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Title: Psychological, sociodemographic, and environmental factors related to physical activity during the COVID-19 lockdown

Short title: Factors of physical activity during the COVID-19 lockdown

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Abstract

Background. Recent findings have shown important between-individual variations in physical activity (PA) during the COVID-19 lockdown.

Objective. In order to understand why some people were physically active while others were not, this study examined the psychological, sociodemographic and, environmental levers and barriers to PA during the COVID-19 lockdown.

Design. In this cross-sectional study, participants living in France (*N*= 386) completed an on-line survey between March 30 and April 10.

Method. Questions about physical activity before and during the lockdown, psychological (e.g., intention, self-efficacy, motivation), sociodemographic (gender, age, number of children) and environmental (habitat surface area, type of housing, media exposure) factors were included in this survey. Multiple linear regressions were used to investigate the role of psychological, sociodemographic, and environmental predictors on PA. Intention and self-efficacy were examined as moderators and mediators of the association between sociodemographic/environmental factors and PA.

Results. Usual physical activity before the COVID-19 lockdown, intention toward physical activity, habitat surface area, and controlled motivation predicted PA during the lockdown. No mediating effects of intention, and self-efficacy were found. Intention significantly moderated the association between gender and PA, and part-time work and PA.

Conclusions. Psychological, sociodemographic, and environmental factors were significantly associated with moderate to vigorous PA during the COVID-19 lockdown in France. Further research in PA should consider investigating multiple level factors to better apprehend why people engage (or not) in physical activity.

Keywords*:* physical activity, COVID-19 lockdown, psychology, context

Psychological, sociodemographic, and environmental factors related to physical activity during the COVID-19 lockdown

COVID-19 represents one of the most important sanitary crisis in the last decades. Beyond the effects of COVID-19 on physical health, the disease may also have side effects on mental health, due to the strategies most countries have adopted for restraining contagion (e.g., lockdowns, closure of restaurants, schools, and public places), and other related events (e.g., overload media exposure of COVID-19, Garfin et al., 2020). In France for example, the government announced a national lockdown starting from 17th March to 11h May. People were authorized to go out of their home only for necessity reasons (work, medical check-up, purchases of necessities, or physical activity for less than one hour per day and less than one kilometer from home) and with a signed certificate.

Physical Activity and COVID-19

In order to limit the side effects of these restrictive measures, the WHO (2020b), researchers (Chen et al., 2020), and local and national governments published a series of recommendations so that people could remain sufficiently physically active (i.e., by giving advices about how to maintain physical activity during the lockdown). Indeed, regular physical activity is known as an important source of physical health (e.g., benefits for the immune system, Nieman & Wentz, 2019) and mental well-being (e.g., reduced depression and anxiety symptoms, Rebar et al., 2015).

Despite WHO recommendations and the potential benefits of physical activity during COVID-19 lockdown, a reduction of physical activity from 7% to 38% in European countries has been observed during the week of March 22 (Fitbit, 2020). More particularly, some activities (e.g., walking for commuting) have decreased while other activities (e.g., working out indoors) have increased (Cheval et al., 2020; Garmin, 2020). Moreover, as suggested by the ONAPS (2020), the impact of lockdown on physical activity might vary depending on

people (e.g., children and teenagers presenting the biggest reduction of physical activity, and adults increasing it). Why did some people manage to remain sufficiently active while others were mostly inactive? It is essential to identify the factors of physical activity during this period in order to better adapt physical activity recommendations during physical and social isolation.

Psychological factors of physical activity

The sociocognitive approach has been dominant to examine factors of physical activity (for a review see Rhodes et al., 2019). Sociocognitive theories (e.g., Theory of Planned Behavior, Ajzen, 1991; Health Belief Model, Rosenstock, 1974) consider that behavior depends on reasoned cognitions: people act when they have formed the intention to do so, which emerges when they believe they are capable to perform the behavior (e.g., self-efficacy), and that the behavior has consequences that are more positive than negative (e.g., perceived benefits and risks). Another prominent approach is the self-determination theory (Ryan & Deci, 2017), that considers behavior to depend on motivations that are either internal to the individual – when behavior is the result of a personal choice and act of volition (i.e., autonomous motivation) – or external to the individual – when behavior results from perceived internal or external pressure (i.e., controlled motivation).

Sociodemographic and environmental factors of physical activity

Although psychological theories are useful to explain engagement in physical activity, they have mostly focused on psychological factors and have omitted the role of external ones. Yet, there is evidence that sociodemographic and environmental factors also substantially predict physical activity. For example, research in different countries showed a tendency of women to be less physically active than men (for a review, see Guthold et al., 2018). Other research has shown an inverse association between age and physical activity, with younger people being more physically active than older people (e.g., Bauman et al., 2012). Moreover,

physical activity has been associated with employment status and family type, with people working in full-time jobs and having children being less physically active (e.g., Borodulin et al., 2016, Rhodes et al., 2014). Past research has also shown that people in higher socio-economic positions might be more active during leisure-time than people in lower socio-economic ones (Beenackers et al., 2012; Gidlow et al., 2006), and have more home equipment for leisure-time physical activity (Cerin & Leslie, 2008). In contrast, people in lower socio-economic positions seem to be more active during work (Beenackers et al., 2012).

Other studies have identified environmental factors on physical activity, including walkability, housing type, access to open spaces/recreation facilities, aesthetic variables (e.g., places evaluated as attractive), and mixed land use (coexistence of shops, residences and other buildings in the same neighborhood/zone) (for a review, see Bauman et al., 2012; Durand et al., 2011).

The present study

In sum, it is necessary to consider not only psychological factors, but also external ones, to better understand physical activity participation. This integrative approach is particularly relevant in the context of the COVID-19 crisis, which has caused sudden changes in people's work, family, and living environment.

Based on the aforementioned literature, we investigated individual-level factors, including psychological (i.e., intention, self-efficacy, autonomous and controlled motivation, as well as factors that may be particularly relevant in this sanitary crisis situation, such as perceived risks of being contaminated, perceived stress and vitality), and behavioral (i.e., usual physical activities before the lockdown) factors, as well as sociodemographic (i.e., age, gender, employment, household and socioeconomic status), and environmental (i.e., type of

housing, habitat surface areas, region's degree of COVID-19 contamination, access to sports equipment, and the media exposure) factors.

In addition, on a more theoretical level, how psychological and external factors articulate with each other remain an open question. Several studies suggest that external variables (e.g., sociodemographic context and environment) influence behavior through the mediating role of social cognitions (e.g., intention and self-efficacy) (Cerin & Leslie, 2008; Hagger & Hamilton, 2020; Sniehotta et al., 2013). In contrast, other studies (e.g., Schüz et al., 2019; Sniehotta et al., 2013) suggest that socio-cognitive constructs interact with sociodemographic/environmental variables to predict physical activity. For instance, Sniehotta et al. (2013) showed that the relationships between social cognitions and physical activity were stronger for individuals with better physical health and lower levels of socio-economic deprivation. Moreover, Schüz et al. (2019) observed that more educated people presented a stronger relationship between intention and physical activity.

In order to investigate the relationships between psychological and external factors, we adopted the same model comparison approach as in Sniehotta et al. (2013), by investigating the three following competing hypotheses:

Hypothesis 1. Sociodemographic (i.e., age, gender, number of children, employment status, educational attainment), environmental (i.e., type of housing, habitat surface area, access to sports equipment, media exposure) and individual (e.g., physical activity before COVID-19 lockdown, intention, self-efficacy, autonomous motivation, controlled motivation, subjective vitality, stress, perceived risks of getting COVID-19) variables predict physical activity independently from each other.

Hypothesis 2. The relationships between environmental/sociodemographic variables and physical activity are mediated by intention and self-efficacy.

Hypothesis 3. The relationships between environmental/sociodemographic variables and physical activity are moderated by intention and self-efficacy.

