difficulties of 81.38% for item PH01_rev and 82.85% for PH03_rev, which lie outside the threshold values. The formulation "*My physical health is important to me.*" in the case of item PH01_rev turns out not to be differentiated enough to obtain a variable response picture. However, since the clear tendency is theoretically provable, the item´s inclusion is classified as justifiable. In the case of item PH03_rev, " *It annoys me when I am physically limited, for instance due to injuries.*" a less inclined response would have been just as surprising, especially against the background of the age of the test persons and their expected high mobility rate. However, the item offers the opportunity to ask the respondent about the importance of physical health in everyday life, utilising a concrete example.

The reliabilities of the subscales based on *Cronbach's alpha* are questionable all in all. While the subscales physical health and perceived importance are very close to an acceptable value (α = .69, N = 8 / α = .65, N = 9), subscale changing attitudes with a = .60 (N = 6) just reaches a value that classified as questionable. On the one hand, this may be due to the smaller number of items; on the other hand, the formulation of items that are supposed to measure attitudes is probably also the most challenging and is then subject to the greatest vagueness and inconsistency. The recalculation following the factor analysis and the reorganised allocation of the items, the factors used in three cases (factor 1,2,3) achieved values above α = .60, or again close to α = .70 and consequently questionable but tending to acceptable values. The additional factor 4, which was not theoretically established beforehand, has a poor value of α = .52 (N=4). This seems reasonable due to the unexpected compilation without basic theoretical considerations and a targeted formulation of the items but causes problems evaluating the affected items and their use. Another possible reason for the poor value of α could be the overly high item difficulty of item PH03_rev (82.85%) and the high item difficulty of item PH04_rev (74.07%). In general, for all items, respectively all subscales, a further revision in the formulation of the items seems appropriate to capture the desired constructs even in a clearer way.

The construct validity of the questionnaire is checked by factor analysis, in this case by varimax rotated factor analysis. There is a risk of interpreting data according to the predefined theoretic basis when conducting factor analysis. The tendency to four factors based on eigenvalues leaves out factor 5 and factor 6. This decision is made based on the again considerable leap in eigenvalues between factor 4 and factor 5 (- .298), after an already occurred, even much more distinct leap from factor 2 to factor 3 (- .986). Together with the result of the scree plot, where a bend in the course occurs both at point three, where however the eigenvalues of the factors are still clearly > 1, and point five, which corresponds to a drop in the eigenvalues, a decision to make a cut is made.

The following mapping of the items can be interpreted to the effect that the three previously defined subscales are represented by the item structure within the factors, with factor 1 being equal to the subscale *physical health*, factor 2 to the subscale *changing attitudes* and factor 3 to the subscale *perceived importance*. This assumption is based on the fact that Factor 1 comprises six of the eight items of the *physical health* subscale,

factor 2 includes five out of six items of the subscale *changing attitudes* and factor 3 includes six of the nine items of the subscale *perceived importance*.

However, as described above, there is another factor in the factor analysis that does not correspond to any of the predefined subscales. This factor includes the items " *It annoys me when I am physically limited, for instance due to injuries*." (PH03_rev), " *Being dependent on the help of others due to physical limitations is a displeasing thought for me."* (PH04_rev), " *I have become more cautious in everyday life out of fear of the possible effects or consequences of an infection with the Covid-19 virus.*"(CA02_rev) and " *I have the feeling that I should have a medical check-up more often.*"(PI09_rev). These four items all have a clear medical expression in their wording. However, while between PH03_rev, PH04_rev and CA02_rev a superordinate construct such as *consequences of illnesses* could be conceivable, item PI09_rev does not seem to fit this in terms of content. It should be mentioned again that item PI09_rev also loads on factor 3 and can therefore be assigned to the other items of the subscale perceived importance. Retrospectively, an item allocation to factor 3 appears to make more sense in terms of content.

In summary, a relationship between the Covid-19 pandemic and changing attitudes can be observed. It is not clear whether attitudes about the perceived importance of physical health are changing, but there is evidence to support this assumption. The research question of whether European millennials experience a change in the perceived importance of their physical health caused by the global covid-19 pandemic thus seems to have a positive tendency to be confirmed. This finding is also reinforced by the results in relation to the general question in item QU01, despite a weak tendency. It is evident that the Covid-19 pandemic causes changes in attitudes, also regarding attitudes towards physical health. However, the strength of this effect was only determined to a small extent in this thesis and urgently requires further clarification. The consistency and sustainability of the changes are also not captured by the methodology used here. In addition, the restriction must be made that this thesis, regarding the structure of the test persons, by no means offers a complete picture of European millennials. The majority of the data is drawn from individuals who grew up in Germany. Although the theoretical part already deals with the commonalities of the socialisation of people growing up in Europe, a generalisation would be inappropriate and misleading.

7. CONCLUSION

This research aimed to investigate whether European millennials experience a change in the perceived importance of their physical health caused by the global Covid-19 pandemic. The impact of the pandemic on the daily lives of individuals is felt by everyone. It is also becoming increasingly clear over the long period of time that changes are to be expected that affect more than just additional hygiene measures. The economic impact is considerable and societies are discussing whether to make vaccination compulsory. As a cohort that is increasingly influential in economic as well as political matters, the millennial generation is not only a relevant player in future societal development but also numerically a severe factor with around 118.000.000 million people, alone in Europe.

The current state of scientific knowledge regarding the investigated issue provides two essential pieces of information. Physical health is important, also for members of the millennial generation, and incidents like a pandemic have the potential to cause lasting changes in individuals´ attitudes and the structure of societies in general. The impact of the Covid-19 pandemic on specific attitudes towards physical health projected by millennials has not been studied and thus represents the identified research gap that justifies this thesis. To fully encompass the different facets of the research question, three sub hypotheses have been developed to test the working hypothesis. A differentiated picture emerges by answering the sub hypotheses, which enables the final answer to the original research question. To obtain relevant data for this purpose, an online questionnaire was developed, as no previously developed questionnaire seemed to meet the contextual requirements.

Based on the three sub hypotheses, three subscales were constructed, evaluated by correspondingly formulated items. The subscales correspond to constructs labelled like *general importance of physical health, perceived importance of physical health* and *change in attitudes*. The items aimed to allow generalisable conclusions to be drawn through a predominantly indirect assessment of behaviour and motives. To develop a questionnaire that meets the requirements of objectivity, reliability and validity, various measures were taken. A lot of importance was given to an appropriate item formulation and a standardised answer option by using a Likert scale. Any weaknesses identified were

dealt with in advance by conducting a pretest and a further revision round before the actual data collection.

The evaluation of the questionnaire and the analysis of the data were then carried out using descriptive and explorative statistics. In total, the analyses were carried out based on 188 data sets. Of these, the majority (n = 116) were female and the overwhelming share (n = 158) were German. As such, the study is not representative of the entire European region but rather of a section of it. In addition, due to the way the questionnaire is distributed, it is a non-probability sample.

The reliability of the questionnaire and the items developed were evaluated based on item difficulty and generally found to be good. For the subscales, the value of *Cronbach's alpha* was calculated for reliability testing. The values were questionable for all three subscales but very close to an acceptable value in two out of three cases. In summary, the questionnaire has weaknesses in reliability but is applicable. The validity has been checked by means of factor analysis. The pre-constructed classification of the items and the number of subscales were confirmed, with some exceptions. In addition, another factor was identified that seems to represent a construct in the direction of consequences of illnesses. New reliability analysis of the newly formed factors confirmed the previously observed *Cronbach's alpha* values but also resulted in a weak value for the additional factor. This is not surprising due to the lack of a theoretical basis and the fact that this factor was not considered when formulating the items.

