

Gender Equality in Mental Health During the Covid-19 Pandemic and Leisure Time

by

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### Abstract

*Introduction:* A cross-sectional and longitudinal study was conducted among parents ( $N=483$ ) in the Netherlands. The aim of this study was to investigate if mothers mental health was lower during the COVID-19 pandemic than fathers, and whether this difference between mothers and fathers was mediated by the difference in experienced leisure time change as a result of COVID-19 measures. *Methods:* Participants completed three different questionnaires from the LISS panel with regards to Health and Gender inequalities in times of the Covid-19 pandemic and answered questions about their mental health and leisure time. Data was analyzed using the Baron and Kenny method for mediation analysis. *Results:* The results provided support for the relation between gender and mental health. Mothers reported a lower mental health than fathers. The results also provided support for a relation between gender and change in leisure time. Mothers were more likely to experience a decrease in leisure time than fathers. However, the results did not provide support for a mediation of leisure time change in the relation between gender and mental health. Finally, results showed a gender difference in effect of leisure time on mental health. *Discussion:* This study found a mental health gap between fathers and mothers during the COVID-19 pandemic, but this gap is not different from the existing gap prior to the pandemic. Leisure time change does not mediate the relation between gender and mental health, which can be explained by the result that leisure time has a different effect on mental health for fathers, compared to mothers. This study suggests that in potential future COVID-19 measures, attention should be paid to the impact of these measures on gender differences in leisure time and mental health. In order not to increase gender differences, but to reduce them.

## Gender Equality in Mental Health During the Covid-19 Pandemic and Leisure Time

At the start of the COVID-19 pandemic, there was hope that it would bring more equality in society, because the virus would not distinguish between rich or poor, young or old and men or women. But recent research showed that men and women are affected by COVID-19 differently (SER, 2021). The gender segregation in the labour market, for example, leads to a difference between men and women in exposure to negative consequences of the pandemic. Of all healthcare workers, 76% is women and because healthcare workers are more exposed to the COVID-19 virus, most infected healthcare workers are also women (71%) (Brakel et al., 2020; European Institute for Gender Equality, n.d.). Women are overrepresented in other essential jobs as well, e.g. education and childcare. These are jobs in which, apart from a higher infection risk, work pressure has increased during the pandemic (Yerkes et al., 2020). In addition, women are overrepresented in sectors that have, more or less, come to a halt due to the COVID-19 measures, e.g. the culture- wellbeing-, and tourism sector (CBS, 2021). This might make women more vulnerable for job loss.

Beyond increased infection risk, increased work pressure and job insecurity, women have to deal with so called ‘time poverty’ (Azcona et al., 2020). During the lockdowns schools and childcare facilities were closed and parents had to adhere to the working-from-home policy, resulting in crowded households. Time spend on paid and unpaid childcare and domestic work had to be rearranged temporarily. Although both men and women reported a significant increase in unpaid care and domestic work during the lockdown, women continued to do most of this work (Azcona et al., 2020). Unequal division of these responsibilities might lead to increased stress, fatigue and impaired health and wellbeing among women. A high share of responsibility for unpaid care and domestic work is also related to insufficient time for leisure and relaxation.

In general, leisure time is important for mental health and a lack of leisure time can therefore contribute to an increased risk of poor health (Eek & Axmon, 2014). During the lockdown, almost half of Dutch parents reported having less leisure time than before, 57% of mothers and 36% of fathers (Yerkes et al., 2020). Mothers could be especially affected by this, because they more often work in essential occupations and are still doing most of the care tasks. According to UN Women (2020), 66% of women reported mental health effects during the pandemic, compared to 58% of men. Mental health is a basic human right and it is crucial to personal, community and socio-economic development (WHO, 2022).

The aim of this study was to investigate if mothers mental health has decreased more than fathers mental health due to inequality in leisure time. This study specifically focussed on parents, because childcare responsibilities have increased during the pandemic due to school closure, which could put extra pressure on parents and could have decreased their leisure time. In the Netherlands there is still gender inequality on different levels, like health (Brakel et al., 2020). It was therefore important to investigate whether or not the pandemic has increased gender inequality in leisure time and mental health. This study increased the scientific knowledge on this subject and will help the government in decision making with regards to future COVID-19 measures.

### **Mental health**

The World Health Organization (WHO, 2018) defines mental health as “a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to the community”. Having a mental disorder does therefore not necessarily mean having impaired mental health and vice versa. Mental disorders include anxiety, depression, schizophrenia, and alcohol and drug dependency (WHO, 2014). According to the WHO (2014) mental health and mental disorders

are shaped by social, economic, and physical environments. Examples of risk factors for poor mental health and mental disorders are: social inequalities, rapid social change, gender discrimination, unhealthy lifestyle (WHO, 2018) and a lack of opportunities (Horwitz, 2010). Examples of protective factors for positive mental health are: social support (Turner & Brown, 2010), purpose to life, cultural values (Horwitz, 2010), egalitarian relationships (Mirowsky & Ross, 2003) and leisure time (Brajša-Žganec, Merkaš, and Šverko, 2011).

According to large-scale epidemiological studies (Kessler, 1993; Kessler, 1994; Kessler et al., 2005) there are no differences overall in men and women's rates of mental disorders. Which suggest that neither gender is worse off (Rosenfield, 2010). However, there are differences between men and women when we look at specific mental disorders. A distinction can be made between internalizing problems (e.g. anxiety and depression), which occurs more often in women, and externalizing problems (e.g. substance abuse and antisocial behaviour), which occurs more often in men (De Graaf, Have, Van Dorsselaer, & Van Dorsselaer, 2010; Rosenfield, 2010). According to Rosenfield (2010), and based on the object relations theory (Chodorow, 1978), gender differences in mental health disorders result from different norms for expressing emotions and gender differences in power, responsibilities and dimensions of the self. Rosenfield states that women still do most of childcare and household tasks compared to men. Even if they make the same hours on paid work as their partner and bring in the same income. This results in an overload of demands on job and family level and raises the level of depression and anxiety, also called the "costs of caring". In addition, men are expected to suppress 'feminine' emotions (e.g. worry and insecurity) which are associated with anxiety and depression. They need to be 'masculine' (assertive, dominant and independent). Therefore, some see substance abuse as a male version of depression. That is their way to deal with their emotions (Rosenfield, 2010).

Several researchers (Pierce et al., 2020; Schafer, Lieberman, Sever, & Joiner, 2022; Twenge & Joiner, 2020) investigated the role of the COVID-19 pandemic on mental health outcomes and found a decrease in mental health during the pandemic. Schafer et al. did this by looking at anxiety, depressive, and eating disorder symptoms before and during COVID-19. They conducted a meta-analysis which included 36 studies. They found statistically significant increased prevalence rates of all these symptoms during COVID-19, compared to pre-COVID times. They looked at region of origin, but their findings indicated that the increase in psychopathology symptoms did not vary by region. This shows that the worldwide mental health has decreased during the COVID-19 pandemic (Schafer et al., 2022).

Van der Velden, Contino, Das, Van Loon, and Bosmans (2020) investigated if the COVID-19 pandemic affected the mental health and emotional support among the general Dutch population, with a prospective national study. As opposed to the three studies above, they did not find indications that mental health problems, e.g. anxiety and depression, increased during the pandemic. Therefore they suggested that the general Dutch population was capable to cope and adjust to the changes caused by the pandemic (Van der Velden, et al., 2020). However, they did not look at specific groups and possible gender differences in mental health.