Method

Participants and procedure

An a priori power analysis conducted using G. Power 3.1.9.4 (Erdfelder et al., 2009; Faul et al., 2007) indicated that 308 participants were needed, considering 47 predictors (21 single predictors and 26 interactions), an R^2 of .40 (based on similar research, Sniehotta et al., 2013), and 90% power. Participants aged 18 and over and residing in France were recruited to answer an online survey (about 20 minutes). Recruitment was done using social media (i.e., facebook and twitter) and by word of mouth. To encourage participation, our research laboratory committed to donate 0.50€ to bioclinical research on COVID-19 for each completely fulfilled questionnaire. The survey was available between March 30 (two weeks after the French government announced the lockdown) and April 10, 2020.

Three-hundred-and-eighty-six people (65.54% women; *M*age = 33.09, *SD* = 13.18) completed the survey, after reading and signing an online informed consent form.

Measures

Physical activity during lockdown was assessed based on the International Physical Activity Questionnaire (IPAQ, Craig et al., 2003), which was adapted to better reflect the extraordinary circumstances of COVID-19 lockdown. Participants reported the time on minutes in different physical activity categories. These categories were chosen based on a recent opinion article about how to maintain physical activity levels during COVID-19 (Chen et al., 2020). Participants were also asked to add the time spent doing any other physical activities and, in this case, to define these activities. We then classified each activity into moderate-to-vigorous physical activity when it was superior or equal to 3 METS using the compendium of physical activities of Ainsworth et al. (2011).

Usual physical activity before lockdown was assessed using Saltin-Grimby Physical Activity Questionnaire (Grimby et al., 2015).

Intention to do physical activity was assessed using one item from Godin (2012) and, self-efficacy related to physical activity was assessed using one item (Schwarzer et al., 2015). Autonomous and controlled motivation toward physical activity was assessed using an short version of the "Motivation scale towards health-oriented physical activity" (Boiché et al., 2016). The eight items reflected four motivational regulations: intrinsic, identified, introjected, and external regulation. Intrinsic and identified regulation were averaged to obtain autonomous motivation and, introjected and external regulation were averaged to obtain controlled motivation (Brunet et al., 2015). Autonomous motivation's reliability showed good reliability (α=0.89). However, because controlled motivation did not show good reliability (α=0.55), we decided to remove one item. Reliability after removing this item was acceptable (α=0.61). Subjective vitality was assessed using the Subjective vitality scale (Ryan & Frederick, 1997) showing a good reliability (α=0.90), perceived stress was assessed using a French translation of the short form of perceived stress scale (PSS-4, Warttig et al., 2013), showing a good reliability (α=0.81). Finally, perceived risks of getting Coronavirus were assessed using perceived susceptibility and perceived severity scales. Perceived susceptibility of getting Coronavirus disease was adapted from a scale related to the susceptibility of getting Influenza infection (Nexøe et al., 1999). This scale did not show good reliability (α=0.48). Therefore, we decided not to include it in our analyses. Perceived severity of Coronavirus disease was assessed and adapted from Perceived severity scale of getting Influenza infection (Nexøe et al., 1999). Reliability was good for this scale (α=0.77).

Media exposure was assessed to gather information about the extent to which the search of information has or has not increased since the start of lockdown. Four items measured four different sources of information (e.g., Television, Internet, Social networks

and press). Reliability was acceptable for this scale (α=0.64) (more details of the scales in Supplementary materials).

Sociodemographic information included age, gender, number of children and employment status (full-time work, partial-time work, partial unemployment, no job), educational attainment, type of housing (housing with access to green areas or terrace and, housing without access to green areas or terrace), habitat surface area, region's degree of contamination (regions most affected by coronavirus were classified in Red, regions less affected in Yellow and the regions the least affected in Green), access to sports equipment at home (yes, no).

Analytical procedures

Moderate-to-vigorous physical activity did not have a normal distribution, squared root transformation was applied to approximate a normal curve. Once MVPA was transformed, skewness and kurtosis were examined to check for normality.

All hypotheses were tested using multiple linear regressions in R version 3.6.0. The "Lm" function was used to test the first and second hypothesis, and "olsrr" package (Hebbali, 2020) was used to do stepwise regression analyses (Hypothesis 3). Dummy variables were created for the categorical variables (gender, employment status, type of housing, and access to sports equipment at home).

Hypothesis 1 was tested using hierarchical regression analyses. In the first step, all the sociodemographic and environmental variables were included as predictors. In the second step, individual variables (intention, self-efficacy, autonomous motivation, controlled motivation, subjective vitality, perceived stress, perceived severity of COVID-19, and physical activity before lockdown) were additionally included following the methodology used by Sniehotta et al. (2013). Finally, both models were compared using chi-square difference tests to decide which model better explained behaviour.

Hypothesis 2 was investigated using mediation analysis following recommendations of Yzerbyt et al. (2018), which showed that the joint-significance test has a better balance of Type I error and statistical power, compared to other approaches such as the bias-corrected bootstrap method. In a first step, we tested whether sociodemographic, environmental, and psychological variables (except intention and self-efficacy that were tested as hypothesized mediators) predicted physical activity. In a second step, we tested whether sociodemographic, environmental, and psychological (except the hypothesized mediators) variables predicted each of the hypothesized mediators (intention and self-efficacy). In a third step, we tested whether each mediator predicted physical activity when controlling for sociodemographic, environmental, and individual variables. According to the joint-significance method, an indirect effect is claimed when regression coefficients in the second and third steps are significant.

Hypothesis 3 was tested using stepwise forward regression analyses. In the first step, we centred all predictors using subtract mean to avoid multicollinearity problems (e.g., Iacobucci et al., 2016; Shieh, 2011). In a second step, physical activity was regressed on all sociodemographic, environmental, and individual variables. In a third step, interactions between sociodemographic and environmental variables on the one hand, and intention and self-efficacy on the other hand, were included. Finally, significant interactions were decomposed into simple slopes analyses and Johnson-Newman plots. In order to simplify these analysis, all the variables were scaled using the scale function in R (this function subtracts the mean and divides each value by the standard deviation).

After testing each hypothesis, we followed recommendations to assess the independence of residuals (using Durbing-Watson test), normal distribution of residuals (using bar plot and q-q plot) and non-multicollinearity (using VIF function in “car” package, Fox & Weisberg, 2019).

Results

Descriptive statistics

The sample population reported performing an average of 368 minutes of moderate-to-vigorous physical activity (MVPA) per week (SD=251.12). The means, standard deviations and the description of our variables are presented in Table 1. Correlations between variables are displayed in Supplemental Materials.

Did sociodemographic / environmental and psychological factors independently predict physical activity (Hypothesis 1)?

Hierarchical multiple linear regression analyses were performed to test Hypothesis 1 (see Table 2). The first model including all sociodemographic and environmental variables was significant ($F(12, 354) = 4.27$, $p<.001$), with an R^2 of .13. Gender ($\beta = .11^{*}$, $p=.040$), habitat surface area ($\beta = .13^{*}$, $p=.035$) and, not having access to sports equipment at home ($\beta = -.24^{***}$, $p<.001$) were significantly associated with physical activity.

The second model, which included psychological variables in addition to sociodemographic/environmental ones, was significant ($F(20,330) = 10.95$, $p<.001$) with an R^2 of .40. Physical activity before lockdown ($\beta = .32^{***}$, $p<.001$), intention ($\beta = .24^{***}$, $p<.001$), habitat surface area ($\beta = .11^{*}$, $p=.037$) and, controlled motivation ($\beta = -.09^{*}$, $p=.048$), were significantly associated with physical activity during COVID-19 lockdown. Durbin-Watson test (Durbin & Watson, 1971), Durbin-Watson $_{\text{Model 1}} = 1.84$, Durbin-Watson $_{\text{Model 2}} = 1.97$), quantile-quantile plot (available in Supplementary Material), as well as VIF tests (Mansfield & Helms, 1982) (average $VIF_{\text{Model 1}} = 1.18$, average $VIF_{\text{Model 2}} = 1.24$) suggested that residuals were normally distributed and not autocorrelated (i.e., Durbin-Watson values should be between 1.5 and 2.5; Field, 2013, VIF values should be not be bigger than 10, Field, 2013). Finally, the chi-squared tests showed that the second model (the extended one) better explained physical activity than the first model.