The item batteries show a generally positive response behaviour both in the arrangement of the originally defined subscales and after a reordering based on the factor analysis. Two of the three sub hypotheses, the questions about the importance of physical health and changing attitudes, are answered with a positive tendency. A change in the perceived importance of physical health is not apparent enough to confirm the sub hypothesis conclusively, but nevertheless the regarding items indicate a positive tendency. The confirmation of two sub hypotheses and the non-rejection of the third, together with the tendency towards confirmation, leads to the conclusion that the test persons experience a change in attitudes as a result of the Covid-19 pandemic and that the perceived importance of physical health is very likely to be affected. In this way, this thesis has contributed to the understanding of the impact of the Covid-19 pandemic on (European, especially

German-raised) millennials and highlighted the importance of physical health for this group.

8. IMPLICATIONS AND LIMITATIONS

The impact of the current pandemic on individuals and ultimately on society is of great relevance. A deeper understanding of the consequences of global pandemics is important, especially with regard to the probable occurrence of further global pandemics in the future (Jonas, 2013). This thesis has shown that physical health is relevant for the sample studied and that the pandemic changes attitudes. To date, the level of research on European millennials in physical health content is low. In this way, this thesis has contributed to understanding the importance of physical health for millennials. The effects of pandemics are dealt with in the literature and were also summarised in the course of this thesis. In addition, the impact of the Covid-19 pandemic on the attitudes of the test persons was explicitly demonstrated in the course of this work. For political decision-makers, the knowledge of the importance of physical health and the potential change in attitudes of various characteristics through disruptive events results, if not in the need for action, then in any case in the need for changed communication and agenda management. Especially for companies in the healthcare sector, be it insurance companies, providers of medical services or distributors of preventive measures such as sports providers or special foods, the further confirmation of the relevance of physical health for millennials is an indication of the importance of this business field. The conspicuous increase in the importance of physical health, at least in terms of tendency, suggests further market growth.

In the scientific context, further possibilities for action result from the observations of this thesis. The demonstration of the influence of the Covid-19 pandemic on attitudes suggests the relevance of further research in other directions, such as personality traits or behaviour. Furthermore, an expansion to a more differentiated sample is advisable, especially in focusing on further countries of origin and the size of the sample. Moreover, a confirmation of the observed tendencies is needed, especially a more profound investigation of the effects of the Covid-19 pandemic on the perceived importance of physical health in specific. For this purpose, it is advisable to further develop the designed questionnaire and thus the central survey instrument, focusing on the items of the subscale perceived importance. It would also be conceivable to develop a survey instrument with

a clear focus on recording this very construct. Above all, however, the consistency of the observations must be monitored. It must be determined whether the impressions gained will continue to remain with a further continuation of the pandemic situation, or whether a weakening can be observed.

In all interpretations of the results of this thesis, the limitations must be respected. First and foremost, although there is a tendency for the Covid-19 pandemic to have an impact on the perceived importance of physical health, the relevant subscale, which is intended to capture this specific attitude, only has a low positive value and the results should therefore at best be understood as a first indication of the existence of a possible correlation. It is important to note that, contrary to the title of this thesis, a Europe-wide picture was by no means drawn. In addition, this sample is a non-random sample and is therefore always subject to the danger of being biased and not adequately reflecting the actual distribution of the target population. The developed questionnaire can be considered objective, primarily due to the online procedure and the consistently generalised response scale.

Furthermore, the instrument was tested for reliability and validity with the help of analysis procedures. While the results of the item difficulty were good for the most part, the reliability for the entire construct is acceptable. Still, for the individual subscales it is acceptable at best and questionable in part. Construct validity appears reliable overall but can be further improved, especially by further elaboration and revision of the items used.

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APPENDIX

Appendix Table Index

1. Questionnaire pretest

Page 01 – SC01
You are being invited to participate in an online research study. This study is being done by Niklas Letz, Master'sstudent in Management from the University of the Algarve.

The purpose of this research study is to examine the impact of the corona pandemic on certain intrinsic attitudes ofEuropean millennials. The exact research title cannot be revealed due to the risk of influencing the participants. If youagree to take part in this study, you will be asked to complete an online questionnaire. This questionnaire will take youapproximately 8-10 minutes to complete. I kindly ask you to answer all the questions. This is necessary for thecompletion of the survey. Your participation in this study is completely voluntary and you can withdraw at any time.

Please read all of the statements carefully,pay attention to the specific wording, and try to put yourself in the situation!

If you have questions about this project or if you have a research-related problem, you may contact me, Niklas Letz,a70291@ualg.pt.

By clicking "I agree" below you have read and understood this consent form and agree to participate in this researchstudy. Please print a copy of this page for your records.

◯ **No, I do not agree (do not participate in this study)**
◯ **Yes, I agree**

Page 02 – DE19

I was born in or between the years 1980 and 2000.

◯ **Yes**
◯ **No**

Page 03 – DE01, DE08

To which gender identity do you most identify?

◯ **female**
◯ **male**
◯ **non-binary**
◯ **Prefer not to answer**

In which country did you grow up?

Austria

Belgium
Bulgaria
Croatia
Cyprus
Czech Republic
Denmark
Estonia
Finland
France
Germany
Greece
Hungary
Ireland
Italia
Latvia
Lithuania
Luxembourg
Malta
Netherlands
Poland
Portugal
Romania
Slovakia
Slovenia
Spain
Sweden
Other text response
Not answered

Page 04 – PH06

I take care of my physical health.

○ Strongly disagree	○ Disagree	○ Neither agree nor disagree	○ Agree	○ Strongly agree

Page 05 – CA02

I am more careful in my everyday life because the reports of crowded hospitals make me anxious.

○ Strongly disagree	○ Disagree	○ Neither agree nor disagree	○ Agree	○ Strongly agree

Page 06 – PH07

I am interested in the topic of physical health and possibilities for improving it.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Page 07 – CA07

I have noticed a shift in the attitudes of friends and other people since the start of the pandemic.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Page 08 – CA06

Incidents like a pandemic can lead to a transformation of society.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Page 09 – PH09

I try to avoid situations that could be dangerous to my physiological constitution.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Page 10 - PI05

The amount of conversations about physical health has increased.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Page 11 – QU01

The experience of the corona pandemic has made my physical health more important to me than before.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Page 12 – PI08

I have become more cautious and intend to avoid injuries or infections.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Page 13 – PH05

I do enough exercise to help my health.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Page 14 – CA05

I make my decisions considering the possible impact on the collective society.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Page 15 – CA04

I like some of the changes that have occurred during the pandemic.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Page 16 – PI03

I am increasingly interested in health topics.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Page 17 – PH01

My physical health is important to me.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Page 18 – PI07

Since the beginning of the pandemic, I have taken additional measures to secure my medical care.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
○	○	○	○	○

Page 19 – PI04

I increasingly notice unhealthy or health-harmful behaviour among my friends or other people.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
○	○	○	○	○

Page 20 – PI06

I have started to point out unhealthy behaviours to my friends.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
○	○	○	○	○

Page 21 – PH04

Being dependent on the help of others due to physical limitations is a terrifying thought for me.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
○	○	○	○	○

Page 22 – PH03

It annoys me when I am physically limited, for instance due to injuries.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
○	○	○	○	○

Page 23 – PI09

I have the feeling that I should have a medical check-up more often.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
○	○	○	○	○

Page 24 – PI01

My physical health has become more important to me.

○	○	○	○	○
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Page 25 – CA03

I think I will continue to behave differently in the future than I did before the outbreak of corona pandemic.

○	○	○	○	○
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Page 26 – PH02

I try to eat healthy food.

