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ABSTRACT

Working from Home and Job Satisfaction: The Role of Gender and Personality Traits

In this paper we investigate the effect of working-from home (WFH) on job satisfaction. We use longitudinal data from Italy to estimate a difference-in-differences model, in which the treatment group includes individuals who transitioned to remote work in 2020 due to the COVID-19 pandemic and continued to work from home in 2021. We perform the analysis, which extends to various aspects of self-reported job satisfaction, by gender and personality traits as per the Big-Five framework, encompassing Openness to Experience, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. Our findings reveal that WFH exhibits a positive influence on job satisfaction, albeit exclusively among women, and with some heterogeneity, depending on personal characteristics. Specifically, this effect seems more noticeable in women characterized by elevated Openness to Experience, whereas those with heightened conscientiousness or neuroticism levels tend to experience less satisfaction when working remotely.

JEL Classification: J28, J81, J16

Keywords: remote working, difference in differences, longitudinal analysis, gender differences, Big-Five framework

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1. Introduction

The COVID-19 pandemic and the lockdown policies implemented across countries to stop the spread of the virus led to a surge in working-from home (WFH) arrangements all over the world (Aksoy et al., 2022, Caselli et al. 2022). While imposed as an emergency measure, WFH became very popular and persisted in various forms even in the post-pandemic era, also thanks to the acceleration in the evolution of digital technology, that enabled work to be done outside the premises of the firm (Gueguen and Senik, 2023). In fact, some forms of WFH have become part of the workplace, as the stigma that was previously associated with remote work has disappeared, workers and companies have made substantial investments in the equipment needed for workers to operate from home (Barrero et al. 2021a) and research and development into new technologies to improve remote working have expanded dramatically (Barrero et al., 2023). These new flexible work arrangements have attracted various views about their far-reaching consequences from land use to the housing market, labour costs, employment levels, organisation of cities, and macroeconomic growth (Barrero et al., 2021b; Delventhal and Parkhomenko, 2021; Delventhal et al., 2022; Yang et al., 2021; Bergeaud and Ray, 2021).

An important overlooked question is whether WFH affects job satisfaction, and specifically whether women and men are affected differently from this flexible work arrangements, depending on their characteristics. While WFH can have some important advantages for workers, such as reduced commuting, increased free time, and greater control over work schedules (Golden, 2006; Laß and Wooden, 2023), it can also carry downsides. It has been shown for instance that face-to-face interactions with managers could lead to faster career advancements and explain up to a third of the gender gap in promotions at the firm (Cullen and Perez-Truglia, 2019). Moreover, workers reported to have difficulties separating home affairs from the professional ones, and to feel socially isolated (Aksoy et al., 2022). The question about the impact of WFH on job satisfaction is very relevant as it has been predicted that working from home is here to stay and will further grow in the future (Barrero et al., 2023). Importantly, before the COVID-19 pandemic, the incidence of WFH was low and WFH was common only among specific group of workers, who self-selected into occupations which allowed such flexibility. In the US, before the pandemic, a mere 5% of the standard U.S. workforce operated from home. However, when the pandemic hit, this figure surged dramatically to 61.5%. Although it has since settled to around 30%, predictions suggest a continued upward trajectory in the future. Hence, the pandemic generated both a one-off jump and a longer-run growth acceleration in working from home (Barrero et al., 2023). The extensive adoption of WFH following the COVID-19 pandemic provides a distinctive opportunity to examine the effects of remote work on a significantly larger pool of workers.