Did psychological factors (intention, and self-efficacy) mediate the association between sociodemographic / environmental factors and physical activity (Hypothesis 2)?

The first multiple regression of the mediation analysis (see Table 3, Model 3) tested whether sociodemographic/environmental and psychological variables (excluding intention and self-efficacy) predicted physical activity. This regression was significant ($F(18,332) = 9.19$, $p<.001$) with an R^2 of .33. Physical activity before lockdown ($\beta = .38^{***}$, $p<.001$), subjective vitality ($\beta = .15^{**}$, $p=.003$), autonomous motivation ($\beta = .13^{*}$, $p=.015$) and, controlled motivation ($\beta = -.10^{*}$, $p=.042$) were significant predictors. Durbin-Watson $_{\text{Model 3}}$ = 1.95 and average $VIF_{\text{Model 3}}$ =1.18.

Second, in Model 3.1 (Table 3), intention was regressed on the same predictors used in model 3. The regression was significant ($F(18,334) = 5.97$, $p<.001$) with an R^2 of .24. Autonomous motivation ($\beta = .33^{***}$, $p<.001$), physical activity before lockdown ($\beta = .17^{**}$, $p=.004$), subjective vitality ($\beta = .14^{*}$, $p=.011$) and, perceived stress ($\beta = -.10^{*}$, $p=.041$) were significantly associated with intention to do physical activity. . Durbin-Watson $_{\text{Model 3.1}}$ = 2.01 and average $VIF_{\text{Model 3.1}}$ =1.18.

In Model 3.2 (Table 3), self-efficacy was regressed on the same predictors. This model was significant ($F(18,334) = 9.52$, $p<.001$) with an R^2 of .34. Subjective vitality ($\beta = .30^{***}$, $p<.001$), autonomous motivation ($\beta = .29^{***}$, $p<.001$) and, physical activity before lockdown ($\beta = .18^{**}$, $p=.001$) were significantly related to self-efficacy to do physical activity. . Durbin-Watson $_{\text{Model 3.2}}$ = 2.06 and average $VIF_{\text{Model 3.2}}$ =1.19.

We decided to stop the mediation analyses at this stage because there was no sociodemographic or environmental factor that was significantly associated to both physical activity and one of the potential mediators (intention or self-efficacy).

Did psychological factors (intention and self-efficacy) interact with sociodemographic / environmental factors in the prediction of physical activity (Hypothesis 3)?

Given the high number of predictors when adding interactive terms, a step-wise forward multiple regression analysis was performed to test Hypothesis 3. The final model is detailed in Table 4. This model was significant ($F(29, 321) = 8.64$, $p < .001$) with an R^2 of .44. Physical activity before the lockdown ($\beta = .28^{***}$, $p<.001$), intention ($\beta = .20^{*}$, $p=.022$), media exposure ($\beta = .10^{*}$, $p=.031$) and, controlled motivation ($\beta = -.11^{*}$, $p=.020$) were significantly related to physical activity.

Concerning the moderating role of self-efficacy and intention, the interaction between gender and intention ($\beta = .12^{*}$, $p=.041$) and, the interaction between people having a part-time job and intention ($\beta = -.10^{*}$, $p=.042$) were significantly related to physical activity.

Durbin-Watson test (Durbin & Watson, 1971, Durbin-Watson $_{\text{Model 4}} = 2.00$, quantile-quantile plot (displayed in Supplementary material), as well as VIF tests (average $\text{VIF}_{\text{Model 4}} = 1.35$) suggested that residuals were normally distributed and not autocorrelated.

To simplify simple slopes analyses interpretations, all independent variables were scaled before analyses. All the Johnson Neyman plots are displayed in Supplemental Materials. We then decomposed Gender × Intention and Partial-time job × Intention interactions using "Interactions" package (Long, 2019) (details of the interactions are displayed in Supplemental Table S2). The interaction between gender and intention, being a man significantly and positively predicted physical activity when the intention was outside the interval [-1.90, 1.04] *(Figure 1).* The interaction between partial-time job and intention, significantly and negatively predicted physical activity when the intention was outside the interval [-1.22, 1.16] *(Figure 2).*

Discussion

The current research aimed to better understand the psychological, sociodemographic, and environmental factors of physical activity during COVID-19 lockdown, and to better understand how these factors articulate with each other to predict physical activity (independent relationships with physical activity, mediating, or moderating role of psychological variables).

Main findings

Results provide support mostly to the hypothesis that psychological, sociodemographic and environmental factors independently predict physical activity (H1). More particularly, we observed a significant role of one environmental variable (habitat surface area) and three individual-level variables (usual physical activity, intention and controlled motivation). In other words, people were less physically active when they were little physically active before the COVID-19 lockdown, when they lived in a small housing, when they had low intention to be physically active, and when they had a high controlled motivation.

In contrast, our findings do not provide support to the hypothesis that sociocognitive variables mediate the association between sociodemographic/environmental factors and physical activity, which contradicts previous studies (Hagger & Hamilton, 2020; Sniehotta et al., 2013)

Finally, intention moderated the association between some sociodemographic variables (i.e., gender and partial-time job) and physical activity, providing some support to H3. More particularly, intention significantly and positively predicted physical activity in men, and negatively predicted physical activity in people having a part-time job.

Strengths and limits

The main contribution of this study is to show the importance of adopting a multi-factorial approach that investigates sociodemographic and environmental factors of physical activity in addition to psychological ones. This approach reveals that although the lockdown has caused sudden changes in people's work, family, and living environment, past physical activity remained a major predictor of physical activity during this period. This suggests the importance of habits in order to maintain regular physical activity in a suddenly-changing environments. Whereas one could have expected external factors to be particularly important in this situation, only one environmental factor (i.e., habitat surface area) significantly predicted physical activity.

Measuring physical activity using self-reports was the main limit of this study, as past research has shown an overestimation of the amount of physical activity when using self-reported physical activity (Dyrstad et al., 2014). Finally, the cross-sectional nature of our study does not allow us to establish causal links. Further longitudinal research during and after the lockdown might allow having more insights about the barriers and levers to physical activity, as well as the mediation and moderation effects of psychological variables.

Comparison with other studies

To our knowledge, few studies (e.g., Cerin & Leslie, 2008; Hagger & Hamilton, 2020; Schüz et al., 2019; Sniehotta et al., 2013) have included multiple-level factors (e.g., sociodemographic, environmental and psychological) while studying physical activity and other health-related behaviors.

The effects of intention toward physical activity on physical activity was in line with past research (Hagger et al., 2002) In contrast, the lack of significant association between autonomous motivation and physical activity (Teixeira et al., 2012) as well as the association between self-efficacy and physical activity (Hagger et al., 2002) were less expected.

Furthermore, the role of habitat surface area is less studied in the physical activity literature. Some research in leisure-time sitting (Saidj et al., 2015) showed that people living in smaller surfaces tended to spend more hours in a leisure-time sitting. Moreover, habitat surface and characteristics of housing might be an indirect measure of socio-economic status (Juhn et al., 2011). If we link smaller surfaces with lower socio-economic status, and bigger surfaces with higher socio-economic status, this could explain our results, as socio-economic status is related with physical activity (e.g., Beenackers et al., 2012; Cerin & Leslie, 2008; Ford et al., 1991; Gidlow et al., 2006).

Contrary to past research (Cerin & Leslie, 2008; Hagger & Hamilton, 2020; Sniehotta et al., 2013) sociodemographic and environmental effects were not mediated by psychological factors (intention and self-efficacy). Covid-19 has provoked negative impacts on health, employment and economy in most of countries. Nevertheless, recent studies reveal negative impacts are greater for those with lower socio socioeconomic status (Chung et al., 2020), suggesting that social, health and economic inequalities are exacerbated due to the epidemic (Dorn et al., 2020) . It seems plausible that extraordinary challenges of the covid-19 has revealed a direct association between sociodemographic/environmental and physical activity rather than an association mediated by psychological factors.