○	○	○	○	○
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Page 27 – PH08

It is advisable to personally take additional measures for sufficient medical care (i.e. additional insurances).

○	○	○	○	○
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Page 28 – PI02

Since the beginning of the pandemic, I have been doing more sport than before.

○	○	○	○	○
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Page 29 – CA01

The pandemic has changed my attitude towards my physical health.

○	○	○	○	○
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Page 30 – FI01

You have answered all questions, thank you for your time! Can I still use your data in anonymous form for scientific purposes?

◯ **Yes, I have answered all questions. My data can be used for the analyses.**
◯ **No, I wanted to "just look", or do not want my data to be used for analyses.**

Last Page

Thank you for completing this questionnaire!

I would like to thank you very much for helping me.

Your answers were transmitted, you may close the browser window or tab now.

2. Notes from the pretest

Page 01

Interview Nr. 44 - Version1

> **1) GDPR and data privacy should be mentioned here. e.g. "All data and opinions shared during the survey will be anonymised and treated with the strictest confidentiality. Moreover, all information will be analysed in an aggregated manner, unless you give explicit permission to do otherwise" + What will this data ultimatelt be used for? You mention a "research study", but whom will the final report be presented to / made accessible for? What will it be used for? Where will it be published? etc.**
>
> **2) I'd swap the order of No and Yes (Yes first, No second)**

Interview Nr. 52 - Version1

> **Mehr Absätze machen, sonst ist das Lesen des ersten Textes schon zu anstrengend *(Make more spaces, otherwise reading the first text is already too tiring)***

Interview Nr. 54 - Version1

> **There is a space missing between 'carefully' and ',pay attention'. I did not notice any ambiguous terms.**
>
> **Clear and concise instructions.**

Interview Nr. 57 - Version1

> **Im vorletzten Satz fehlt ein Leerzeichen *(A space is missing in the second last sentence)* "...carefully, pay attention".**

Interview Nr. 60 - Version1

> **Just the comma written together in the second paragraph**

Page 02

Interview Nr. 57 - Version1

> **das die erste Antwortmöglichkeit verwirrt mich, aber denke ist okay und macht bestimmt Sinn. *(the first answer option confuses me, but I think it's OK and it certainly makes sense.)***

Page 03

Interview Nr. 44 - Version1

***Which gender identity to you identify most with?**

***Which country did you grow up in? --> Also, there might be several countries respondents grew up in.**

Do you want to give them the option to select several countries, or ask them to pick the one they spent the majority of their childhood/youth in?

Interview Nr. 45 - Version1

I grew up between two countries, going back and forth. Angola and Portugal are the countries.

Interview Nr. 57 - Version1

Okay, das blaue verwirrt doch, vielleicht gibts da ne andere Möglichkeit? Satzstellung in der Frage? "To which gender identity do you identify most?" aber ist hier alles ganz dünnes eis ***(Okay, the blue one is confusing, maybe there is another possibility? Sentence order in the question? "To which gender identity do you identify most?" but it's all very thin ice here.)***

Page 04

Interview Nr. 44 - Version1

I know I'm being a pain in the arse here, but physical health and taking care of it could be interpreted in many different ways. Maybe give some examples or be more precise?

Interview Nr. 57 - Version1

Disagree klein beim ersten (*disagree small letters for the first answer option)*

Page 05

Interview Nr. 44 - Version1

***I have become more careful...**

Interview Nr. 55 - Version1

More careful yes, but for different reasons than full hospitals.

Seite 06

Interview Nr. 57 - Version1

Disagree beim ersten klein (*disagree small letters for the first answer option)*

Page 07

Interview Nr. 44 - Version1

It's sort of implied, but as far as I remember, the COVID-19 pandemic hasn't been explicitly mentioned yet ...? Please correct me if I'm wrong. Would perhaps be good to be explicit; Otherwise, technically speaking, it could be any pandemic.

Interview Nr. 54 - Version1

Difficult to distinguish if you mean 'attitude towards beging healthy' of a shift in attitude in life in general.

Interview Nr. 57 - Version1

Attitudes to what?

Page 09

Interview Nr. 56 - Version1

What do you mean with physiological constitution?

Interview Nr. 57 - Version1

Disagree klein, schreibe das jetzt nicht mehr bei jedem (*disagree small letters for the first answer option)*

Page 10

Interview Nr. 44 - Version1

I'd say frequency rather than amount

Page 11

Interview Nr. 57 - Version1

ah, hier ist es sogar klein. *(ah, here there is even a small letter)*

Corona oder COVID? Kp *(Corona or covid? I don´t know)*

Page 13

Interview Nr. 52 - Version1

physische Gesundheit oder psychische Gesundheit? evtl. definieren oder beides als einzelne Fragen (falls das überhaupt wichtig ist) (*physical health or*

mental health? possibly define or both as individual questions (if that is important at all))

Interview Nr. 57 - Version1

Boah, würde das irgendwie anders formulieren als mit "help". (*Would somehow phrase that differently than with "help".)*

Page 15

Interview Nr. 44 - Version1

***... that have come along with**

Page 16

Interview Nr. 44 - Version1

Only physical or also mental health? Asking because so far, you've explicitly mentioned physical health

Interview Nr. 56 - Version1

Do you mean if I am more conscious now than before the pandemic?

Page 17

Interview Nr. 52 - Version1

Die Frage könnte viel eher stehen - keine Ahnung warum- ist ein Gefühl *(The question could be asked much sooner - no idea why - it's a feeling)*

Page 18

Interview Nr. 44 - Version1

Isn't this more of a binary yes/no question?

Interview Nr. 55 - Version1

Yes, but not because of covid. Maybe specify.

Page 19

Interview Nr. 57 - Version1

my friends or other people- not precise enough

Page 24

Interview Nr. 44 - Version1

Do you mean during the pandemic?

Interview Nr. 55 - Version1

Since when?

Interview Nr. 57 - Version1

würde noch einmal checken, bei einer Frage hast du "physiological" sonst immer "physical". aber ist an sich nicht falsch ***(would check again, in a question you have "physiological" otherwise always "physical". but is not wrong in itself)***

Page 25

Interview Nr. 44 - Version1

***Than I had done before...**

Interview Nr. 57 - Version1

"the" corona pandemic?

Page 28

Interview Nr. 55 - Version1

Same question than before?

Page 29

Interview Nr. 57 - Version1

hier wieder physical ***(this time "physical" is written here again)***

Page 30

Interview Nr. 44 - Version1

Good you mention this, but I'd rather state in the beginning something along the lines of "by participating in this survey, you agree to your answers being used for scientific purposes." If you give people the option to decide (and they say "no"), their data might become useless for you even though they filled in the survey.

Interview Nr. 57 - Version1

Ist das hier auf jeden Fall notwendig? Würde wenn nur schreiben: "Yes, my data can be used....", "No, I do not want my data to be used..." Ohne just look
(Is this necessary here in any case? Would only write: "Yes, my data can be used....", "No, I do not want my data to be used..." Without "just looking")

3. Questionnaire after pretest

Page 01 – SC01

You are being invited to participate in an online research study. This study is being is being conducted as part of a master's thesis by Niklas Letz, Master's student in Management from the University of the Algarve. The final report will ultimately be made available to the public via the University of the Algarve.

The purpose of this research study is to examine the impact of the corona pandemic on certain intrinsic attitudes of European millennials. The exact research title cannot be revealed due to the risk of influencing the participants.

You will be asked to complete an online questionnaire. This questionnaire will take you approximately 8-10 minutes to complete. I kindly ask you to answer all the questions. This is necessary for the completion of the survey.