Dutch researchers (Vloo et al., 2021) used panel data from a large sample of Dutch adults and performed longitudinal research on the subject gender differences in mental health and the impact of the COVID-19 lockdown. Their main variables were depression and anxiety symptoms and disorders and they compared lockdown data with pre-lockdown data. Their results show that women experienced significantly more depression symptoms and disorders than men, which contributes to widening the existing structural gender gap in depression. They explain this by the closure of childcare services due to the lockdown which might have put an extra burden on women. Surprisingly, young men experienced significantly more anxiety

disorders than young women, which decreased the gender gap in anxiety. No explanation is given, but it does show that men and women reacted differently to the lockdown (Vloo et al., 2021).

### **Leisure time**

Leisure time is important for our physical and mental health and can positively influence our subjective well-being (Newman, Tay, & Diener, 2013). Murphy (1974) defines leisure as “that portion of time which remains when time for work and the basic requirements for existence have been satisfied”. Leisure activities can help with recovery and relaxation and can prevent negative health effects caused by stress (Eek & Axmon, 2014). Several studies showed that participation in leisure activities is positively associated with subjective mental health (e.g. Brajša-Žganec et al., 2011; Chatzitheochari & Arber, 2012; Newman et al., 2013). In addition, leisure is found to be negatively associated with depression and anxiety symptoms (Nielsen et al., 2021) and is perceived as a coping mechanism for depression (Nimrod, Kleiber, & Berdychevsky, 2012). In other words, leisure time is highly important for mental health and wellbeing.

Eek & Axmon (2014) investigated gender inequality at home and the association with poorer health for women in Sweden. Leisure time was included in their study. The results indicated that women have more responsibilities for household tasks and that this was associated to insufficient time for leisure activities and relaxation, which in turn may contribute to increased stress and impaired health among women (Eek & Axmon, 2014).

According to Yerkes, Roeters and Baxter (2018) there are gendered differences in quality of leisure due to the unequal division of childcare and household tasks and because mothers are more likely to include their children in their leisure activities. As a consequence of which mothers leisure time is less relaxing than fathers. They investigated this topic with a

cross-national comparison study and found that women's leisure quality is lower in countries with: conservative gender norms, lower levels of childcare support, limited paternity leave and lower political power for women. In countries that scored higher on these factors, leisure quality was more equal, but gendered differences remained (Yerkes et al., 2018).

Yerkes et al. (2020) investigated gender inequality in paid work, division of childcare and household tasks, and quality of life (including leisure time) among parents during the first COVID-19 lockdown in the Netherlands. They used a cross-sectional study design with retrospective items to compare their results. Their results show that leisure activities were significantly impacted by the pandemic and almost half (48%) of Dutch parents experienced less leisure time during the lockdown. For parents with an essential occupation and parents with children in primary school leisure time was reduced more often than for parents without an essential occupation or children in secondary school. Their study indicates that the impact of the lockdown measures on Dutch parents is gendered and some existing gender inequalities increased. Mothers, compared to fathers, adjusted their working times more often, experienced an increase in work pressure, continued to do more childcare and household tasks, and reported a larger decline in leisure time (Yerkes et al., 2020).

However, it was still unclear if this decrease in leisure time during the pandemic, especially among mothers, also caused a decrease in mental health and an increase in gender inequality in mental health. It was important to study the effects of COVID-19 measures on the population and to investigate if existing gender differences were magnified by the pandemic, allowing us to gain more insight into mechanisms that have always been there but are now becoming more visible. In addition, the pandemic is not over yet and a new wave of contamination is expected after the summer holiday with possible new variants of the virus. It was therefore important to know how current measures affected different population groups to



make better informed decisions on measures in the future and to offer more targeted support, specifically to the groups that are affected the most. In this case, for example, by focusing on the leisure time of mothers to unburden them during a lockdown. To my knowledge, no research on this subject had been done. The current study addressed this gap in literature.

This research was conducted in an interdisciplinary and problem-oriented way, with a focus on individual, social and structural levels. Through clinical psychology this study focussed on individual factors that might influence parents mental health (e.g. age and previous mental health). Leisure time is on the individual and social level and is looked at from a psychological and social perspective, because leisure time can help with relaxation, but also with social interactions and relationship building. In addition, there was a focus on gender differences in mental health, which is more on a structural level and is based on stereotypes and traditional gender roles, for example the division of household tasks and child care.

The present study investigated if mothers mental health was lower than fathers during the pandemic and whether this difference between mothers and fathers was mediated by the experienced leisure time change as a result of COVID-19 measures. It was hypothesised that mothers mental health was lower during the pandemic compared to fathers mental health ( $H_1$ ). It was also hypothesised that mothers more often experienced a decrease in leisure time compared to fathers ( $H_2$ ). Finally it was hypothesised that the experienced change in leisure time as a result of COVID-19 measures mediated the gender difference in mental health during the pandemic ( $H_3$ ). The analyses were controlled by the following variables: prior mental health data; age; paid employment; essential occupation; and stress. See figure 1 for the visual representation of the hypotheses.

## **Method**

### **Design**

To answer the research question and to test the hypotheses a longitudinal and correlational research design was applied on data of the LISS (Longitudinal Internet studies for the Social Sciences) panel administered by CentERdata (Tilburg University, The Netherlands). The LISS panel consists of approximately 5,000 households (7,500 individuals) from the Netherlands. The panel is based on a true probability sample drawn from the population register by Statistics Netherlands (Scherpenzeel & Das, 2010). Part of the LISS panel is the LISS Core Study which is a longitudinal study that follows changes in the life course and living conditions of the panel members. The LISS Core Study consists of eight questionnaires that cover eight different themes. For this study the Health module was used, containing 18 different concepts that measure health, health perception and health related to job situation. In addition, the ‘Gender inequalities in times of the Covid-19 pandemic’-survey was used, containing items measuring paid work, division of childcare and household tasks, and quality of life (CentERdata, n.d.).

### **Procedure**

Every year these questionnaires are administered. Apart from the questionnaires used in this study, participants fill in other questionnaires as well, one each month. The administering of the questionnaires is online and takes place at home. It takes approximately 15 – 30 minutes per questionnaire. One member in the household provided the household data and updated this information. Participants were paid 15 euros per hour for each completed questionnaire. Households that could not otherwise participate were provided with a computer and internet connection.

The Health LISS Core Study used double informed consent and data from the LISS panel questionnaires were reported anonymously. The way in which personal data is handled is in accordance with the General Data Protection Regulation (AVG).

### **Data collection and sample**

Data on mental health was extracted from the longitudinal Health module, wave 13 (November 2020,  $N^{\text{invited}} = 6,832$ , response = 84.0%) and was controlled for by data of wave 12 (November 2019,  $N^{\text{invited}} = 5,954$ , response = 86.7%). Controlling for data from pre-COVID time made it possible to investigate the effects of COVID-19 on mental health. Data on leisure was extracted from the longitudinal ‘Gender inequalities in times of the COVID-19 pandemic’-survey, wave 2 (July 2020,  $N^{\text{invited}} = 1,602$ , response = 76.7%). After combining data of the three waves and excluding all respondents who did not participate in all three waves ( $N = 5,675$ ), a net sample of  $N = 838$  remained. The net sample consisted of 483 parents (57.6%) and 355 non-parents (42.4%). In the current study the influence of the pandemic on parents mental health is examined, therefore only parents were included.