Finally, previous studies have shown that intention and self-efficacy moderate physical activity behaviors, therefore (Hagger & Hamilton, 2020; Schüz et al., 2019; Sniehotta et al., 2013), intention toward physical activity might moderate the effects of sociodemographic and environmental variables on physical activity. For instance, gender and intention toward physical activity has been shown to effect physical activity behaviors in previous work (for a review , see Rhodes & Dickau, 2013).

Practical implications

In terms of practical implications, the understanding of how sociodemographic, environmental and psychological factors affect physical activity patterns and levels could be used to benefit physical activity promotion programs. This knowledge could be integrated to specific physical activity programs targeting people living in small areas, for example. Moreover, these findings provide evidence for the importance of policies multi-level barriers and levers to physical activity.

Conflict of interest

The authors do not have any conflict of interest to declare.

Data availability statement

The R code and the dataset for this research can be found in an open platform OFSHOME https://osf.io/dva9c/?view_only=10ed1075ffd940708119cd16329a4e1a.

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Authors contribution

All the authors developed the study concept and contributed to the study design. All the authors contributed to data collection. C.T.E. analyzed and interpreted the data under the supervision of C.F. and A.C. C.T.E. and A.C. drafted the manuscript, and the remaining authors provided critical revisions. All of the authors approved the final version of this manuscript for submission.

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578 Tables

579 Table 1

580 *Means, standard deviations and description of variables*

Variable	Mean (95% CI)	SD	Range/unity of measure
Dependent variable			
PA during COVID-19 lockdown	368 [342.74, 393.34]	251.12	Minutes per week
Sociodemographic and environmental Variables			
Gender	65.54% women, 34.46% men		
Age	33.09 [31.76, 34.41]	13.18	
Region classified by colour (green zones are the least affected by COVID-19, red zones are the most affected zones)	63% people living in yellow zones, 19.2% people living in green zones, 17.9% people in red zones		
Educational attainment	6.04 [5.92, 6.16]	1.20	0-7
Employment status	45.08% full-time job, 32.9% no work, 12.7% part-time job, 9.3% partial unemployment		
Type of housing	68.65% access to green spaces/balcony, 31.35 % without access to green spaces/balcony		
Habitat surface area	99.41 [94.37, 104.45]	49.88	Square meters
Number of Children	0.55 [0.46, 0.64]	0.91	
Media exposure	5.52 [5.35, 5.68]	1.65	1-10
Access to sports equipment at home	69.69% access to sports equipment, 32.9% without access to sports equipment		
Psychological and Individual Variables			
Intention	5.60 [5.43, 5.77]	1.67	1-7
Self-efficacy	5.27 [5.1, 5.45]	1.76	1-7
Autonomous motivation	5.62 [5.5, 5.74]	1.20	1-7
Controlled motivation	1.84 [1.76, 1.93]	0.87	1-7
Subjective vitality	4.31 [4.18, 4.44]	1.30	1-7
Perceived stress	3.60 [3.55, 3.66]	0.55	1-7
Perceived severity of getting COVID	2.9 [2.74, 3.04]	1.48	1-7
PA before COVID-19 lockdown	3.03 [2.94, 3,12]	0.90	1-4

581 *Note*: *N*= 387. PA= Physical activity, CI= Confidence interval, SD= Standard deviation.

582 Values between brackets represent confidence intervals.

583 Table 2

584 *Hierarchical regression models testing the independent contribution of sociodemographic,*
585 *environmental and individual variables to physical activity during COVID-19 lockdown*
586 *(Hypothesis 1)*

	Step 1				**Step 2**			
	b	***SE* b**	***B***	***p***	**b**	***SE* b**	***B***	***p***
Constant	**15.84***** [10.13, 21.54]	2.90		**<.001**	-5.67 [-13,27, 1,93]	3.86		0.14
Gender	**1.57*** [0.08, 3.06]	0.76	**.11***	**0.040**	0.27 [-1.05, 1.59]	0.67	.02	.688
Age	-0.01 [-0.07, 0.04]	0.03	-.02	.669	-0.001 [-0.05, 0.05]	0.03	-.002	.967
Region degree of contamination	0.49 [-0.65, 1.63]	0.58	.04	.397	0.46 [-0.50, 1.41]	0.49	.04	.348
Educational attainment	0.03 [-0.67, 0.72]	0.35	0.01	.938	0.27 [-0.32, 0.86]	0.30	.05	.361
Part-time job	-0.48 [-2.80, 1.84]	1.18	-.02	.686	-0.10 [-2.09, 1.88]	1.01	-.01	.919
Partial unemployment	0.51 [-1.99, 3.02]	1.27	.02	.686	0.15 [-2.02, 2.32]	1.10	.01	.891
No job	1.33 [-0.57, 3.23]	0.97	.09	.170	1.33 [-0.28, 2.94]	0.82	.09	.105
Housing without access to green areas/terrace	-0.15 [-1.87, 1.57]	0.87	-.01	.864	1.14 [-0.34, 2.62]	0.75	.08	.130
Habitat surface area	**0.02*** [0.001., 0.04]	0.01	**.13***	**.035**	**0.02*** [0.001, 0.03]	0.01	**.11***	**.037**
Number of children	-0.59 [-1.40, -0.23]	0.41	-.08	.157	-0.33 [-1.03, 0.37]	0.36	-.04	.358
No access to sports equipment	**-3.68***** [-5.2, -2.15]	0.78	**-.24*****	**<.001**	-0.90 [-2.30, 0.49]	0.71	-.06	.203

Factors of physical activity during the COVID-19 lockdown

Media exposure	0.02 [-0.40, 0.44]	0.21	0.01	.917	**0.31^{t}** [-0.05, 0.67]	0.18	**.07^{t}**	**.092**
Intention					**0.99***** [0.47, 1.51]	0.26	**.24*****	**<.001**
Self-efficacy					0.36 [-0.16, 0.86]	0.27	.09	.174
Autonomous motivation					0.17 [-0.45, 0.79]	0.31	.03	.595
Controlled motivation					**-0.72*** [-1.44, -0.01]	0.36	**-.09***	**.048**
Subjective vitality					**0.50^{t}** [-0.04, 1.04]	0.27	**.09^{t}**	**.068**
Perceived stress					0.35 [-0.79, 1.48]	0.58	.03	.545
Perceived severity					-0.22 [-0.63, 0.20]	0.21	-.05	.299
PA before lockdown					**2.49***** [1.66, 3.33]	0.43	**.32*****	**<.001**
R^2	**0.13**				**0.40**			
Adjusted R^2	**0.10**				**0.36**			

Note: $N_{\text{Model 1}}$= 367, $N_{\text{Model 2}}$= 351. Dependent variable is minutes of moderate-to-vigorous physical activity per week transformed in squared root. Women were used as reference dummy group; results in this table are displayed for men. *b* = raw coefficient, *SE b*= Standard error of betas, β = Standardized betas, ^{t} represents p <.10, * p < .05, ** p < .01, *** p <.001. Values between brackets represent confidence intervals.