Please read all the statements carefully, pay attention to the specific wording, and try to put yourself in the situation!

All data and opinions shared during the survey will be anonymised and treated with the strictest confidentiality. Moreover, all information will be analysed in an aggregated manner, unless you give explicit permission to do otherwise.

By clicking "I agree" below you have read and understood this consent form and agree to participate in this research study.

If you have questions about this project or if you have a research-related problem, you may contact me, Niklas Letz,a70291@ualg.pt.

◯ **Yes, I agree**
◯ **No, I do not agree (do not participate in this study)**

Page 02 – DE19

I was born in or between the years 1980 and 2000.

◯ **Yes**
◯ **No**

Page 03 – DE01, DE08

To which gender identity do you identify most?

◯ **female**
◯ **male**
◯ **non-binary**
◯ **Prefer not to answer**

In which European country did you spend the majority of your childhood/youth?

Austria
Belgium
Bulgaria
Croatia
Cyprus
Czech Republic
Denmark
Estonia
Finland
France
Germany
Greece
Hungary
Ireland
Italia
Latvia
Lithuania
Luxembourg
Malta
Netherlands
Poland
Portugal
Romania
Slovakia
Slovenia
Spain
Sweden
Other text response
Not answered

Page 04 – PH06

I take care of my physical health.

○ Strongly disagree	○ Disagree	○ Neither agree nor disagree	○ Agree	○ Strongly agree

Page 05 – CA02

I have become more cautious in everyday life out of fear of the possible effects or consequences of an infection with the Covid-19 virus.

○ Strongly disagree	○ Disagree	○ Neither agree nor disagree	○ Agree	○ Strongly agree

Page 06 – PH07

I am interested in the topic of physical health and possibilities for improving it.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
○	○	○	○	○

Page 07 – CA07

I have noticed a shift in health habits of friends and other people I know since the start of the Covid-19 pandemic.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
○	○	○	○	○

Page 08 – CA06

Incidents like a pandemic can lead to a transformation of society.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
○	○	○	○	○

Page 09 – PH09

I try to avoid situations that could be dangerous to my physical constitution.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
○	○	○	○	○

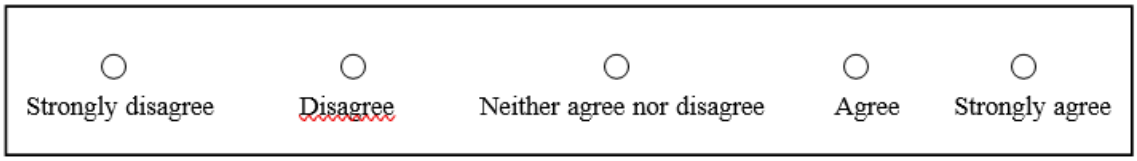
Page 10 - PI05

The frequency of conversations about physical health has increased.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
○	○	○	○	○

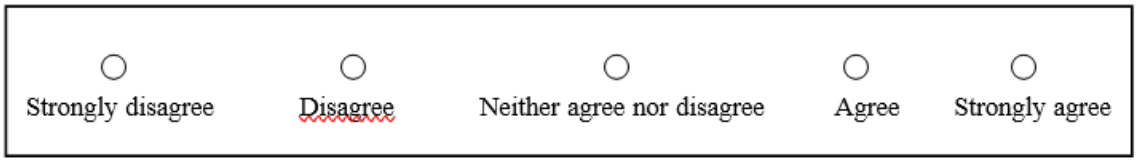
Page 11 – QU01

The experience of the Covid-19 pandemic has made my physical health more important to me than before.



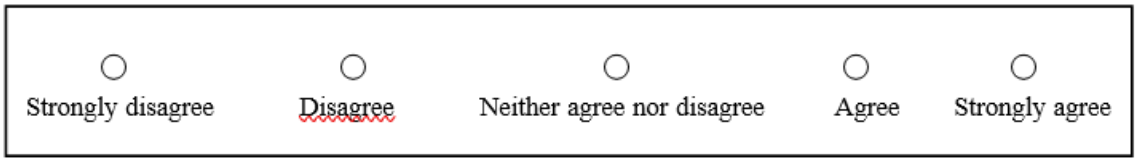
Page 12 – PI08

I have become more cautious and intend to avoid injuries or infections.



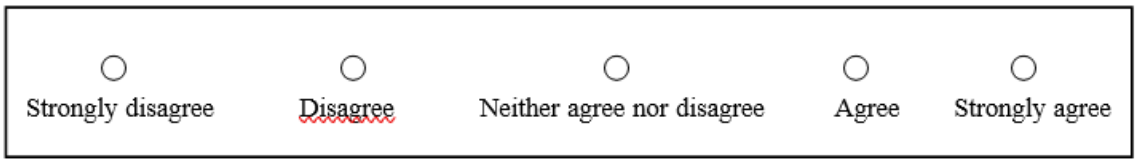
Page 13 – PH05

I do enough exercise to aid my physical health.



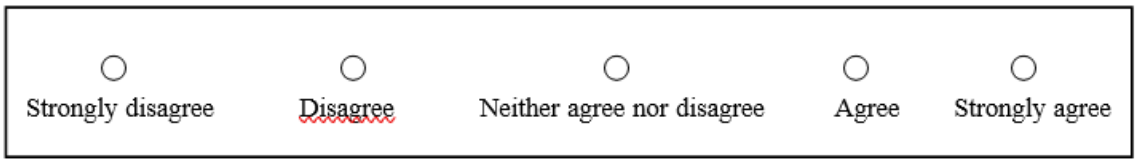
Page 14 – CA04

I like some of the changes that have come along with the Covid-19 pandemic.



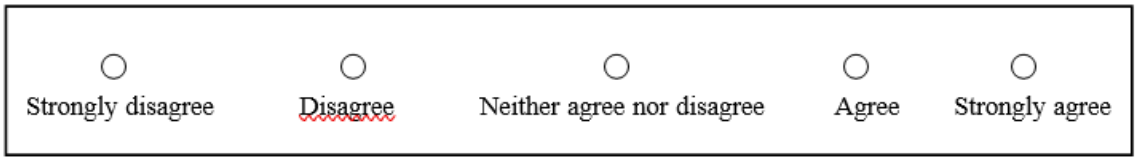
Page 15 – PI03

I am increasingly interested in physical health topics.



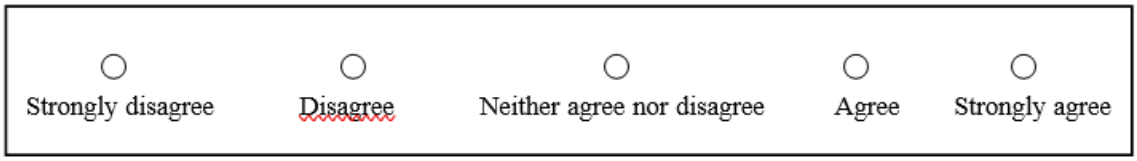
Page 16 – PH01

My physical health is important to me.



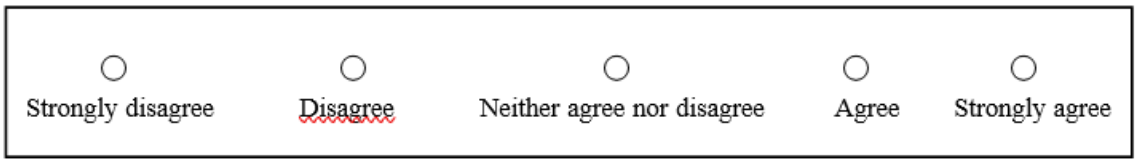
Page 17 – PI07

The beginning of the Covid-19 pandemic has been a reason for me to implement additional measures to secure my medical care.