### **Materials**

**Mental health.** Mental health was assessed in the Health module, using the Mental Health Inventory (5-item subscale of the SF-36, a short-form health survey) which specifically assessed anxiety and depression symptoms (Ware & Sherbourne, 1992). This scale consisted of five items (ch20m011 – ch20m015) that were answered on a 6-point Likert scale ranging from 0 (never) to 5 (continuously). Participants were asked “This past month ...” followed by, for example, “I felt calm and peaceful”. Negative formulated items were recoded and total scores were multiplied by 4. Therefore, participants could score between 0 and 100. With a score of 60 or more, a participant was qualified as mentally healthy and with a score below 60 as mentally unhealthy.

**Leisure time.** One question (qh20a050) from the ‘Gender inequalities in times of the COVID-19 pandemic’-survey was used to measure the experienced impact of COVID-19 measures on leisure time. Participants were asked “How much time did you have for yourself (leisure time) in the month of June, compared to the situation prior to the corona crisis?”. This question was answered on a 6-point Likert scale. However, only participants who filled in the question with 1 until 5 were included in the study, 1 (I had much less time for myself ..) to 5 (I had much more time for myself..), because 6 (Not applicable) was filled in by participants who were on holiday during the month June and could therefore not be included in this study. Given the skewed distribution of these data, these five categories were recoded into two categories: less leisure time (a combination of much less and slightly less leisure time); and no change/ more leisure time (a combination of no change, slightly more and much more leisure time).

### **Data analysis approaches**

The data from the different questionnaires were merged into one dataset and opened in the SPSS Statistics 28 program. Two scale variables were constructed based on the Mental Health Inventory items: (1) the mental health during COVID-19 scale (MHI\_20), which scored a Cronbach’s alpha of 0.88, and (2) the mental health prior to COVID-19 scale (MHI\_19), which scored a Cronbach’s alpha of 0.87. Dummy variables were created for gender, paid employment, essential occupation and leisure time. The assumptions linearity and homoscedasticity were tested with a plot of standardized residuals against predicted values, normality was tested with a histogram, multicollinearity with the Collinearity Statistics (VIF and Tolerance), and outliers were controlled for with histograms and boxplots.

All hypotheses were answered with the Baron and Kenny method for mediation analysis (Baron & Kenny, 1986). See Figure 2 for the visual diagram of the mediation model. For

hypothesis one a simple linear regression with bootstrapped analysis was used to investigate if mothers (independent variable) had a lower score on mental health during the pandemic (dependent variable), compared to fathers. For hypothesis two a binary logistic regression analysis was used to investigate if mothers (independent variable) more often experienced a decrease in leisure time during the pandemic (dependent variable), compared to fathers. For hypothesis three a multiple linear regression with bootstrapped analysis was used to investigate if experienced change in leisure time (mediator variable) mediated the gender difference (independent variable) in mental health during the pandemic (dependent variable). During this analysis the following confounding variables were added to control the correlation: age; mental health prior to COVID-19 scale; paid employment; essential occupation; and the amount of daily stress in June 2020.

### Results

The sample of this study ( $N=483$ ) consists of 266 mothers (55.1%) and 217 fathers (44.9%) from separate households. Table 1 shows that women reported a significantly higher score on the experienced stress in June ( $t(472) = -2.19, p = .014$ ) and a significantly lower score on mental health before COVID-19 ( $t(481) = 2.00, p = .023$ ) and during COVID-19 ( $t(481) = 2.75, p = .003$ ), compared to men. Table 2 shows that 48,9% of the women experienced less leisure time, compared to 25,3% of men. Further, it shows that women less often have a paid employment than men (72,9% vs 88,0%) and that women more often work in an essential occupation (52,7% vs 33,5%). Table 3 shows Pearson correlations between all studied variables, including the confounding variables that will be controlled for. In general, all variables have a significant correlation with gender. Leisure time change was significantly correlated with all variables except paid employment. Mental health during COVID-19 was significantly correlated with all variables except essential occupation.

The following three hypotheses were examined using the Baron and Kenny method for mediation analysis (Baron & Kenny, 1986): *Mothers have a lower score on mental health during the COVID-19 pandemic compared to fathers ( $H_1$ )*, *Mothers more often experience a decrease in leisure time during the pandemic compared to fathers ( $H_2$ )* and *Change in experienced leisure time as a result of the COVID-19 pandemic mediates the gender difference in mental health during COVID-19 ( $H_3$ )*.

Step 1: Effect of gender on mental health. A simple linear regression with bootstrap analysis was conducted. The assumption of normality was violated, the mental health scale variable was not normally distributed for males and females. Therefore, a bootstrapped analysis was used. The analysis showed that gender had a significant effect on mental health,  $F(1, 481) = 7.57, p = .006, R^2 = .02, R^2_{\text{adjusted}} = .01$ . The regression coefficient,  $B = -3.93, p = .006$ , BCa 95% CI [-7.10, -0.41], indicates that mothers, on average, scored 3.93 points lower on mental health than fathers and therefore confirms hypothesis 1.

Step 2: Effect of gender on leisure time change. A binary logistic regression analysis was used to examine whether gender was associated with the likelihood of having less leisure time during the pandemic. An inspection of standardised residual values revealed that no outliers were found. No violations of the assumptions were found. The model was statistically significant,  $X^2(1, N = 483) = 28.59, p < .001$ , suggesting that gender could distinguish between those with and without less leisure time during the pandemic. The model explained between 5.7% (Cox & Snell R square) and 7.8% (Nagelkerke R square) of the variance in the dependent variable and correctly classified 61.7% of cases. Gender significantly contributed to the model (see Table 4). The gender odds ratio suggest that mothers were 2.82 times more likely to experience less leisure time during the pandemic than fathers. This confirms hypothesis 2.

Step 3: Effect of gender and leisure time change on mental health. A multiple linear regression with bootstrap analysis was conducted with gender and leisure time change as predictors of mental health. In addition, several confounding variables were added to the analysis (see Table 5). No violations of the assumptions were found. Model 2 did show a significant effect on mental health,  $F(7, 414) = 40.81, p < .001, R^2 = .41, R^2_{\text{adjusted}} = .40$ . Looking at the predictors, results showed that gender and leisure time change both did not significantly predict mental health. Therefore, leisure time change is no significant mediator in the relation between gender and mental health, which contradicts hypothesis 3. See Figure 3 for the mediation model. In addition, stress in June, paid employment and mental health prior to the pandemic did (marginally) significantly predict mental health during the pandemic. Parents with a higher level of stress scored 1.25 points lower; parents without a paid employment scored 3.26 points lower; and parents with a lower mental health score prior to the pandemic scored 2.07 points lower on mental health during the pandemic.

Two separate multiple linear bootstrapped regression analyses were conducted to explore whether there is a gender difference in the effect of leisure time on mental health. Men showed a significant effect of leisure time,  $B = 3.79, p = .013, 95\% \text{ CI } [0.39, 7.23]$ , which suggests that men's mental health increased when their leisure time decreased (see Table 6). Women did not show a significant effect of leisure time on mental health,  $B = -0.18, p = .470, 95\% \text{ CI } [-4.69, 4.39]$  (see Table 7).