592 Table 3

593 *Hierarchical regression models testing the mediating role of intention and self-efficacy, in the association between sociodemographic /*
594 *environmental variables and physical activity during COVID-19 lockdown (Hypothesis 2).*
595

	Model 3				**Model 3.1**				**Model 3.2**			
	b	***SE* b**	***B***	***p***	**b**	***SE* b**	***B***	***p***	**b**	***SE* b**	***B***	***p***
Constant	-2.34	4.01		.560	**2.76****	1.01		**.007***	1.44	1.00		.151
	[-10.23, 5.55]				[0.78, 4.74]				[-0.53, 3.42]			
Gender	0.15	0.71	.01	.827	-0.10	0.18	-.03	.573	-0.03	0.18	-.01	.887
	[-1.23, 1.54]				[-0.45, 0.25]				[-0.37, 0.32]			
Age	-0.01	0.03	-.02	.683	-0.01	0.01	-.07	.188	-0.00	0.01	-.03	.583
	[-0.07, 0.04]				[-0.02, 0.01]				[-0.02, 0.01]			
Region degree of contamination	0.53	0.51	.05	.300	0.05	0.13	.02	.712	0.07	0.13	.03	.565
	[-0.48, 1.54]				[-0.21, 0.30]				[-0.18, 0.33]			
Educational attainment	0.30	0.31	.05	.343	0.04	0.08	.03	.658	-0.04	0.08	-.03	.619
	[-0.32, 0.92]				[-0.12, 0.19]				[-0.19, 0.12]			
Part-time job	0.11	1.06	-.01	.919	0.21	0.27	.04	.435	0.10	0.26	.02	.702
	[-1.98, 2.19]				[-0.31, 0.73]				[-0.28, 0.86]			
Partial unemployment	0.14	1.15	.01	.904	-0.12	0.29	-.02	.676	0.29	0.289	.05	.319
	[-2.13, 2.41]				[-0.69, 0.45]				[-0.28, 0.57]			
No job	1.26	0.86	.09	.142	-0.13	0.22	-.04	.539	0.15	0.22	.04	.499
	[-0.43, 2.95]				[-0.56, 0.29]				[-0.28, 0.57]			
Housing without access to green areas/terrace	1.14	0.79	.08	.148	0.03	0.20	.01	.863	-0.07	0.20	-.02	.717
	[-0.41, 2.69]				[-0.36, 0.43]				[-0.46, 0.32]			

Habitat surface area	**0.01^{t}** [-0.002, 0.03]	0.01	**.10^{t}**	**.090**	-0.002 [-0.01, 0.002]	0.002	-.06	.291	0.00 [-0.00, 0.00]	0.00	-.01	.934
Number of children	-0.46 [-1.19, 0.28]	0.37	-.06	.220	-0.10 [-0.28, 0.09]	0.09	-.05	.309	-0.12 [-0.30, 0.07]	0.09	-.06	.209
No access to sports equipment	-0.99 [-2.45, 0.48]	0.74	-.07	.186	-0.07 [-0.44, 0.30]	0.19	-.02	.709	-0.04 [-0.41, 0.32]	0.19	-.01	.814
Media exposure	0.29 [-0.09, 0.67]	0.19	.07	.134	-0.02 [-0.11, 0.08]	0.05	-.02	.732	0.01 [-0.09, 0.10]	0.05	.01	.913
Autonomous motivation	**0.76*** [0.15, 1.38]	0.31	**.13***	**.015**	**0.45***** [0.29, 0.60]	0.08	**.33*****	**<.001**	**0.41***** [0.26, 0.57]	0.08	**.29*****	**<.001**
Controlled motivation	**-0.77*** [-1.52, -0.03]	**0.38**	**-.10***	**.042**	0.01 [-0.18, 0.20]	0.10	.01	.901	**-0.16^{t}** [-0.35, 0.03]	0.10	**-.08^{t}**	**.095**
Subjective vitality	**0.82**** [0.28, 1.36]	0.27	**.15****	**.003**	**0.18*** [0.04, 0.31]	0.07	**.14***	**.011**	**0.41***** [0.27, 0.54]	0.07	**.30*****	**<.001**
Perceived stress	-0.07 [-1.25, 1.11]	0.60	-.01	.912	**-0.31*** [-0.61, -0.01]	0.15	**-.10***	**.041**	**-0.27^{t}** [-0.56, 0.03]	0.15	**-.08^{t}**	**.078**
Perceived severity	-0.14 [-0.57, 0.29]	0.22	-.03	.527	0.06 [-0.05, 0.17]	0.06	.05	.296	0.06 [-0.05, 0.17]	0.06	.05	.292
PA before lockdown	**2.94***** [2.07, 3.80]	0.44	**.38*****	**<.001**	**0.32**** [0.10, 0.54]	0.11	**.17****	**.004**	**0.36**** [0.15, 0.58]	0.11	**.18****	**.001**
R^2	**0.33**				**0.24**				**0.34**			
Adjusted R^2	**0.30**				**0.20**				**0.30**			

Note: $N_{\text{Model 3}}$= 351, $N_{\text{Model 3.1}}$= 353, $N_{\text{Model 3.2}}$= 353. In Model 3, dependent variable is minutes of moderate-to-vigorous physical activity per week transformed in squared root. In Model 3.1, dependent variable is Intention, and in Model 3.2, dependent variable is Self-efficacy. Women were used as reference dummy group; results in this table are displayed for men. *b* = raw coefficient, *SE B*= Standard error of betas, β = Standardized betas, ^{t} represents p <.10, * p < .05, ** p < .01, *** p <.001. Values between brackets represent confidence intervals.

600 Table 4

601 *Stepwise regression model testing moderation effects between intention, self-efficacy, and*
602 *sociodemographic / environmental variables (Hypothesis 3).*

	Model 4 Interaction Effects			
	b	***SE* b**	***β***	***p***
Constant	**17.46***** [16.21, 18.70]	0.63		**<.001**
PA before lockdown	**2.20***** [1.36, 3.04]	0.43	**.28*****	**<.001**
Self-efficacy	0.14 [-0.48, 0.76]	0.31	.04	.652
Habit surface area	**0.02t** [0.00, 0.03]	0.01	**.10t**	**.053**
Controlled motivation	**-0.85*** [-1.52, -0.11]	0.36	**-.11***	**.020**
Subjective vitality	**0.47**^{t} [-0.07, 1.01]	0.27	**.09**^{t}	**.085**
Part-time job	-0.19 [-1.79, 2.16]	1.00	-.01	.852
Partial unemployment	0.28 [-2.92, 2.63]	1.09	.01	.794
No job	1.26 [-0.34, 2.85]	0.81	.09	.122
Media exposure	**0.40*** [0.04, 0.76]	0.18	**.10***	**.031**
Gender	0.23 [-1.07, 1.54]	0.66	.02	.725
Region degree of contamination	0.28 [-0.67, 1.24]	0.48	.03	.561
Number of children	-0.44 [-1.13, 0.26]	0.35	-.06	.215
Perceived severity	**-0.36**^{t} [-0.78, 0.06]	0.21	**-.08**^{t}	**.096**
No access to sports equipment	-0.97 [-2.36, 0.42]	0.71	-.06	.172
Age	0.01 [-0.04, 0.06]	0.03	.02	.762
Housing without access to green areas/terrace	0.97 [-0.50, 2.44]	0.75	.07	.194
Educational attainment	0.34	0.30	.06	.257

	[-0.25, 0.94]			
Perceived stress	0.46	0.58	.04	.422
	[-0.67, 1.59]			
Autonomous motivation	0.25	0.31	.04	.421
	[-0.36, 0.87]			
Intention	**0.85***	0.37	**.20***	**.022**
	[0.12, 1.58]			
Gender x Intention	**0.80***	0.39	**.12***	**.041**
	[0.03, 1.57]			
Age x Intention	-0.02	0.01	-.07	.128
	[-0.05, 0.01]			
Housing without access to green areas/terrace x Self-efficacy	**0.70t**	0.38	**.10t**	**.067**
	[-0.05, 1.45]			
Number of children x Self-efficacy	**0.36t**	0.19	**.09t**	**.066**
	[-0.02, 0.74]			
Region degree of contamination x Intention	**0.52t**	0.30	**.08t**	**.080**
	[-0.06, 1.10]			
Educational attainment x Self-efficacy	-0.25	0.15	-.08	.010
	[-0.55, 0.04]			
Part-time job x Intention	**-1.34***	0.66	**-.10***	**.042**
	[-2.63, -0.05]			
Partial unemployment x Intention	-0.51	0.64	-.04	.425
	[-1.78, 0.75]			
No job x Intention	0.14	0.43	0.02	.744
	[-0.70, 0.99]			
R^2	**0.44**			
Adjusted R^2	**0.39**			

Note: *N*= 352. In Model 4, dependent variable is minutes of moderate-to-vigorous physical activity per week transformed in squared root; all predictors were mean centered. *b* = raw coefficient, *SE B*= Standard error of betas, β = Standardized betas, ^{t} represents p <.10, * p < .05, ** p < .01, *** p <.001. Values between brackets represent confidence intervals.