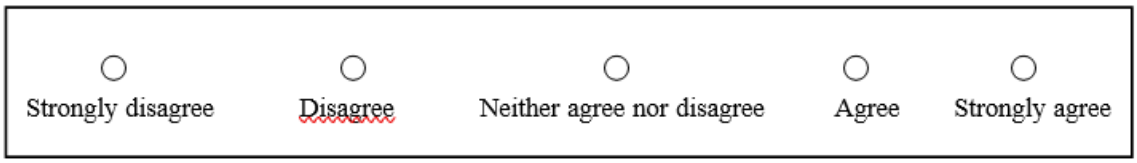
Page 18 – PI04

I increasingly notice unhealthy or health-harmful behaviour among my friends or other people I know.



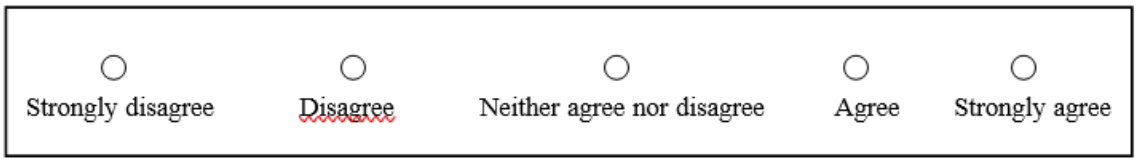
Page 19 – PI06

I have started to point out unhealthy behaviours to my friends.



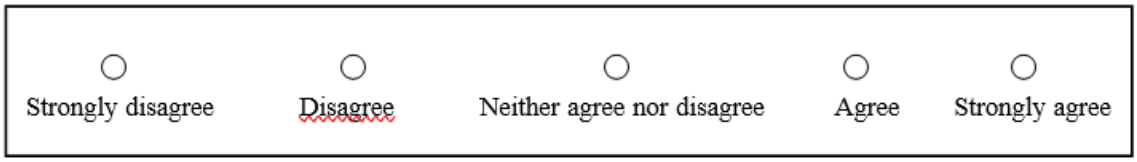
Page 20 – PH04

Being dependent on the help of others due to physical limitations is a displeasing thought for me.



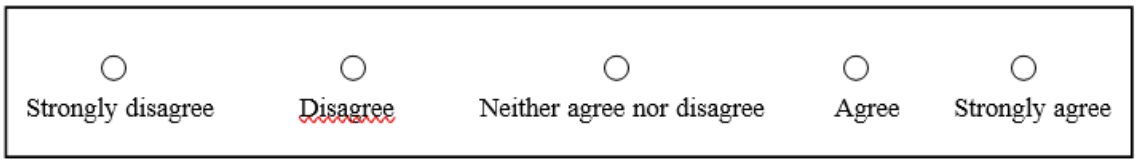
Page 21 – PH03

It annoys me when I am physically limited, for instance due to injuries.



Page 22 – PI09

I have the feeling that I should have a medical check-up more often.



Page 23 – PI01

My physical health has become more important to me in the past years.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Page 24 – CA03

I think I will continue to behave differently in the future than I had done before the outbreak of the covid-19 pandemic.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Page 25 – PH02

I try to eat healthy food most of the time.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Page 26 – PH08

It is advisable to personally take additional measures for sufficient medical care (i.e. additional insurances).

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Page 27 – PI02

Since the beginning of the pandemic, I have been doing more sport than before.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Page 28 – CA01

The Covid-19 pandemic has changed my attitude towards my physical health.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Page 29 – FI01

You have answered all questions, thank you for your time! Can I still use your data in anonymous form for scientific purposes?

◯ **Yes, I have answered all questions. My data can be used for the analyses.**
◯ **No, I do not want my data to be used.**

Last Page

Thank you for completing this questionnaire!

I would like to thank you very much for helping me.

Your answers were transmitted, you may close the browser window or tab now.

4. Notes from the revision round

Page 01

Interview Nr. 118 – Revision round

Etwas zu lang. Evtl. bei der Themenerklärung kürzen. (A bit too long. Perhaps shorten the explanation of the topic.)

Interview Nr. 132 – Revision round

University of Algarve

Page 03

Interview Nr. 122 – Revision round

DE 01: reicht non-binary aus? Oder muss noch divers dahin evtl? (is non-binary adequate? Or do you still need to add divers?)

Interview Nr. 124 – Revision round

No box popped up

Interview Nr. 132 – Revision round

Which gender do you identify yourself the most with?

Page 08

Interview Nr. 130 – Revision round

"...of society" --> "...in society."

Page 10

Interview Nr. 114 – Revision round

Do you mean conversations in general (i.e. overall discourse) or the conversations that I personally have had since the start of Covid?

Page 11

Interview Nr. 124 – Revision round

Sometimes the ID is in front of words of the question

Page 12

Interview Nr. 132 – Revision round

To me infection sounds a little like an infected wound but not sure if it's correctly used

Page 14

Interview Nr. 124 – Revision round

An open Field to identify which changes would be helpful?

Page 19

Interview Nr. 114 – Revision round

> Don't know if relevant, but does it might make a difference if we talk about health in terms of eitherphysical or mental health. The impact of Covid might have been of mental nature for many, but is this what you're after in this survey? Perhaps good to be specific here.

Seite 24

Interview Nr. 114

> Covid --> Capital C

Seite 29

Interview Nr. 118

> Würde hier noch einen freundlicheren Abschied schreiben: wünsche Ihnen alles Gute/Gesundheit etc. (Would write a more friendly goodbye here: wish you all the best/health, etc.)

5. Final Questionnaire

Page 01 – SC01

You are being invited to participate in an online research study. This study is being is being conducted as part of a master's thesis by Niklas Letz, Master's student in Management from the University of Algarve. The final report will ultimately be made available to the public via the University of Algarve.

The purpose of this research study is to examine the impact of the Covid-19 pandemic on certain intrinsic attitudes of European millennials. The exact research title cannot be revealed, due to the risk of influencing the participants.

You will be asked to complete an online questionnaire. This questionnaire will take you approximately six minutes to complete. I kindly ask you to answer all the questions. This is necessary for the completion of the survey.

Please read all the statements carefully, pay attention to the specific wording, and try to put yourself in the situation!

All data and opinions shared during the survey will be anonymised and treated with the strictest confidentiality. Moreover, all information will be analysed in an aggregated manner, unless you give explicit permission to do otherwise.

By clicking "I agree" below you have read and understood this consent form and agree to participate in this research study.

If you have questions about this project or if you have a research-related problem, you may contact me, Niklas Letz,a70291@ualg.pt.

- ◯ **Yes, I agree**
- ◯ **No, I do not agree (do not participate in this study)**

Page 02 – DE19

I was born in or between the years 1980 and 2000.

- ◯ **Yes**
- ◯ **No**

Page 03 – DE01, DE08

Which gender do you identify yourself the most with?

- ◯ **female**
- ◯ **male**
- ◯ **non-binary**
- ◯ **Prefer not to answer**

In which European country did you spend the majority of your childhood/youth?

Austria
Belgium
Bulgaria
Croatia
Cyprus
Czech Republic
Denmark
Estonia
Finland
France
Germany
Greece
Hungary
Ireland
Italia
Latvia
Lithuania
Luxembourg
Malta
Netherlands
Poland
Portugal
Romania
Slovakia
Slovenia
Spain
Sweden
Other text response
Not answered

Page 04 – PH06

I take care of my physical health.