### Discussion

This study aimed to investigate if mothers mental health is lower during the pandemic than fathers, and whether this difference between mothers and fathers is mediated by the experienced leisure time change as a result of COVID-19 measures.

In line with the expectations of hypothesis 1 and the research of Vloo et al. (2021), the results of this study show that mothers have a lower mental health during the COVID-19 pandemic, than fathers. Secondly, mothers are more likely to experience a decrease in leisure time than fathers, which is in line with the expectations of hypothesis 2 and the research of Yerkes et al. (2020). In addition, results show that less leisure time correlates with lower mental health, which is in accordance with Nielsen et al. (2021). However, the results do not support the expectation that leisure time is a mediator in the relation between gender and mental health, which was expected in hypothesis 3. After adding the confounding variables in the model (e.g. mental health prior to the pandemic, paid employment and stress), which significantly correlate with mental health, leisure time and gender are no longer significant predictors. This could mean that those confounding variables are more strongly related to mental health and that they decrease the effect that leisure time and gender have. Zhou, MacGeorge and Myrick (2020) came to a similar conclusion in their research on mental health and its predictors during the COVID-19 pandemic. They found that the strongest and most consistent effect on mental health came from pre-existing health conditions. It is therefore not surprising that in the current study the effects of gender and leisure time disappear as soon as prior mental health data is added to the analysis. The fact that the relation between gender and mental health disappears after the confounding variables are added does not mean that there is no difference in mental health between fathers and mothers. It means that the gender gap in mental health does not significantly change during the COVID-19 pandemic. So, according to the results the pandemic has no effect on the gender gap in mental health. This is the opposite result of what Vloo et al. (2021) found. Their results showed an increasing gender gap in mental health.

A surprising result in this study is that leisure time seems to have a different effect on mental health of fathers than on mothers. Fathers who experienced a decrease in leisure time



report, on average, an increase in mental health, while mothers who experienced a decrease in leisure time report, on average, a decrease in mental health. However, this result of mothers is not significant, which might be explained by the research of Yerkes et al. (2018) who found that there is a gender difference in leisure time quality. Women have a lower quality of leisure time than men because they more often multitask during their leisure time and include their children in their leisure time activities, while men focus more on themselves during their leisure time. This difference might explain why mothers leisure time is less relaxing and therefore an increase or a decrease in leisure time does not affect mental health of mothers that much. The difference found in effect of leisure time on mental health between fathers and mothers might be the reason that no mediation effect is found in this study.

This study has notable strengths including the large sample size, which is representative for the Dutch population of parents, the longitudinal study design with pre-covid control variables and the validated questionnaire of the LISS panel, which increases the internal validity. However, this study has limitations that should also be noted. First, the health questionnaire and the gender inequity in times of Covid-19 questionnaire were not conducted at the same time. The gender inequity in times of Covid-19 questionnaire took place in June 2020 while the health questionnaire took place in November 2020. So, there are three months between the measurement of leisure time changes and the mental health measurement of parents, in which situations could have changed. This might decrease the internal validity of this study. Secondly, there are two limitations with regards to the leisure time variable. Leisure time change was measured as a cross-sectional retrospective item instead of a longitudinal item, meaning that participants had to think back to their leisure time situation prior to the pandemic. This is more difficult for participants and can cause bias, which might decrease the internal validity. In addition, leisure time is computed as a dichotomous variable, which is less valid

compared to a scale variable, because it measures less precisely. In this case the answer options ‘no change’ and ‘more leisure time’ are put together. Finally, with regards to the external validity of this study, it is unclear to what extent the results of this study can be generalized to other countries, due to the possible different COVID-19 measures and different individual-level consequences.

Although this study did not provide support for an increasing gender gap in mental health, it did show that women still have a lower mental health than men. In addition, results showed that mothers more often experienced a decrease in leisure time than fathers. To increase gender equality, policy should focus more on these two themes. This is especially important because the pandemic is still going on and new COVID-19 measures are expected in the fall. Therefore politicians and policy makers need to be aware of the existing gender differences and consciously respond to them by paying extra attention to mental health of mothers and by ensuring that measures will not affect their leisure time.

The results of this study offer several possibilities for future research. It would be interesting to further investigate the found difference in effect of leisure time on mental health between men and women, since this was an unexpected result. In addition, stress turned out to be a significant predictor of mental health during the pandemic. Future research could investigate whether or not there are gender differences in stress that might cause a difference in mental health. Finally, it would be interesting to investigate the quality of leisure time of parents, instead of the quantity. Perhaps the gender difference in quality of leisure, which there is according to Yerkes et al. (2018), might be a mediating factor in the gender difference in mental health during the pandemic. This study concludes that in potential future COVID-19 measures, attention should be paid to the impact of these measures on gender differences in leisure time and mental health. In order not to increase gender differences, but to reduce them.

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Table 1

*Descriptive Statistics of Interval Variables (N=474)*

Variable	Min.	Max.	Fathers <sup>a</sup>	Mothers <sup>b</sup>	Total
			<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Age	25	62	45.70 (7.23)	43.20 (7.00)**	44.32 (7.21)
Stress in June 2020	0	10	4.07 (2.64)	4.60 (2.59)*	4.36 (2.62)
MH before COVID-19	12	100	75.06 (15.03)	72.23 (15.81)*	73.50 (15.52)
MH during COVID-19	8	100	76.57 (15.18)	72.65 (15.92)**	74.41 (15.70)

*Note.* MH = Mental Health.<sup>a</sup>*n* = 214. <sup>b</sup>*n* = 260.\* *p* < .05. \*\* *p* < .01.

Table 2

*Descriptive Statistics of Dichotomous Variables (N=483)*

Variable	Item	Fathers <sup>a</sup>		Mothers <sup>b</sup>		Total	
		<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Leisure time change	No change/ more time	162	74.7	136	51.1	298	61.7
	Less time	55	25.3	130	48.9	185	38.3
Paid employment	Yes	191	88.0	194	72.9	385	79.7
	No	26	12.0	72	27.1	98	20.3
Essential occupation	Yes	70	33.5	117	52.7	187	43.4
	No	139	66.5	105	47.3	244	56.6

*Note.* <sup>a</sup>*n* = 217. <sup>b</sup>*n* = 266.

Table 3

*Pearson Correlation of All Studied Variables, Including the Control Variables (N=483)*

Variables	1	2	3	4	5	6	7	8
1. Gender	1	-.17**	-.19**	-.19**	.24**	.10*	-.12**	-.09*
2. Age	-.17**	1	-.08*	.25**	-.12**	-.11**	.01*	.07
3. Paid employment	-.19**	-.08*	1	-.14**	-.01	.04	.12**	.06
4. Essential occupation	-.19**	.25**	-.14**	1	-.16**	-.06	.02	.05
5. Leisure time change	.24**	-.12**	-.01	-.16**	1	.35**	-.08*	-.09*
6. Stress in June 2020	.10*	-.11**	.04	-.06	.35**	1	-.40**	-.36**
7. MH during COVID	-.12**	.10*	.12**	.02	-.08*	-.40**	1	.64**
8. MH before COVID	-.09*	.07	.06	.05	-.09*	-.36**	.64**	1

*Note.* MH = Mental health.\*  $p < .05$ . \*\*  $p < .01$ . (one-tailed).