In this paper, we estimate the impact of working from home (WFH) on different components of the employees' self-declared job satisfaction, which are standard measures of subjective wellbeing (Barrington-Leigh, 2022), across gender and personality traits. To this aim, we use the National Institute for Public Policy Analysis' (INAPP) Participation, Labour, and Unemployment Survey (PLUS) for the year 2019-2021 for Italy. PLUS contains information on a very large number of labour force characteristics. In addition, the information included in the survey allows to build measures of personality traits which match the Big 5 classification using the Ten Item Personality Inventory (TIPI; see Costa and McCrae 1992; McCrae and Costa 2008). Italy represents an interesting case study, as it was the European country with the lowest proportion of workers operating from home before 2020 and, following the pandemic, faced an enormous increase in WFH in a very short time (Bonacini et al. 2021). Since the share of WFH is increasing steadily, it is paramount to understand the potential impact of such structural change on the labour market to inform tailored policies.

Using PLUS longitudinal data, we estimate a difference-in-differences model where our treatment is the COVID-19 pandemic and treated workers are those who started working from home in 2020 and were still working from home a year afterwards, in 2021. Since we leverage the exogenous decision of the Government to enforce a strict lockdown at national level, which forced many people to work from home, we can identify the causal impact of WFH on job satisfaction, regardless of labour market conditions, personal characteristics, and individual preferences. Moreover, in February 2020 a law decree introduced a simplified 'emergency' regime for smart working, which could be applied to any salaried employment relationship, even in the absence of appropriate individual agreements; this decree was valid until the end of 2022. As such, in this period the choice to adopt a work-from-home arrangement in Italy was primarily determined by employers, leaving relatively limited decision-making autonomy to employees.[5]

We break down job satisfaction into several different components, such as career prospects, work-life balance, etc. to enhance our understanding of the factors which affect more deeply the satisfaction of workers, when they operate in flexible work arrangements. To assess the heterogenous impact of WFH on job satisfaction by gender, given the well-known asymmetries in the contribution to housework and the disadvantages women already face in getting recognised and promoted at work (Del Boca et al., 2022, Lundberg and Stearns, 2022), we separately estimate our main model for men and women. Next, to further understand the heterogeneity in changes in job satisfaction among people working from home, we perform a triple difference-in-differences estimation where we interact the treated and the treatment variables with each of the Big 5 personality traits, by gender.

Our results show that WFH significantly increased job satisfaction among women, while we do not find any significant effect among men. In terms of personality traits, we find that women who identify themselves as open to experience, tend to be more satisfied with their job when working from home along almost all components, i.e., job environment, tasks, salary, and job stability. Women who identify themselves as extrovert or agreeable also tend to be more satisfied with their career prospects when working from home. Finally, women who identify themselves as neurotic or conscientious, tend to be less satisfied with their job stability, career perspectives, and workload when working from home. Our regressions on the sample of men shows no significant impact of WFH on overall job satisfaction. However, we find significant positive impacts on employment stability and work-life balance.

This paper contributes to the existing literature in three main dimensions. First, this is the first study investigating gender differences in the relationship between working from home and job satisfaction in a European country, which, before the pandemic, was characterised by a very low level of flexibility in work arrangements. Second, we explore heterogeneity in the impact of WFH on job satisfaction by further decomposing gender differences according to effect of WFH on various aspects of job satisfaction. Last, we explore the role of personality traits in affecting job satisfaction when working from home, to identify the profiles of workers who might be more severely affected by the new flexible work arrangements.

The policy implications of this research are salient. First, if some categories of individuals benefit more from in-person work, it's important that the opportunity to work from home is offered to all workers (if the jobs allow it). This would ensure that remote work doesn't disadvantage certain groups of individuals. Second, workers who are unsatisfied with their job while working from home, may feel unhappy, anxious, with negative effects on their mental health and wellbeing. As the impact of remote work on job satisfaction can vary widely, it is paramount to tailor policies to the unique circumstances and needs of different industries, regions, and demographics.

[5]https://www.europarl.europa.eu/RegData/etudes/STUD/2021/662904/IPOL_STU(2021)662904(ANN04)_EN.pdf.

The remainder of the paper is structured as follows. In Section 2, we review the main literature on working from home and job satisfaction before and after the COVID-19 pandemic. In Section 3, we describe the data used and provide descriptive statistics of our sample. Section 4 describes the econometric strategy, while Section 5 discusses the results. Finally, Section 6 concludes the paper.