○ Strongly disagree	○ Disagree	○ Neither agree nor disagree	○ Agree	○ Strongly agree

Page 05 – CA02

I have become more cautious in everyday life out of fear of the possible effects or consequences of an infection with the Covid-19 virus.

○ Strongly disagree	○ Disagree	○ Neither agree nor disagree	○ Agree	○ Strongly agree

Page 06 – PH07

I am interested in the topic of physical health and possibilities for improving it.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
○	○	○	○	○

Page 07 – CA07

I have noticed a lasting shift in health habits of friends and other people I know since the start of the Covid-19 pandemic.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
○	○	○	○	○

Page 08 – CA05

I make my decisions considering the possible impact on the collective society.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
○	○	○	○	○

Page 09 - PI05

The frequency of the conversations I have about physical health has increased since the beginning of the Covid-19 pandemic.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
○	○	○	○	○

Page 10 – QU01

The experience of the Covid-19 pandemic has made my physical health more important to me than before.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
○	○	○	○	○

Page 11 – PI08

I have become more cautious and intend to avoid injuries or infections.

○	○	○	○	○
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Page 12 – PH05

I do enough exercise to aid my physical health.

○	○	○	○	○
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Page 13 – CA04

I like some of the changes that have come along with the Covid-19 pandemic.

○	○	○	○	○
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Page 14 – PI03

I am increasingly interested in physical health topics.

○	○	○	○	○
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Page 15 – PH01

My physical health is important to me.

○	○	○	○	○
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Page 16 – PI07

The beginning of the Covid-19 pandemic has been a reason for me to implement additional measures to secure my medical care.

○	○	○	○	○
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Page 17 – PI04

I increasingly notice unhealthy or health-harmful behaviour among my friends or other people I know.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
○	○	○	○	○

Page 18 – PI06

I have started to point out unhealthy behaviours to my friends.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
○	○	○	○	○

Page 19 – PH04

Being dependent on the help of others due to physical limitations is a displeasing thought for me.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
○	○	○	○	○

Page 20 – PH03

It annoys me when I am physically limited, for instance due to injuries.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
○	○	○	○	○

Page 21 – PI09

I have the feeling that I should have a medical check-up more often.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
○	○	○	○	○

Page 22 – PI01

My physical health has become more important to me in the past years.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
○	○	○	○	○

Page 23 – CA03

I think I will continue to behave differently in the future than I had done before the outbreak of the cCovid-19 pandemic.

○	○	○	○	○
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Page 24 – PH02

I try to eat healthy food most of the time.

○	○	○	○	○
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Page 25 – PH08

It is advisable to personally take additional measures for sufficient medical care (i.e. additional insurances).

○	○	○	○	○
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Page 26 – PI02

Since the beginning of the Covid-19 pandemic, I have been doing more sports than before.

○	○	○	○	○
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Page 27 – CA01

The Covid-19 pandemic has changed my attitude towards my physical health.

○	○	○	○	○
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Page 28 – FI01

You have answered all questions, thank you for your time! Can I still use your data in anonymous form for scientific purposes?

◯ **Yes, I have answered all questions. My data can be used for the analyses.**
◯ **No, I do not want my data to be used.**

Last Page

Thank you for completing this questionnaire!

I would like to thank you very much for helping me, stay healthy!

Your answers were transmitted, you may close the browser window or tab now.

6. Tables of statistical analyses

Table 1A

Total processing time pretest

	Pretest
n	20
M	365.70
Mdn	376
SD	109.692
min	80
max	542

*Time values are in seconds

Table 2A

Gender distribution pretest

Sex	Pretest *n (%)*
Female	9 (45)
Male	10 (50)
non-binary	1 (5)

Table 3A

Subscale physical health pretest

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
PH01_rev	21.8500	22.450	.719	.827	.727
PH02_Rev	22.0500	24.787	.513	.712	.757
PH03_rev	21.6500	28.450	.085	.250	.802
PH04_rev	22.4500	20.997	.603	.475	.739
PH05_rev	22.5500	20.682	.607	.697	.739
PH06_rev	21.9000	26.200	.562	.679	.762
PH07_rev	22.1500	21.503	.654	.710	.731
PH08_rev	22.8500	25.397	.399	.530	.770
PH09_rev	22.5500	26.366	.187	.153	.803

Table 4A

Subscale perceived importance pretest

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
PI01_rev	16.4000	20.463	.277	.622	.669
PI02_Rev	17.0000	18.632	.536	.693	.620
PI03_rev	16.5000	20.053	.380	.669	.651
PI04_rev	16.9000	20.516	.270	.568	.670
PI05_rev	16.0500	20.682	.185	.633	.690
PI06_rev	17.0000	17.158	.535	.635	.610
PI07_rev	16.8500	17.713	.499	.762	.620
PI08_rev	16.7000	18.537	.415	.715	.640
PI09_rev	16.6000	21.305	.134	.626	.699

Table 5A
Subscale changing attitudes pretest

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
CA01_rev	14.9000	15.674	.553	.507	.741
CA02_Rev	15.4000	15.516	.418	.331	.769
CA03_rev	14.6000	14.253	.656	.666	.717
CA04_rev	14.3000	13.695	.669	.648	.712
CA05_rev	14.4000	17.305	.200	.375	.814
CA06_rev	13.6500	16.555	.456	.660	.759
CA07_rev	13.8500	15.503	.673	.561	.724

Table 6A
Overall scale pretest

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
CA01_rev	60.4500	138.155	.628	.852
CA02_rev	60.9500	137.103	.534	.853
CA03_rev	60.1500	135.397	.658	.850
CA04_rev	59.8500	135.818	.586	.852
CA05_rev	59.9500	142.787	.306	.861
CA06_rev	59.2000	142.905	.424	.857
CA07_rev	59.4000	140.358	.587	.854
QU01_Rev	60.6000	141.305	.467	.856
PH01_rev	59.2500	139.355	.536	.854
PH02_Rev	59.4500	144.261	.358	.859
PH03_rev	59.0500	150.155	.073	.865
PH04_rev	59.8500	134.029	.554	.852
PH05_rev	59.9500	137.734	.407	.858
PH06_rev	59.3000	146.537	.389	.859
PH07_rev	59.5500	136.576	.533	.853
Ph08_rev	60.2500	139.039	.593	.853
PH09_rev	59.9500	142.366	.323	.860
PI01_rev	60.0500	142.471	.390	.858

PI02_rev	60.6500	144.450	.309	.860
PI03_rev	60.1500	142.029	.458	.856
PI04_rev	60.5500	145.629	.246	.862
PI05_rev	59.7000	139.063	.463	.856
PI06_rev	60.6500	143.503	.258	.863
PI07_rev	60.5000	144.684	.227	.864
PI08_rev	60.3500	148.450	.089	.868
PI09_rev	60.2500	140.829	.410	.858

Table 7A

Total processing time revision round

	Revision round
n	22
M	352.50
Mdn	349.5
SD	104.680
min	134
max	547

*Time values are in seconds

Table 8A

Gender distribution revision round

Sex	**Revision round *n (%)***
Female	10 (45.5)
Male	12 (54.5)
non-binary	0 (0)