Table 4

*Logistic Regression Predicting the Likelihood of Less Leisure Time During the Pandemic*

	<i>B</i>	<i>SE</i>	Wald	<i>df</i>	<i>P</i>	<i>OR</i>	95% CI <i>OR</i>	
							<i>LL</i>	<i>UL</i>
Gender	1.04	0.20	27.20	1	< .001	2.82	1.91	4.15
Constant	-1.08	0.16	47.92	1	< .001	0.34		

Table 5

*Linear Model of Predictors of Mental Health During COVID-19. 95% Bias Corrected and Accelerated Confidence Intervals Reported in Square Brackets. Confidence Intervals and Standard Errors Based on 1000 Bootstrap Samples.*

	<i>b</i>	<i>SE B</i>	$\beta$	<i>p</i>
Model 1				
Gender	-2.95 [-5.59, -0.27]	1.42	-.03	.019
Leisure time	-2.19 [-5.32, 0.96]	1.49	.07	.069
Model 2				
Gender	-1.51 [-3.72, 0.60]	1.20	-.07	.107
Leisure time	1.54 [-1.87, 4.60]	1.42	.09	.140
Age	0.04 [-0.10, 0.19]	0.08	.00	.326
Paid employment	3.26 [-0.06, 6.83]	1.72	.06	.052
Essential occupation	-0.58 [-2.77, 1.54]	1.14	-.06	.315
Stress in June 2020	-1.25 [-1.76, -0.71]	0.28	.00	< .001
MH before COVID-19	2.07 [1.72, 2.47]	0.20	.01	< .001

*Note.*  $R^2 = .02$  for model 1;  $\Delta R^2 = .39$  for model 2.

Table 6

*Linear Model of Predictors of Mental Health for Men. 95% Bias Corrected and Accelerated Confidence Intervals Reported in Square Brackets. Confidence Intervals and Standard Errors Based on 1000 Bootstrap Samples.*

	<i>b</i>	<i>SE B</i>	<i>β</i>	<i>p</i>
Model 1				
Leisure time	0.001	2.02	.05	.500
	[-4.44, 4.22]			
Model 2				
Leisure time	3.79	1.66	-.001	.013
	[0.39, 7.23]			
Age	-0.005	0.09	.002	.470
	[-0.19, 0.17]			
Paid employment	2.25	2.71	-.02	.198
	[-2.56, 7.63]			
Essential occupation	0.43	1.51	-.03	.385
	[-2.42, 3.40]			
Stress in June 2020	-1.03	0.37	.000	.006
	[-1.76, -0.28]			
MH before COVID-19	2.46	0.29	-.003	< .001
	[1.92, 3.03]			

*Note.*  $R^2 = .00$  for model 1;  $\Delta R^2 = .51$  for model 2.

Table 7

*Linear Model of Predictors of Mental Health for Women. 95% Bias Corrected and Accelerated Confidence Intervals Reported in Square Brackets. Confidence Intervals and Standard Errors Based on 1000 Bootstrap Samples.*

	<i>b</i>	<i>SE B</i>	<i>β</i>	<i>p</i>
Model 1				
Leisure time	-3.81	2.10	.16	.038
	[-7.74, 0.85]			
Model 2				
Leisure time	-0.18	2.15	.12	.470
	[-4.69, 4.39]			
Age	0.07	0.12	.000	.259
	[-0.15, 0.30]			
Paid employment	4.13	2.28	-.06	.038
	[-0.14, 8.71]			
Essential occupation	-1.49	1.64	-.15	.187
	[-4.54, 1.38]			
Stress in June 2020	-1.33	0.45	.002	.002
	[-2.15, -0.44]			
MH before COVID-19	1.82	0.27	.003	< .001
	[1.34, 2.33]			

*Note.*  $R^2 = .02$  for model 1;  $\Delta R^2 = .31$  for model 2.

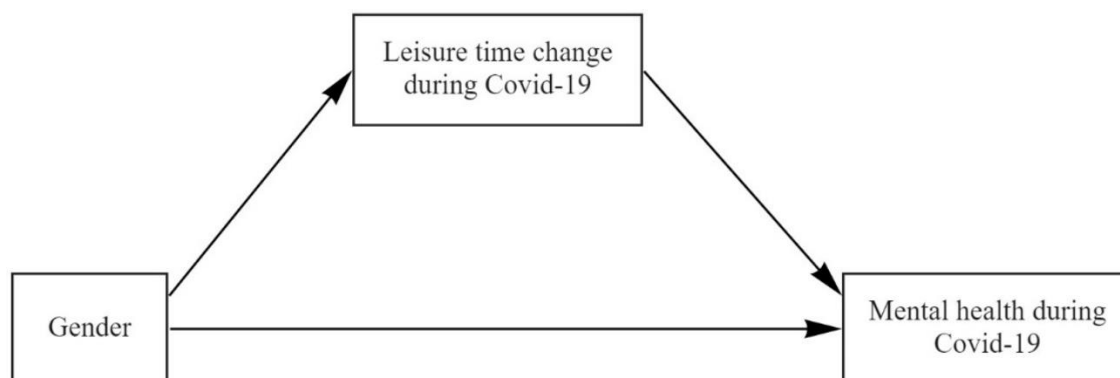
Figure Captions

*Figure 1.* Main research question and hypotheses.

*Figure 2.* Diagram of simple mediation model with statistical controls.

*Figure 3.* Mediation model of gender as a predictor of mental health, mediated by leisure time change.





*Figure 1.* Main research question and hypotheses.