Figures

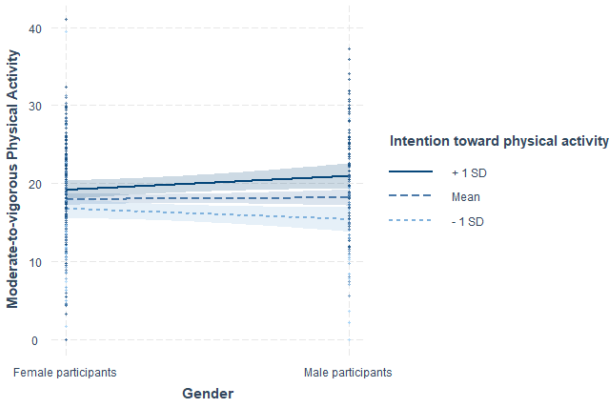


Figure 1. Intention x Gender on moderate-to-vigorous physical activity. Simple slopes for levels of moderator (intention) are displayed for 1 SD, 1 SD below, above the mean, and for the mean. The shaded areas reflect 95% confidence intervals and the grey circles show our observed data.

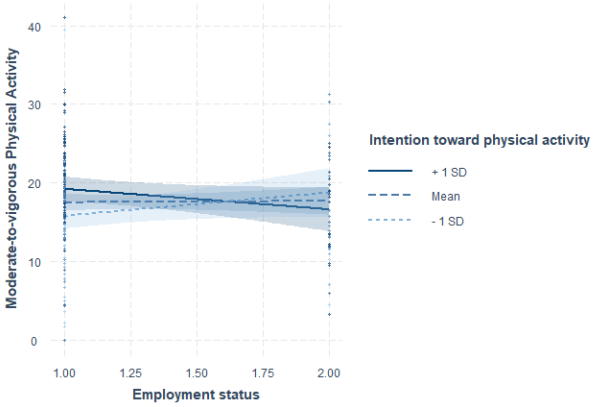


Figure 2. Intention x Partial-Time job on moderate-to-vigorous physical activity. Simple slopes for levels of moderator (intention) are displayed for 1 SD, 1 SD below, above the mean, and for the mean. 1 = Full-time job, 2 = Part-time job. The shaded areas reflect 95% confidence intervals and the grey circles show our observed data.

618 Supplemental Material Files

619 Supplementary Table S1

620 *Matrix of correlations*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. MVPA																		
2. Gend	.12* [.02, .22]																	
3. Age	-.07 [-.17, .03]	.12* [.02, .22]																
4. Reg	.01 [-.09, .11]	.02 [-.08, .12]	-.06 [-.16, .04]															
5. Educ	-.05 [-.15, .05]	-.06 [-.16, .04]	.26** [.16, .35]	.14** [.04, .24]														
6. Work	.16** [.06, .26]	-.07 [-.17, .03]	-.26** [-.35, -.16]	-.11* [-.21, -.01]	-.47** [-.55, -.39]													
7. HoType	-.10 [-.20, .00]	.03 [-.07, .13]	.01 [-.09, .11]	.13** [.03, .23]	.15** [.05, .25]	-.16** [-.25, -.06]												
8. Habsurf	.18** [.08, .28]	.09 [-.01, .19]	.05 [-.05, .15]	-.10 [-.20, .00]	-.14** [-.24, -.04]	.23** [.13, .32]	-.50** [-.57, -.42]											

9. NuCh	-.06	.01	.17**	-.03	-.06	-.04	-.17**	.25**								
	[-.16, .04]	[-.09, .11]	[.07, .27]	[-.13, .07]	[-.16, .04]	[-.14, .06]	[-.27, -.07]	[.15, .34]								
10. SpEq	-.27**	-.02	.07	.05	.01	-.13**	.14**	-.17**	.03							
	[-.36, -.18]	[-.12, .08]	[-.03, .17]	[-.05, .15]	[-.09, .11]	[-.23, -.03]	[.04, .23]	[-.27, -.07]	[-.08, .13]							
11. Media	-.02	-.00	-.04	.06	.08	-.04	.03	.02	.00	.07						
	[-.12, .08]	[-.10, .10]	[-.14, .06]	[-.04, .16]	[-.02, .18]	[-.14, .06]	[-.07, .13]	[-.08, .12]	[-.10, .10]	[-.03, .17]						
12. Int	.44**	.01	-.09	-.02	-.03	.03	-.05	.03	-.10	-.20**	-.02					
	[.36, .52]	[-.09, .11]	[-.19, .01]	[-.12, .08]	[-.13, .07]	[-.07, .13]	[-.15, .05]	[-.07, .13]	[-.20, .00]	[-.29, -.10]	[-.12, .08]					
13. SEf	.47**	.07	-.04	-.06	-.12*	.14**	-.13*	.12*	-.06	-.26**	-.06	.71**				
	[.39, .55]	[-.03, .17]	[-.14, .06]	[-.16, .04]	[-.22, -.02]	[.04, .24]	[-.23, -.03]	[.02, .22]	[-.16, .04]	[-.35, -.16]	[-.16, .04]	[.65, .75]				
14. AMot	.37**	.00	-.03	-.09	-.07	.06	-.11*	.11*	-.01	-.26**	-.06	.41**	.44**			
	[.28, .45]	[-.10, .10]	[-.13, .07]	[-.19, .01]	[-.16, .04]	[-.04, .16]	[-.21, -.01]	[.01, .21]	[-.11, .09]	[-.35, -.16]	[-.16, .04]	[.32, .49]	[.36, .52]			
15. CMot	-.03	-.02	-.28**	.05	-.02	.11*	.01	.01	-.14**	.04	.10*	.04	-.04	.01		
	[-.14, .07]	[-.12, .08]	[-.37, -.18]	[-.05, .15]	[-.12, .08]	[.00, .20]	[-.09, .11]	[-.09, .12]	[-.24, -.04]	[-.06, .14]	[.00, .20]	[-.06, .14]	[-.14, .06]	[-.10, .11]		
16. SubVi	.28**	.12*	.11*	-.12*	-.04	.03	-.12*	.20**	-.05	-.27**	-.11*	.21**	.39**	.25**	-.03	
	[.19, .37]	[.02, .22]	[.01, .21]	[-.22, -.02]	[-.14, .06]	[-.07, .13]	[-.21, -.02]	[.10, .29]	[-.15, .05]	[-.36, -.18]	[-.21, -.01]	[.11, .30]	[.31, .48]	[.15, .34]	[-.13, .07]	
17. Stre	-.02	.10*	.06	.01	-.01	-.04	.04	-.05	.00	.06	-.04	-.05	-.03	.08	.07	.09
	[-.12,	[.00,	[-.04,	[-.09,	[-.11,	[-.14,	[-.06,	[-.15,	[-.10,	[-.04,	[-.14,	[-.15,	[-.13,	[-.02,	[-	[-

	.08]	.20]	.16]	.11]	.09]	.06]	.14]	.05]	.11]	.16]	.06]	.05]	.07]	.18]	.03, .17]	.01, .19]		
18. PSe	-.10*	-.04	.17**	-.04	-.05	.04	.04	-.01	.01	-.02	.05	-.02	-.03	-.14**	-.09	-.06	.08	
	[-.20, -.00]	[-.14, .06]	[.07, .26]	[-.13, .06]	[-.15, .05]	[-.06, .14]	[-.06, .14]	[-.11, .09]	[-.09, .11]	[-.12, .08]	[-.05, .15]	[-.12, .08]	[-.13, .07]	[-.24, -.04]	[-.19, .01]	[-.16, .04]	[-.02, .18]	
19. PABe	.50**	.16**	-.16**	-.00	-.17**	.17**	-.19**	.16**	-.02	-.31**	-.07	.36**	.42**	.50**	.07	.22**	-.01	-.06
	[.42, .57]	[.07, .26]	[-.25, -.06]	[-.10, .10]	[-.27, -.08]	[.07, .26]	[-.29, -.10]	[.06, .25]	[-.12, .08]	[-.40, -.22]	[-.17, .03]	[.27, .44]	[.33, .50]	[.42, .57]	[-.03, .17]	[.12, .31]	[-.11, .09]	[-.16, .04]