Table 9A

Descriptive statistics revision round

			Range	
Item	***n***	***Mdn***	**possible**	**actual**
QU01_rev- general question	22	2	0-4	1-4
PH01_rev-PH is important to me	22	3	0-4	2-4
PH02_rev-Healthy food	22	3	0-4	1-4
PH03_rev-Annoying Injuries	22	3	0-4	0-4
PH04_rev-Dependence on others	22	3	0-4	1-4
PH05_rev-exercise extent	22	3	0-4	1-4
PH06_rev-care of physical health	22	3	0-4	2-4
PH07_rev-Interest in improving	22	3	0-4	1-4
PH08_rev-additional measures	22	2.5	0-4	1-4
PH09_rev-dangerous situations	22	2	0-4	1-4
PI01_rev-PH more important	22	3	0-4	1-4
PI02_rev-more sport since begin	22	1	0-4	1-4
PI03_rev-Interest in health topics	22	2	0-4	1-4
PI04_rev-noticing unhealthy	22	2	0-4	1-4
PI05_rev-Nr of conversations	22	3	0-4	1-4
PI06_rev-pointing out behavior	22	1	0-4	0-3
PI07_rev-amount of additional measures	22	2	0-4	1-4
PI08_rev-increased caution	22	2	0-4	1-4
PI09_rev-medical check up	22	2	0-4	1-3
CA01_rev-attitude physical health	22	2	0-4	1-3
CA02_rev-crowded hospitals	22	3	0-4	1-4
CA03_rev-Continue behaviour	22	3	0-4	1-3
CA04_rev-liking changes	22	3	0-4	1-4
CA06_rev-pandemic society	22	3	0-4	2-4
CA07_rev-shift attitudes friends	22	3	0-4	1-4

Table 10A

Item difficulty revision round

Item	*n*	*M*	*Pi*		Item	*n*	*M*	*Pi*
QU01_rev- general question	22	2.18	54.50		PI04_rev-noticing unhealthy	22	2.27	56.75
PH01_rev-PH is important to me	22	3.27	81.75		PI05_rev-Nr of conversations	22	3.04	76.00
PH02_rev-Healthy food	22	2.63	65.75		PI06_rev-pointing out behavior	22	1.36	34.00
PH03_rev-Annoying Injuries	22	2.95	73.75		PI07_rev-amount of additional measures	22	1.86	46.50
PH04_rev-Dependence on others	22	2.81	70.25		PI08_rev-increased caution	22	2.22	55.50
PH05_rev-exercise extent	22	2.45	61.25		PI09_rev-medical check up	22	1.90	47.50
PH06_rev-care of physical health	22	3.09	77.25		CA01_rev-attitude physical health	22	2.04	51.00
PH07_rev-Interest in improving	22	3.04	76.00		CA02_rev-crowded hospitals	22	2.59	64.75
PH08_rev-additional measures	22	2.45	61.25		CA03_rev-Continue behaviour	22	2.36	59.00
PH09_rev-dangerous situations	22	2.04	51.00		CA04_rev-liking changes	22	2.59	64.75
PI01_rev-PH more important	22	2.68	67.00					
PI02_rev-more sport since begin	22	1.63	40.75		CA06_rev-pandemic society	22	3.18	79.50
PI03_rev-Interest in health topics	22	2.25	56.25		CA07_rev-shift attitudes friends	22	2.68	67.00

Table 11A

Subscale physical health revision round

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
PH01_rev	21.5000	7.881	.524	.579	.370
PH02_Rev	22.1364	8.885	.063	.326	.498
PH03_rev	21.8182	6.346	.449	.369	.325
PH04_rev	21.9545	7.950	.201	.553	.451
PH05_rev	22.3182	8.513	.046	.418	.524
PH06_rev	21.6818	8.227	.570	.773	.385
PH07_rev	21.7273	7.446	.645	.819	.329
PH08_rev	22.3182	10.132	-.180	.266	.547
PH09_rev	22.7273	8.874	.005	.585	.534

Table 12A

Subscale perceived importance revision round

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
PI01_rev	16.5909	20.348	.500	.344	.757
PI02_Rev	17.6364	21.385	.435	.340	.767
PI03_rev	17.0000	23.619	.147	.319	.805
PI04_rev	17.0000	21.238	.468	.549	.762
PI05_rev	16.2273	21.041	.579	.530	.750
PI06_rev	17.9091	17.706	.715	.778	.719
PI07_rev	17.4091	20.158	.566	.439	.748
PI08_rev	17.0455	21.855	.362	.316	.777
PI09_rev	17.3636	21.290	.472	.567	.762

Table 13A

Subscale changing attitudes revision round

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
CA01_rev	13.4091	6.063	.384	.206	.545
CA02_Rev	12.8636	6.981	.131	.109	.641
CA03_rev	13.0909	5.896	.376	.200	.547
CA04_rev	12.8636	5.742	.327	.171	.572
CA06_rev	12.2727	6.113	.418	.250	.535
CA07_rev	12.7727	5.898	.438	.259	.524

Table 14A

Overall scale revision round

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
QU01_Rev	59.5000	68.548	.135	.777
PH01_rev	58.4091	68.539	.256	.770
PH02_Rev	59.0455	69.379	.090	.778
PH03_rev	58.7273	64.303	.345	.765
PH04_rev	58.8636	68.219	.143	.777
PH05_rev	59.2273	69.422	.044	.785
PH06_rev	58.5909	69.968	.144	.774
PH07_rev	58.6364	67.861	.315	.768
Ph08_rev	59.2273	69.708	.112	.776
PH09_rev	59.6364	66.338	.255	.771
PI01_rev	59.0000	61.619	.549	.751
PI02_rev	60.0455	65.665	.322	.766
PI03_rev	59.4091	67.587	.177	.775
PI04_rev	59.4091	63.396	.498	.756
PI05_rev	58.6364	64.814	.455	.760
PI06_rev	60.3182	60.799	.513	.752
PI07_rev	59.8182	61.870	.569	.751
PI08_rev	59.4545	65.022	.357	.764
PI09_rev	59.7727	63.517	.499	.756
CA01_rev	59.6364	61.957	.696	.747
CA02_rev	59.0909	69.039	.114	.777
CA03_rev	59.3182	65.846	.335	.766
CA04_rev	59.0909	67.229	.193	.775
CA06_rev	58.5000	66.738	.326	.767
CA07_rev	59.0000	68.000	.200	.773

Table 15A

Item difficulty final data

Item	*n*	*M*	*Pi*		Item	*n*	*M*	*Pi*
QU01_rev-general question	188	2.1170	52.93		PI04_rev-noticing unhealthy	188	2.1968	54.92
PH01_rev-PH is important to me	188	3.2553	81.38		PI05_rev-Nr of conversations	188	2.6915	67.29
PH02_rev-Healthy food	188	2.7181	67.95		PI06_rev-pointing out behavior	188	1.5319	38.30
PH03_rev-Annoying Injuries	188	3.3138	82.85		PI07_rev-amount of additional measures	188	1.8670	46.68
PH04_rev-Dependence on others	188	2.9628	74.07		PI08_rev-increased caution	188	2.3723	59.31
PH05_rev-exercise extent	188	2.2713	56.78		PI09_rev-medical check up	188	2.2819	57.05
PH06_rev-care of physical health	188	2.9309	73.27		CA01_rev-attitude physical health	188	2.0053	50.13
PH07_rev-Interest in improving	188	3.0000	75.00		CA02_rev-crowded hospitals	188	2.6755	66.89
PH08_rev-additional measures	188	2.2660	56.65		CA03_rev-Continue behaviour	188	2.3245	58.11
PI01_rev-PH more important	188	2.6436	66.09		CA04_rev-liking changes	188	2.5000	62.50
PI02_rev-more sport since begin	188	1.6968	42.42		CA05_rev-collective society	188	2.4894	62.23
PI03_rev-Interest in health topics	188	2.3298	58.24		CA07_rev-shift attitudes friends	188	2.4521	61.30