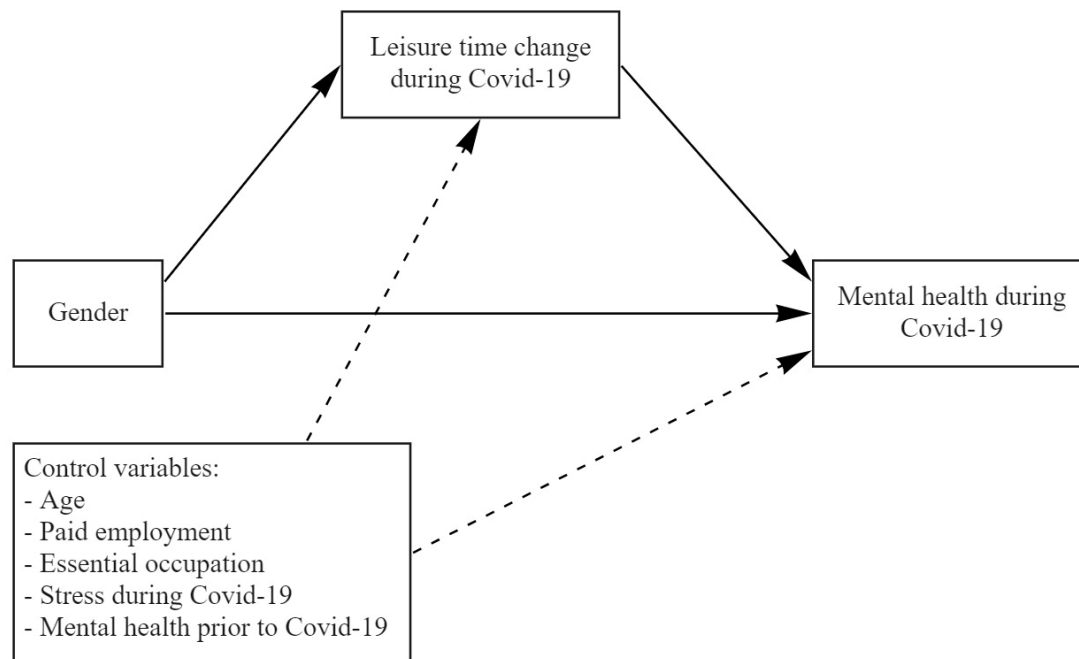
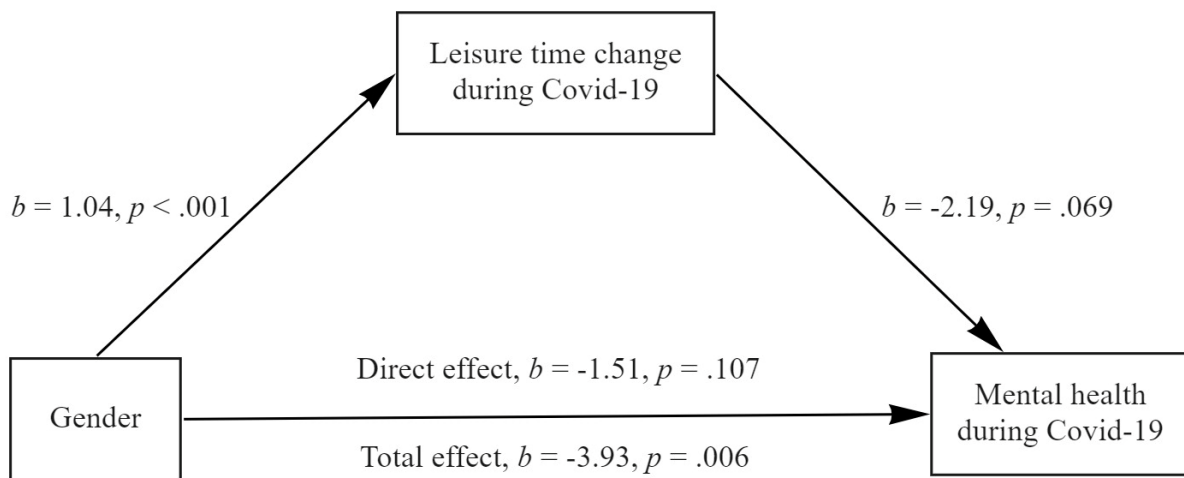


Figure 2. Diagram of simple mediation model with statistical controls.



*Figure 3.* Mediation model of gender as a predictor of mental health, mediated by leisure time change.

## Appendices

### Appendix 1 – Instruments

#### LISS Panel – Health – Wave 13

Questionnaire: [Data Archive | ControlConstructSchemes \(lissdata.nl\)](#)

Used questions: ch011-ch015 (Mental Health Inventory items)

#### LISS Panel – Health – Wave 12

Questionnaire: [Data Archive | ControlConstructSchemes \(lissdata.nl\)](#)

Used questions: ch011-ch015 (Mental Health Inventory items)

#### LISS Panel – Gender inequalities in times of the COVID-19 pandemic – Wave 2

Questionnaire: [Data Archive | ControlConstructSchemes \(lissdata.nl\)](#)

Used question: qh050 (leisure time), qh006 (paid employment), qh008 (essential occupation), qh104 (stress in June 2020).

## Appendix 2 – Data analysis syntax

```

1  * Encoding: UTF-8.
2  * opening raw dataset.
3  GET
4  FILE='C:\Users\lamely\OneDrive\Documenten\Amely\Master SPPH\Master Thesis\SPSS\Data '+
5  'package\Leisure_Covid-19.sav'.
6
7  * work in copy of raw data: save under new name.
8  SAVE OUTFILE='C:\Users\lamely\OneDrive\Documenten\Amely\Master SPPH\Master Thesis\SPSS\Data package\Leisure_Covid-19_1.sav'
9  /COMPRESSED.
10
11 * reverse negatively formulated mental health variables.
12 DATASET ACTIVATE DataSet1.
13 RECODE mental_health_1_19 mental_health_2_19 mental_health_4_19 mental_health_1_20
14 mental_health_2_20 mental_health_4_20 (1=6) (2=5) (3=4) (4=3) (5=2) (6=1).
15 EXECUTE.
16
17 * adjust value labels mental health variables due to reversalment.
18 VALUE LABELS mental_health_1_19 1 'continuously' 2 'mostly' 3 'often' 4 'sometimes' 5 'seldom' 6 'never'.
19 VALUE LABELS mental_health_2_19 1 'continuously' 2 'mostly' 3 'often' 4 'sometimes' 5 'seldom' 6 'never'.
20 VALUE LABELS mental_health_4_19 1 'continuously' 2 'mostly' 3 'often' 4 'sometimes' 5 'seldom' 6 'never'.
21 VALUE LABELS mental_health_1_20 1 'continuously' 2 'mostly' 3 'often' 4 'sometimes' 5 'seldom' 6 'never'.
22 VALUE LABELS mental_health_2_20 1 'continuously' 2 'mostly' 3 'often' 4 'sometimes' 5 'seldom' 6 'never'.
23 VALUE LABELS mental_health_4_20 1 'continuously' 2 'mostly' 3 'often' 4 'sometimes' 5 'seldom' 6 'never'.
24
25 * recode mental health items in order to create correct MHI_19 variable.
26 DATASET ACTIVATE DataSet1.
27 RECODE mental_health_1_19 (1=0) (2=1) (3=2) (4=3) (5=4) (6=5) INTO MHI_1_19.
28 EXECUTE.
29 DATASET ACTIVATE DataSet1.
30 RECODE mental_health_2_19 (1=0) (2=1) (3=2) (4=3) (5=4) (6=5) INTO MHI_2_19.
31 EXECUTE.
32 DATASET ACTIVATE DataSet1.
33 RECODE mental_health_3_19 (1=0) (2=1) (3=2) (4=3) (5=4) (6=5) INTO MHI_3_19.
34 EXECUTE.
35 DATASET ACTIVATE DataSet1.
36 RECODE mental_health_4_19 (1=0) (2=1) (3=2) (4=3) (5=4) (6=5) INTO MHI_4_19.
37 EXECUTE.
38 DATASET ACTIVATE DataSet1.
39 RECODE mental_health_5_19 (1=0) (2=1) (3=2) (4=3) (5=4) (6=5) INTO MHI_5_19.
40 EXECUTE.
41
42 * recode mental health items in order to create correct MHI_20 variable.
43 DATASET ACTIVATE DataSet1.
44 RECODE mental_health_1_20 (1=0) (2=1) (3=2) (4=3) (5=4) (6=5) INTO MHI_1_20.
45 EXECUTE.
46 DATASET ACTIVATE DataSet1.
47 RECODE mental_health_2_20 (1=0) (2=1) (3=2) (4=3) (5=4) (6=5) INTO MHI_2_20.
48 EXECUTE.
49 DATASET ACTIVATE DataSet1.
50 RECODE mental_health_3_20 (1=0) (2=1) (3=2) (4=3) (5=4) (6=5) INTO MHI_3_20.
51 EXECUTE.
52 DATASET ACTIVATE DataSet1.
53 RECODE mental_health_4_20 (1=0) (2=1) (3=2) (4=3) (5=4) (6=5) INTO MHI_4_20.
54 EXECUTE.
55 DATASET ACTIVATE DataSet1.
56 RECODE mental_health_5_20 (1=0) (2=1) (3=2) (4=3) (5=4) (6=5) INTO MHI_5_20.
57 EXECUTE.
58
59 *reliability test mental health 2019 scale.
60 RELIABILITY
61 /VARIABLES=MHI_1_19 MHI_2_19 MHI_3_19 MHI_4_19 MHI_5_19
62 /SCALE('ALL VARIABLES') ALL
63 /MODEL=ALPHA
64 /STATISTICS=DESCRIPTIVE SCALE
65 /SUMMARY=TOTAL.
66
67 * Create MHI_19 variable.
68 COMPUTE MHI_19=(MHI_1_19 + MHI_2_19 + MHI_3_19 + MHI_4_19 + MHI_5_19) * 4.
69 EXECUTE.
70