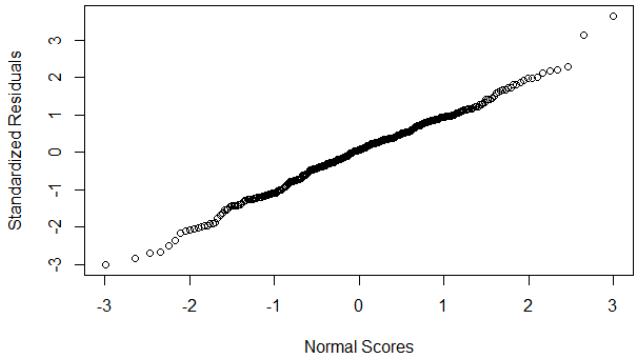
Note. Values in square brackets indicate the 95% confidence interval for each correlation. MVPA = Moderate-to-vigorous physical activity during COVID-19 lockdown, Gender= Gend (1=female, 2=male), , Reg = Region classified in colors (1=Green, least affected zones, 2=Yellow, moderately affected zones, 3=Red, strongly affected zones), Work = employment status (1= full-time job, 2= part-time job, 3 = partial unemployment, 4 =No job), HoType=Housing type (1=Housing with access to green areas/terrace, 2=Housing without access, 3=Housing without classification), Habsurf=Habitat surface area, NuCh=Number of children, SpEq = Access to sports equipment (1=No, 2=Yes), Int=Intention, Sef= Self-efficacy, Amot= Autonomous motivation, Cmot=Controlled motivation, SubVi = Subjective vitality, Stre=Perceived stress, Pse=Perceived severity, PABe=Physical activity before lockdown, Media = Media exposure. * indicates $p < .05$. ** indicates $p < .01$.

Supplementary Table S2

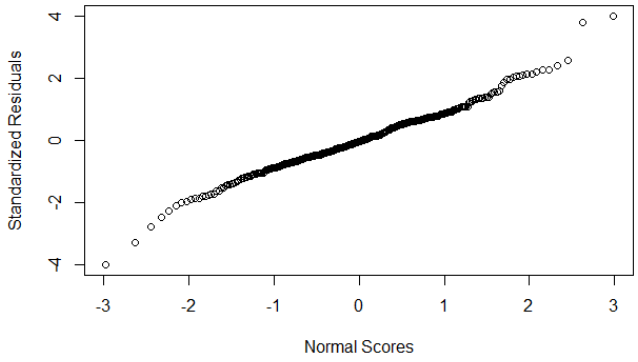
Summary of Interaction effect between Intention and Gender and, Intention and Part-time job

	Intention		
Variable	**Focal predictor**	**Intention**	**Interaction**
Gender	.02	**.20****	**.12***
No job	.08	**.20****	.01
Partial unemployment	.01	**.20****	-.04
Part-time job	.01	**.20****	**-.10***

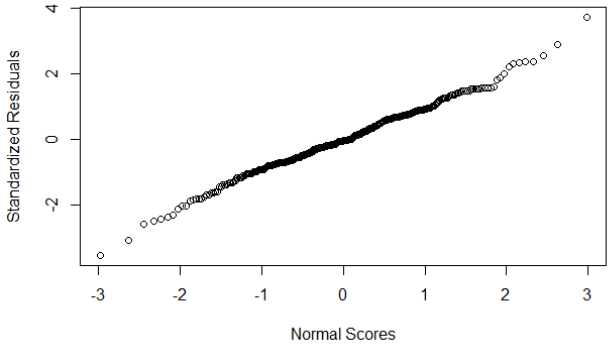
Note: N = 352. Dependent variable is minutes of moderate-to-vigorous physical activity per week transformed in squared root; all predictors were scaled. Focal predictor refers to the effects (standardized beta) of the variable mentioned in the left column on physical activity, ** represents $p < .01$, *** $p < .001$.



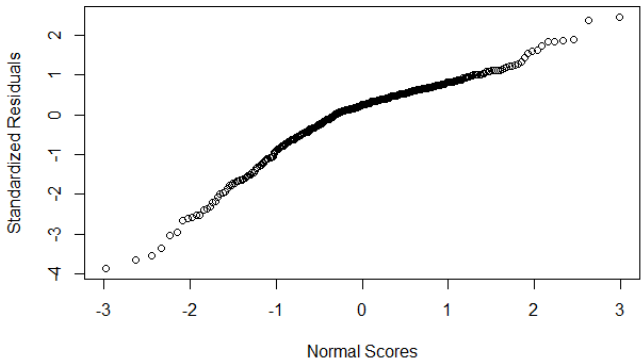
Supplement Figure 1. Quantile-Quantile plot of standardized residuals of Regression model 1. In the x label, Normal score, in the y label standardized residuals. Each circle represent a residual observation.



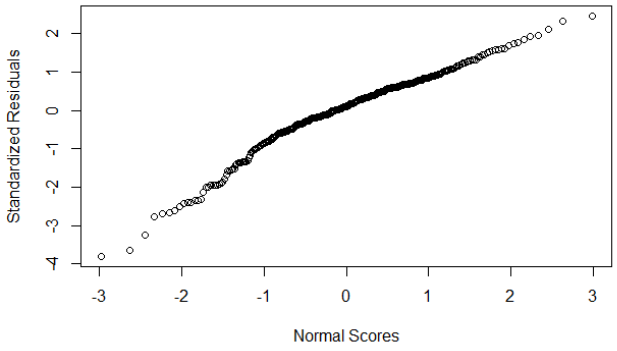
Supplement Figure 2. Quantile-Quantile plot of standardized residuals Regression model 2. In the x label, Normal score, in the y label standardized residuals. Each circle represent a residual observation.



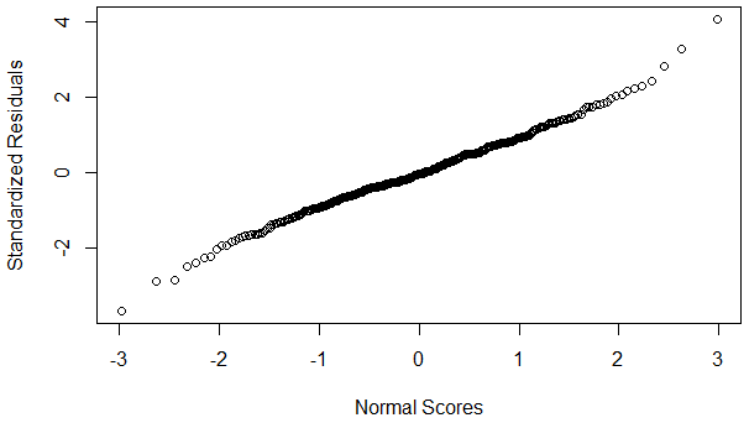
Supplement Figure 3. Quantile-Quantile plot of standardized residuals Regression model 3. In the x label, Normal score, in the y label standardized residuals. Each circle represent a residual observation.



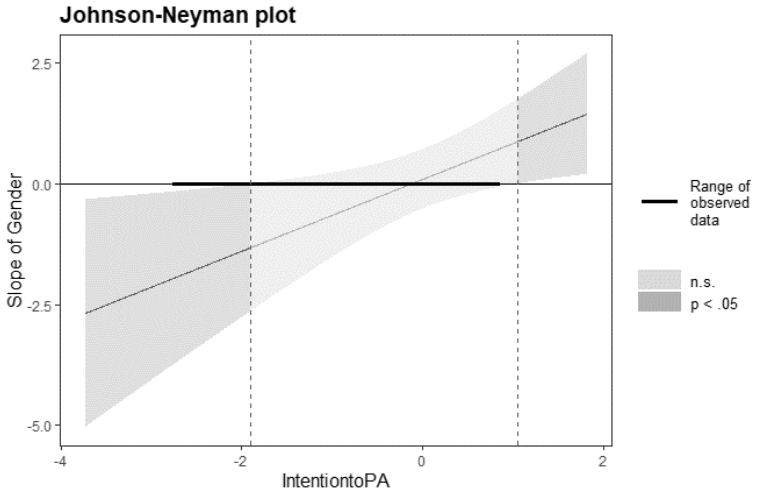
Supplement Figure 4. Quantile-Quantile plot of standardized residuals Regression model 3.1. In the x label, Normal score, in the y label standardized residuals. Each circle represent a residual observation.