Table 16A

Kolmogorov-Smirnov Z for subscales

		Zscore (ph.scale)	**Zscore (pi.scale)**	**Zscore (ca.scale)**	**Zscore (Meanallscalesfinaldata)**
Most Extreme Differences	Absolute	.138	.108	.130	.102
	Positive	.138	.078	.084	.102
	Negative	-.090	-.108	-.130	-.080
Kolmogorov-Smirnov Z		.910	.711	.859	.672
Asymp. Sig. (2-tailed)		.379	.693	.451	.757
Exact Sig. (2-tailed)		.227	.513	.282	.690
Point Probability		.008	.006	.014	.002

* Grouping Variable: Sex

Table 17A

Mann-Whitney U for subscales

	ph.scale	**pi.scale**	**ca.scale**	**Meanallscalesfinaldata**
Mann-Whitney U	3850.500	2966.000	3035.500	3014.000
Wilcoxon W	6335.500	5451.000	5520.500	5499.000
Z	-.592	-3.083	-2.897	-2.941
Asymp. Sig. (2-tailed)	.554	.002	.004	.003
Exact Sig. (2-tailed)	.555	.002	.004	.003
Exact Sig. (1-tailed)	.278	.001	.002	.002
Point Probability	.000	.000	.000	.000

* Grouping Variable: Sex

Table 18A

Subscale perceived importance final data

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
PI01_rev	16.9681	18.149	.330	.171	.625
PI02_rev	17.9149	18.955	.159	.061	.666
PI03_rev	17.2819	17.754	.395	.235	.612
PI04_rev	17.4149	17.132	.431	.299	.602
PI05_rev	16.9202	17.764	.284	.109	.637
PI06_rev	18.0798	17.635	.359	.287	.618
PI07_rev	17.7447	17.122	.451	.234	.598
PI08_rev	17.2394	17.980	.308	.132	.630
PI09_rev	17.3298	18.158	.285	.122	.635

Table 19A

Subscale changing attitudes final data

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
CA01_rev	12.4415	7.735	.428	.231	.511
CA02_rev	11.7713	8.381	.291	.102	.568
CA03_rev	12.1223	7.295	.487	.279	.481
CA04_rev	11.9468	7.826	.318	.139	.559
CA05_rev	11.9574	8.982	.228	.067	.590
CA07_rev	11.9947	8.433	.246	.085	.588

Table 20A

Overall scale final data

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
QUO1_rev	56.7128	78.634	.426	.468	.767
PH01_rev	55.5745	82.278	.388	.442	.772
PH02_rev	56.1755	79.696	.244	.172	.780
PH03_rev	55.5160	82.294	.295	.386	.775
PH04_rev	55.8670	85.410	.050	.231	.787
PH05_rev	56.5585	82.109	.193	.374	.781
PH06_rev	55.8989	83.578	.220	.427	.778
PH07_rev	55.8298	80.580	.472	.558	.767
PH08_rev	56.5638	82.878	.244	.206	.777
PI01_rev	56.1862	79.543	.401	.272	.769
PI02_rev	57.1330	81.057	.247	.309	.778
PI03_rev	56.5000	78.305	.489	.487	.764
PI04_rev	56.6330	79.977	.346	.342	.772
PI05_rev	56.1383	79.735	.309	.262	.774
PI06_rev	57.2979	81.547	.252	.337	.777
PI07_rev	56.9628	78.154	.470	.352	.764
PI08_rev	56.4574	78.848	.401	.353	.768
PI09_rev	56.5479	80.859	.286	.197	.775
CA01_rev	56.8245	78.434	.475	.480	.765
CA02_rev	56.1543	81.703	.270	.356	.776
CA03_rev	56.5053	79.770	.367	.390	.770
CA04_rev	56.3298	81.035	.261	.224	.777
CA05_rev	56.3404	82.162	.282	.158	.775
CA07_rev	56.3777	79.413	.383	.273	.769

Table 21A

KMO and Bartlett's Test factor analysis		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.762
Bartlett's Test of Sphericity	Approx. Chi-Square	1110.922
	df	276
	Sig.	.000

Table 22A

Communalities of items in factor analysis

	Initial	Extraction
General question	1.000	.550
PH is important to me	1.000	.521
Healthy food	1.000	.410
Annoying Injuries	1.000	.625
Dependence on others	1.000	.409
exercise extent	1.000	.535
care of physical health	1.000	.464
Interest in improving	1.000	.676
additional measures	1.000	.153
PH more important	1.000	.273
more sport since begin	1.000	.413
Interest in health topics	1.000	.550
noticing unhealthy	1.000	.502
Nr of conversations	1.000	.284
pointing out behavior	1.000	.537
amount of additional measures	1.000	.399
increased caution	1.000	.516
medical check up	1.000	.310
attitude physical health	1.000	.569
crowded hospitals	1.000	.538
Continue behaviour	1.000	.519
liking changes	1.000	.299
collective society	1.000	.209
shift attitudes friends	1.000	.297

* Extraction Method: Principal Component Analysis.

Table 23A

Factor loadings after factor analysis

	Component			
	1	**2**	**3**	**4**
Interest in health topics	.626	.306		-.214
attitude physical health	.589	-.426		
amount of additional measures	.584			
Interest in improving	.578	.567		
General question	.552	-.474		
PH more important	.518			
shift attitudes friends	.490		-.230	
increased caution	.488	-.378	.260	.261
Continue behaviour	.462	-.415		.358
Nr of conversations	.396	-.250		-.222
collective society	.330		.236	
additional measures	.328			
care of physical health	.302	.601		
exercise extent	.272	.570	-.221	.296
PH is important to me	.474	.541		
Healthy food	.381	.444		
Annoying Injuries	.327	.375	.612	
Dependence on others		.211	.599	
crowded hospitals	.317	-.273	.578	
more sport since begin	.325		-.418	.362
medical check up	.335		.366	-.239
pointing out behavior	.351			-.604
noticing unhealthy	.453			-.503
liking changes	.337			.401

* Extraction Method: Principal Component Analysis, 4 Components extracted.

Table 24A

Factor 1 - Cronbach´s alpha if Item deleted

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
PH01_rev	13.1862	8.056	.537	.387	.653
PH02_rev	13.7234	7.089	.438	.210	.673
PH05_rev	14.1702	6.463	.492	.275	.658
PH06_rev	13.5106	7.770	.498	.340	.655
PH07_rev	13.4415	7.617	.574	.383	.636
PH08_rev	14.1755	8.712	.212	.075	.734

Table 25A

Factor 2 - Cronbach´s alpha if Item deleted

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
PI01_rev	15.8404	15.515	.319	.138	.657
PI02_rev	16.7872	14.981	.304	.106	.663
PI08_rev	16.1117	14.442	.424	.223	.631
CA01_rev	16.4787	14.229	.520	.319	.610
CA03_rev	16.1596	14.124	.500	.297	.613
CA04_rev	15.9840	15.021	.319	.142	.658
CA05_rev	15.9947	16.326	.256	.101	.669
CA07_rev	16.0319	15.411	.305	.105	.660

Table 26A

Factor 3 - Cronbach´s alpha if Item deleted

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
PI03_rev	8.2872	7.307	.369	.145	.578
PI04_rev	8.4202	6.705	.447	.274	.538
PI05_rev	7.9255	7.310	.240	.079	.649
PI06_rev	9.0851	6.763	.427	.271	.548
PI07_rev	8.7500	6.841	.439	.196	.543

Table 27A

Factor 4 - Cronbach´s alpha if Item deleted

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
PH03_rev	10.4202	5.068	.371	.236	.325
PH04_rev	10.7713	5.129	.246	.160	.395
PI09_rev	11.4521	4.944	.226	.066	.411
CA02_rev	11.0585	4.815	.322	.129	.341
CA04_rev	11.2340	5.453	.087	.044	.517