2. Literature Review

Evidence on the impact of WFH before the COVID-19 pandemic

The impact of WFH (previously often defined as teleworking) on workers and firms has attracted the attention of economists and scholars in the field of industrial relations for the last two decades (Gajendran and Harrison, 2007; Golden, 2006). However, since these studies are mainly focused on relatively small samples of US-based workers with single employers, the external validity of their results is rather limited. Several more recent studies have used larger longitudinal surveys in the UK (Wheatley 2012, 2017; Binder 2016; Felstead and Henseke 2017; Reuschke 2019), Germany (Kröll and Nüesch 2019; Bellmann and Hübler 2021; Arntz et al., 2022; Yang et al., 2023), the US (Kim et al. 2020) and Australia (Dockery and Bawa 2014). Overall, they found small positive associations between WFH and job satisfaction, with some differences across countries, generally pointing to smaller effects among workers in Germany. Some pre-pandemic studies have analysed employees' preferences for flexibility and have shown that workers would be willing to give up a significant portion of their wages to avoid the rigid schedules set by employers or to be able to work from home (Mas and Palais, 2017).

Another interesting line of research has analysed gender differences in the impact of job flexibility and WFH on job satisfaction. Some studies have shown that women (and especially mothers of young children) benefit more than men from flexibility at work (Kim et al., 2020; Laß and Wooden, 2023), while other papers find negligeable gender differences or opposite effects. Consistently, men have been shown to benefit more than women from WFH (see for example Wheatley, 2012; Binder, 2016).
However, all these studies use data from the pre-pandemic world, in which the incidence of WFH was much lower compared to the current one and the samples were significantly selected. Thus, it is important to further our understanding of the impact of WFH on workers' well-being at work, in a context where WFH is much more common.

WFH and job satisfaction after the COVID-19 pandemic

Working from home (WFH) emerged as an asset during the COVID-19 era, enabling individuals to sustain employment amidst the pandemic and aiding employers in maintaining economic activity. This shift highlighted the transformative power of digital technologies, rapidly influencing the organizational structure of work and companies in complex settings. The swift adoption of WFH practices, aligned with the theory of skill-biased technical change (Card and DiNardo, 2002), revealed its non-neutral impact, displaying heterogeneous effects on different skill sets. The ability to WFH was found to be contingent on the specific skills and tasks associated with the job. Some recent empirical studies (Dingel and Neiman, 2020; Gottlieb et al., 2020; Koren and Peto, 2020; Barbieri et al. 2022,) have also classified and ranked occupations in the US and in some European countries according to their WFH capacity.[6]

[6] A well-recognized indicator of WFH capacity is the Dingel and Neiman (2020) index, which intends to classify occupations according to whether employees can carry out their work entirely remotely. They use data from the United States Bureau of Labor Statistics Occupational Information Network (O*NET) and bring together information from 15 different questions across O*NET's Work Context and Generalized Work Activities Questionnaires. Merging this index with occupational

Given the prediction that WFH will further increase in the future (Barrero et al., 2023), a relevant question is what will be its impact on workers' well-being (Barrero et al., 2021; Senik et al., 2022). An interesting strand of literature has analysed its effect on workers' psychological well-being and has shown detrimental effects, especially among women (Oakman et al., 2020 for a meta-analysis of pre-pandemic studies and Bertoni et al., 2021; Senik et al., 2022; among others, for analyses of WFH and well-being during the pandemic).