```

```

71 * reliability test mental health 2020 scale.
72 RELIABILITY
73 /VARIABLES=MHI_1_20 MHI_2_20 MHI_3_20 MHI_4_20 MHI_5_20
74 /SCALE(ALL VARIABLES) ALL
75 /MODEL=ALPHA
76 /STATISTICS=DESCRIPTIVE SCALE
77 /SUMMARY=TOTAL.
78
79 * Create MHI_20 variable.
80 COMPUTE MHI_20=(MHI_1_20 + MHI_2_20 + MHI_3_20 + MHI_4_20 + MHI_5_20) * 4.
81 EXECUTE.
82
83 * Changing '6 not applicable' answer in variable leisure_diff to missings.
84 DATASET ACTIVATE DataSet1.
85 RECODE leisure_diff (6=SYSMIS).
86 EXECUTE.
87
88 * Gender_2020 as dummy variable.
89 RECODE gender_2020 (1=0) (2=1).
90 EXECUTE.
91 VALUE LABELS gender_2020 0 'male' 1 'female'.
92
93 * Es_occ_J as dummy variable.
94 RECODE es_occ_J (1=0) (2=1).
95 EXECUTE.
96
97 * creating dummy variable for leisure difference: less leisure time (1) and all other answers (0).
98 DATASET ACTIVATE DataSet1.
99 RECODE leis_dif (1=1) (2=1) (ELSE=0) INTO D_leis_c.
100 VARIABLE LABELS D_leis_c 'Less leisure time'.
101 EXECUTE.
102
103 * Deleting all non-parent respondents.
104 * Deleted all participants who did not participate in all three waves: wave_2, wave_12, wave_13.
105 * Deleted all participants who did not answer the following question variables: gender20, D_leis_c, MHI_19, MHI_20.
106
107 * Descriptive statistics for table 1.
108 SORT CASES BY gender20.
109 SPLIT FILE SEPARATE BY gender20.
110 DESCRIPTIVES VARIABLES=age_2020 stress_J MHI_19 MHI_20
111 /STATISTICS=MEAN STDDEV MIN MAX.
112 SPLIT FILE OFF.
113 DESCRIPTIVES VARIABLES=age_2020 stress_J MHI_19 MHI_20
114 /STATISTICS=MEAN STDDEV MIN MAX.
115 T-TEST GROUPS=gender20(0 1)
116 /MISSING=ANALYSIS
117 /VARIABLES=age_2020 stress_J MHI_19 MHI_20
118 /ES DISPLAY(TRUE)
119 /CRITERIA=CI(.95).
120
121 * Descriptive statistics dichotomous variables for table 2.
122 SORT CASES BY gender20.
123 SPLIT FILE SEPARATE BY gender20.
124 FREQUENCIES VARIABLES=D_leis_c paid_emp es_occ_J
125 /NTILES=4
126 /STATISTICS=MEAN
127 /ORDER=VARIABLE.
128 SPLIT FILE OFF.
129 FREQUENCIES VARIABLES=D_leis_c paid_emp es_occ_J
130 /NTILES=4
131 /STATISTICS=MEAN
132 /ORDER=VARIABLE.
133
134 * Correlations for table 3.
135 CORRELATIONS
136 /VARIABLES=gender20 age_2020 paid_emp es_occ_J D_leis_c stress_J MHI_19 MHI_20
137 /PRINT=ONETAIL NOSIG FULL
138 /STATISTICS DESCRIPTIVES
139 /MISSING=PAIRWISE.
140
141

```

```

142 STEP 1: without control variables.
143
144 *Step 1: H1: spotting normality for MHI_20 by gender: histogram.
145 GRAPH
146 /HISTOGRAM(NORMAL)=MHI_20
147 /PANEL COLVAR=gender20 COLOP=CROSS.
148
149 * Step 1: H1: spotting homoscedasticity for MHI_20 by gender: scatterplot.
150 REGRESSION
151 /MISSING LISTWISE
152 /STATISTICS COEFF OUTS R ANOVA
153 /CRITERIA=PIN(.05) POUT(.10)
154 /NOORIGIN
155 /DEPENDENT MHI_20
156 /METHOD=ENTER gender20
157 /SCATTERPLOT=(*ZRESID ,*ZPRED)
158 /RESIDUALS HISTOGRAM(ZRESID) NORMPROB(ZRESID).
159
160 * Step 1 mediation by Baron & Kenny: Simple Linear Bootstrapped Regression: Gender and Mental Health.
161 BOOTSTRAP
162 /SAMPLING METHOD=SIMPLE
163 /VARIABLES TARGET=MHI_20 INPUT= gender20
164 /CRITERIA CILEVEL=95 CTYPE=BCA NSAMPLES=1000
165 /MISSING USERMISSING=EXCLUDE.
166 REGRESSION
167 /MISSING LISTWISE
168 /STATISTICS COEFF OUTS R ANOVA
169 /CRITERIA=PIN(.05) POUT(.10)
170 /NOORIGIN
171 /DEPENDENT MHI_20
172 /METHOD=ENTER gender20
173 /SCATTERPLOT=(*ZRESID ,*ZPRED).
174
175
176 STEP 1: with control variables.
177 * Step 1: spotting normality, homoscedasticity and multicollinearity for MHI_20, while control variables are included: histogram, scatterplot
178 and collinearity statistics.
179 REGRESSION
180 /MISSING LISTWISE
181 /STATISTICS COEFF OUTS R ANOVA COLLIN TOL CHANGE
182 /CRITERIA=PIN(.05) POUT(.10)
183 /NOORIGIN
184 /DEPENDENT MHI_20
185 /METHOD=ENTER gender20
186 /METHOD=ENTER age_2020 paid_emp es_occ_J stress_J Tot_MH19
187 /SCATTERPLOT=(*ZRESID ,*ZPRED) (*ZRESID ,*ZPRED)
188 /RESIDUALS HISTOGRAM(ZRESID) NORMPROB(ZRESID).
189
190
191 * Step 1 mediation by Baron & Kenny: Multiple Linear Bootstrapped Regression: Gender and Mental Health (including control variables).
192 BOOTSTRAP
193 /SAMPLING METHOD=SIMPLE
194 /VARIABLES TARGET=MHI_20 INPUT= gender20 age_2020 paid_emp es_occ_J stress_J Tot_MH19
195 /CRITERIA CILEVEL=95 CTYPE=BCA NSAMPLES=1000
196 /MISSING USERMISSING=EXCLUDE.
197 REGRESSION
198 /MISSING LISTWISE
199 /STATISTICS COEFF OUTS R ANOVA CHANGE
200 /CRITERIA=PIN(.05) POUT(.10)
201 /NOORIGIN
202 /DEPENDENT MHI_20
203 /METHOD=ENTER gender20
204 /METHOD=ENTER age_2020 paid_emp es_occ_J stress_J Tot_MH19
205 /SCATTERPLOT=(*ZRESID ,*ZPRED).
206