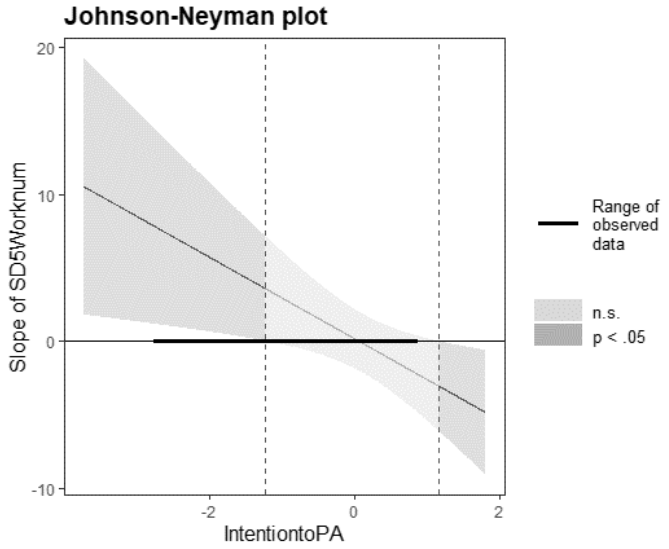
Supplement Figure 5. Quantile-Quantile plot of standardized residuals Regression model 3.2. In the x label, Normal score, in the y label standardized residuals. Each circle represent a residual observation.



Supplement Figure 6. Quantile-Quantile plot of standardized residuals Regression model 4. In the x label, Normal score, in the y label standardized residuals. Each circle represent a residual observation.



Supplement Figure 7. Johnson-Neyman plot of the Interaction Gender X Intention. In the x label, Intention standard deviations (SD). In the y level, slope of Gender. Significant ($p < .05$) and non-significant slopes are displayed using grey (non-significant values) and darker grey for significant slopes.



Supplement Figure 7. Johnson-Neyman plot of the Interaction Partial-time job X Intention. In the x label, Intention standard deviations (SD). In the y level, slope of Partial-time job. Significant (p <.05) and non-significant slopes are displayed using grey (non-significant values) and darker grey for significant slopes.

Supplemental Material Files: Full scales of physical activity, psychological factors and media exposure

Physical Activity during lockdown

- **Over the past 7 days, indicate the time spent in minutes for each listed type of physical activity…**
- Walking outside
- Running outside
- Climbing the stairs of the building/house
- Doing muscle strengthening exercises (abs, push-ups, squats) or balance / stretching exercises (tai chi, yoga)
- Cycling, rowing or doing cardio activities at home
- Other physical activities (define which)

Usual physical activity before the lockdown

- **In general, what did your "profile" look like in terms of physical activity over the past year? If your activity varied greatly from week to week, try to estimate an average**

1	2	3	4
Sedentary. Being almost completely inactive: reading, TV watching, movies, using computers or doing other sedentary activities during leisure time.	Some physical activity during at least 4 h/week as riding a bicycle or walking to work, walking or skiing with the family, gardening, fishing, table tennis, bowling, etc.	Regular physical activity and training (moderate PA) such as heavy gardening, running, swimming, calisthenics, tennis, badminton and similar activities for at least 2–3 h/week.	Regular hard physical training for competition sports (vigorous PA): running events, orienteering, skiing, swimming, soccer, racing, European handboll, etc. Several times per week.

Intention

- **Since lockdown, to what extent do you intend to do 30 minutes of moderate to vigorous physical activity at least 5 days a week, as recommended by health authorities?**

1	2	3	4	5	6	7
No intention at all						Totally the intention

Self-efficacy

- **Since lockdown, how confident are you in your ability to do 30 minutes of moderate to vigorous physical activity at least 5 days a week as recommended by health authorities?**

1	2	3	4	5	6	7
No confident at all						Totally confident

Autonomous Motivation

- ***We would like to know your motivations when you do physical activities, in other words, why you do physical activity or exercise. Indicate the extent to which each of the following statements currently corresponds to one of your reasons for being physically active.***
- *For the pleasure I experience when I practice PA*

1	2	3	4	5	6	7
(Does not match at all						Matches very strongly

- *Because personally, I consider it as a factor of well-being.*

1 2 3 4 5 6 7
(Does not match at all) Matches very strongly

- For the pleasant feelings that PA provides me.

1 2 3 4 5 6 7
(Does not match at all) Matches very strongly

- Because I believe that PA is a good thing for my personal growth.

1 2 3 4 5 6 7
(Does not match at all) Matches very strongly

<u>*Controlled motivation*</u>

- ***We would like to know your motivations when you do physical activities, in other words, why you do physical activity or exercise. Indicate the extent to which each of the following statements currently corresponds to one of your reasons for being physically active.***
- *Because I would feel ashamed if I wasn't physically active.*

1 2 3 4 5 6 7
(Does not match at all) Matches very strongly

- *Because some people around pressure me to do it*

1 2 3 4 5 6 7
(Does not match at all) Matches very strongly

- In order not to hear the criticisms of certain people.

1 2 3 4 5 6 7
(Does not match at all) Matches very strongly

- Because I would feel bad if I did not make this effort. (REMOVED)

1 2 3 4 5 6 7
(Does not match at all) Matches very strongly

<u>*Subjective vitality*</u>

- ***In the last seven days...***

- *I felt alive and vital*

1 2 3 4 5 6 7
Completely disagree) Completely agree

- *I have energy and spirit*

1 2 3 4 5 6 7
Completely disagree) Completely agree

- I look forward to each new day

1 2 3 4 5 6 7
Completely disagree) Completely agree

- I nearly always feel alert and awake

1 2 3 4 5 6 7
Completely disagree) Completely agree

- I feel energized

1 2 3 4 5 6 7
Completely disagree) Completely agree

690
691 *Perceived stress*
692

- ***In the last week…***
- *How often have you felt you were unable to control the important things in your life?*

1 2 3 4 5 6 7
Never Always

- How often have you felt confident about your ability to handle your

1 2 3 4 5 6 7
Never Always

- How often have you felt difficulties were piling up so high that you could not overcome them?

1 2 3 4 5 6 7
Never Always

- How often have you felt that things were going your way?

1	2	3	4	5	6	7
Never						Always

Perceived risks

Perceived susceptibility

- *I have an increased risk of falling ill with coronavirus disease*

1	2	3	4	5	6	7
Completely disagree)						Completely agree

- I am concerned about the risk of falling ill with coronavirus disease

1	2	3	4	5	6	7
Completely disagree)						Completely agree

- I get sick more easily than other people my age

1	2	3	4	5	6	7
Completely disagree)						Completely agree

Perceived severity

- *I have an increased risk of falling ill with coronavirus disease*

1	2	3	4	5	6	7
Completely disagree)						Completely agree

- I am afraid the coronavirus disease will make me very sick

1	2	3	4	5	6	7
Completely disagree)						Completely agree

- I cannot stand the coronavirus disease because of my general health

1	2	3	4	5	6	7
Completely disagree)						Completely agree

Media Exposure

- ***The following question is intended to help you understand your key sources of information since the beginning of the pandemic. For each source of information below, indicate whether your consultations are decreasing or increasing, on a scale from 1 to 10.***
- *Television*

1	2	3	4	5	6	7	8	9	10
Decrease of informations				Constancy					Increase of information

- *Internet*

1	2	3	4	5	6	7	8	9	10
Decrease of informations				Constancy					Increase of information

- *Social media*

1	2	3	4	5	6	7	8	9	10
Decrease of informations				Constancy					Increase of information

- *Press*

1	2	3	4	5	6	7	8	9	10
Decrease of informations				Constancy					Increase of information