Some recent studies from various disciplines, including psychology and human resources management, investigate the relationship between WFH and job satisfaction during the COVID-19 pandemic (see for example Yang et al. 2023, Toscano and Zappalà 2020; Karácsony 2021; Sousa-Uva et al., 2021; Yu and Wu 2021; Makridis and Schloetzer 2022; Niebuhr et al., 2022; Fan and Moen 2023; Vij et al., 2023, among others), with conflicting or inconclusive findings on whether individuals who work from home are ultimately happier with their jobs. Many of these studies in fact use data gathered after the onset of the COVID-19 emergency, rendering them inconclusive regarding the degree to which the implementation of remote work contributed to a shift in job satisfaction (Toscano and Zappalà 2020; Sousa-Uva et al. 2021; Yu and Wu 2021). Moreover, most of this research is based on small and unrepresentative samples (Makridis and Schloetzer 2022; Fan and Moen 2023 represent few exceptions in this literature).

One notable exception is Laß and Wooden (2023), who analyse the relationship between WFH and job satisfaction using a longitudinal study of Australian families. They show that the main benefit from WFH for workers arises from the improved ability to reconcile work and family responsibilities, and this aspect seems to be especially beneficial for women. However, the Australian context is very different from the European one, both in terms of the impact of the COVID-19 pandemic on the society (Australia was hit by the COVID-19 pandemic later than Europe and in a somehow less dramatic way, see for example Basseal et al., 2022) and in terms of the institutional context.[7] Further, the Australian labour market and institutional context differ significantly from the one found in most European countries.[8]

Our work complements the existing evidence, by analysing the differential gendered impact of WFH on job satisfaction in a European country (Italy) with a highly structured labour market, where relatively fewer working women had access to any form of job flexibility before the COVID-19 pandemic. Further, it explores how personality traits specifically influence workers' job satisfaction to discern which worker profiles are more likely to adapt positively and derive benefits from WFH, with a specific emphasis on gender differences.

employment numbers from the US Bureau of Labor Statistics, the authors determine that about 37 percent of US workers can perform their jobs entirely from home. Such an index has also been applied to measure remote work feasibility in other countries. For instance, using the same index Beland et al. (2022) make clear that 37.5 percent of Canadian jobs can be done from remote. It was also shown that the feasibility to working remotely of local labour markets areas may influence the effects of lockdown measures. Caselli et al. (2022) evidence that small areas with a higher share of professions that can be done from home exhibit a smaller increase in mobility after reopening. For a complete survey see Kosteas et al. (2022)

[7] Australia is one of the few OECD countries where legislation provides certain groups of employees with the right to request flexible workplace arrangements, including work location, see OECD 2021.

[8] Labour regulation in Australia is traditionally characterized by minimal statutory regulations and heavy reliance on industry and occupational agreements are set by independent tribunals. Another noticeable and peculiar trait of the Australian labour market is the high incidence of casual work and the overlap of part-time with casual employment is particularly marked. Most part-time workers are classified as casual rather than permanent part-time employees and women represent a very relevant proportion of part-time and casual workers (ILO, 2016). Notably, Australia ranks near the top of all OECD countries for the high incidence of part-time weekly hours amongst employed women (48.5 per cent) (ILO, 2016).

COVID-19 and Gender inequality

The COVID-19 crisis has emphasized the issue of gender inequality in terms of work and family responsibilities. Working from home has brought about a relative shift in the distribution of caregiving responsibilities, especially in households where women maintained their regular work, such as in essential jobs, leading partners to take on increased roles in caregiving duties compared to previous norms (ILO, 2020; İlkkaracan and Memiş, 2021; Corsi and Ilkkaracan, 2022, Bonacini et al. 2023). At the outburst of the pandemic the surge in WFH practices led to an increase in unpaid work for women, because of school closures and the shift to online education (Corsi and Ilkkaracan, 2023). Although women were more likely to work from home than men, the closure of schools made childcare at home necessary and, usually, married women took care of children more often than married men, creating an increased burden on working mothers (Alon et al., 2020). Real-time data on daily lives in the UK confirmed that, irrespective of their employment status, women working from home took on a greater share of childcare than men during the crisis (Sevilla and Smith, 2020). Similarly, in Italy and in the US most of the additional housework and childcare associated with the COVID-19 crisis fell on women (Del Boca et al., 2022; Zamarro and Prados, 2021)[9]. On the other hand, the results of Craig and Churchill (2021) are more balanced. Using data from a survey of 2,772 Australians, they found that women were doing more unpaid work during the lockdown, but the time men dedicated to childcare increased more in relative terms, so the average gender gaps reduced.