```

```

207 STEP 2: without control variables.
208
209 * Step 2 mediation by Baron & Kenny: Binary Logistic Regression: Gender and Leisure time change.
210 LOGISTIC REGRESSION VARIABLES D_leis_c
211 /METHOD=ENTER gender20
212 /CONTRAST (gender20)=Indicator(1)
213 /CLASSPLOT
214 /CASEWISE OUTLIER(2)
215 /PRINT=GOODFIT CI(95)
216 /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).
217
218
219 STEP 2: with control variables.
220
221 * Assumptions: linearity.
222 COMPUTE LnAge=LN(age_2020).
223 VARIABLE LABELS LnAge 'Ln(Age)'.
224 EXECUTE.
225
226 LOGISTIC REGRESSION VARIABLES D_leis_c
227 /METHOD=ENTER gender20 age_2020 paid_emp es_occ_J LnAge*age_2020
228 /CONTRAST (gender20)=Indicator(1)
229 /CONTRAST (paid_emp)=Indicator(1)
230 /CONTRAST (es_occ_J)=Indicator(1)
231 /CLASSPLOT
232 /CASEWISE OUTLIER(2)
233 /PRINT=GOODFIT CI(95)
234 /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).
235
236 * Assumptions: multicollinearity.
237 REGRESSION
238 /MISSING LISTWISE
239 /STATISTICS COLLIN TOL
240 /CRITERIA=PIN(.05) POUT(.10)
241 /NOORIGIN
242 /DEPENDENT D_leis_c
243 /METHOD=ENTER gender20 age_2020 paid_emp es_occ_J.
244
245 * Step 2 mediation by Baron & Kenny: Binary Logistic Regression: Gender and Leisure time change (Including control variables).
246 LOGISTIC REGRESSION VARIABLES D_leis_c
247 /METHOD=ENTER gender20
248 /METHOD=ENTER age_2020 paid_emp es_occ_J
249 /CONTRAST (gender20)=Indicator(1)
250 /CONTRAST (paid_emp)=Indicator(1)
251 /CONTRAST (es_occ_J)=Indicator(1)
252 /CLASSPLOT
253 /CASEWISE OUTLIER(2)
254 /PRINT=GOODFIT CI(95)
255 /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).
256
257
258 STEP 3: without control variables.
259
260 * Assumptions: linearity, homoscedasticity, normality and multicollinearity.
261 SORT CASES BY gender20.
262 SPLIT FILE LAYERED BY gender20.
263 REGRESSION
264 /MISSING LISTWISE
265 /STATISTICS COEFF OUTS R ANOVA COLLIN TOL
266 /CRITERIA=PIN(.05) POUT(.10)
267 /NOORIGIN
268 /DEPENDENT MHI_20
269 /METHOD=ENTER D_leis_c
270 /SCATTERPLOT=(*ZRESID ,*ZPRED)
271 /RESIDUALS DURBIN HISTOGRAM(ZRESID) NORMPROB(ZRESID).
272 SPLIT FILE OFF.
273

```



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274 * Step 3 mediation by Baron & Kenny: Multiple Linear Bootstrapped Regression: Gender, Leisure time change and Mental health.
275 BOOTSTRAP
276 /SAMPLING METHOD=SIMPLE
277 /VARIABLES TARGET=MHI_20 INPUT= gender20 D_leis_c
278 /CRITERIA CILEVEL=95 CITYPE=PERCENTILE NSAMPLES=1000
279 /MISSING USERMISSING=EXCLUDE.
280 REGRESSION
281 /MISSING LISTWISE
282 /STATISTICS COEFF OUTS R ANOVA
283 /CRITERIA=PIN(.05) POUT(.10)
284 /NOORIGIN
285 /DEPENDENT MHI_20
286 /METHOD=ENTER gender20 D_leis_c
287 /SCATTERPLOT=(*ZRESID ,*ZPRED).
288
289 STEP 3: with control variables.
290
291 * Assumptions: linearity, homoscedasticity, normality and multicollinearity.
292 SORT CASES BY gender20.
293 SPLIT FILE LAYERED BY gender20.
294 REGRESSION
295 /MISSING LISTWISE
296 /STATISTICS COEFF OUTS R ANOVA COLLIN TOL
297 /CRITERIA=PIN(.05) POUT(.10)
298 /NOORIGIN
299 /DEPENDENT MHI_20
300 /METHOD=ENTER D_leis_c paid_emp es_occ_J stress_J MHI_19 age_2020
301 /SCATTERPLOT=(*ZRESID ,*ZPRED)
302 /RESIDUALS DURBIN HISTOGRAM(ZRESID) NORMPROB(ZRESID).
303 SPLIT FILE OFF.
304
305 * Step 3 mediation by Baron & Kenny: Multiple Linear Bootstrapped Regression: Gender, Leisure time change and Mental health
306 (Including control variables).
307 DATASET ACTIVATE DataSet1.
308 BOOTSTRAP
309 /SAMPLING METHOD=SIMPLE
310 /VARIABLES TARGET=MHI_20 INPUT= gender20 D_leis_c age_2020 paid_emp es_occ_J stress_J Tot_MH19
311 /CRITERIA CILEVEL=95 CITYPE=BCA NSAMPLES=1000
312 /MISSING USERMISSING=EXCLUDE.
313 REGRESSION
314 /MISSING LISTWISE
315 /STATISTICS COEFF OUTS R ANOVA CHANGE
316 /CRITERIA=PIN(.05) POUT(.10)
317 /NOORIGIN
318 /DEPENDENT MHI_20
319 /METHOD=ENTER gender20 D_leis_c
320 /METHOD=ENTER age_2020 paid_emp es_occ_J stress_J Tot_MH19.
321

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322 * Explorative analysis: Multiple Linear Bootstrapped Regression: Leisure time and MH with confounding variables (split file men/women).
323 SORT CASES BY gender20.
324 SPLIT FILE LAYERED BY gender20.
325 BOOTSTRAP
326 /SAMPLING METHOD=SIMPLE
327 /VARIABLES TARGET=MHI_20 INPUT= D_leis_c age_2020 paid_emp es_occ_J stress_J Tot_MH19
328 /CRITERIA CILEVEL=95 CITYPE=BCA NSAMPLES=1000
329 /MISSING USERMISSING=EXCLUDE.
330 REGRESSION
331 /MISSING LISTWISE
332 /STATISTICS COEFF OUTS R ANOVA CHANGE
333 /CRITERIA=PIN(.05) POUT(.10)
334 /NOORIGIN
335 /DEPENDENT MHI_20
336 /METHOD=ENTER D_leis_c
337 /METHOD=ENTER age_2020 paid_emp es_occ_J stress_J Tot_MH19.
338 SPLIT FILE OFF.

```