Women were also more likely to lose their jobs due to the COVID-19 crisis (Adams-Prassl et al., 2020; Farré et al., 2021; Ham, 2021) and were more likely to suffer a negative impact on their careers with respect to men (Baert et al., 2020). The share of female workers in sectors affected by lockdown measures was higher (Hupkau and Petrongolo, 2020) and the same applies to the share of those with a higher risk of COVID-19 contagion (Bertocchi, 2020; Lewandowski et al., 2020), which provided a lower remuneration (Folbre et al. 2020). Adams (2020) reported a positive correlation between female participation in the labour market and female exposure to the risk of contagion, while Besart and Gaurav (2020) argued that a larger share of female employment was found in occupations that are intensive in terms of face-to-face interactions. Similarly, Adams-Prassl et al. (2020) showed that women tended to work in occupations where workers can perform fewer tasks remotely.[10] With respect to Italy, Angelici and Profeta (2023) investigated the consequences of the COVID-19 pandemic through a randomized experiment among Italian workers. They show that the flexibility of WFH reduced gender inequalities, while Çoban (2021) found that having children at home makes women more likely to prefer WFH compared to men, because they can spend more time on childcare and other household work. Overall, these results show that the rapid spread of WFH is likely to worsen women's work–life balance.

All in all, while greater flexibility with respect to time worked may be emphasized as the 'last chapter' for gender equality (Goldin, 2014), the potential consequences of an increase in WFH on the job satisfaction of women is a relatively less explored topic in the current literature on COVID-19. Our

[9] Thomason and Macias-Alonso (2020) report that caregiving—where women are over-represented—is relevant and underpaid work.

[10] The COVID-19 crisis is expected to affect women more severely than men not only through a work/income point of view. For instance, Bertocchi and Dimico (2020) show that among African Americans, women face a much higher probability of death from COVID-19, and Holland et al. (2020) demonstrate that sexual harassment and discrimination can be present even with remote work. Moreover, Flaherty (2020) and Vincent-Lamarre et al. (2020) demonstrate that the ability of women to innovate or contribute to academic research has at least narrowed during the COVID-19 crisis. Gender differences also emerge in the behavior during the crisis: women tend to take the pandemic more seriously and to be more compliant than men (Galasso et al., 2020). Finally, Mohapatra (2020) show that gender differences in the pandemic's economic impacts have been also observed in developing countries.

study fills this gap, by exploring the gendered impact of WFH on job satisfaction and its main components, and by analysing the specific mediating role of personality traits.

3. Data

We use the Participation, Labour, and Unemployment Survey (PLUS) survey data, which is provided by the National Institute for Public Policy Analyses (INAPP). This survey was created to provide reliable statistical estimates of labour market phenomena which are only marginally explored by the standard Labour Force Survey. We use data from waves 8 and 9, which were collected in 2019 and 2021, respectively. A dynamic computer-assisted telephone interviewing (CATI) approach was employed to distribute the questionnaire to a sample of residents aged between 18 and 74, according to a stratified random sample of the Italian population.

In the 9th wave of the survey (collected in 2021) a new section on remote working was added to the questionnaire to shed light on the diffusion of the 'new normal' way of working among Italian workers, also including retrospective questions about working from home before and during the pandemic (2019 and 2020).[11] One of the key elements of this dataset is the absence of proxy interviews: only respondents are reported in the survey to reduce measurement errors and partial non-response. However, the INAPP-PLUS survey provides individual weights to account for non-response and attrition problems that usually affect sample surveys. Like other empirical studies based on the same dataset (see, among others, Bonacini et al. 2021, Esposito and Scicchitano 2022, 2023), all descriptive statistics and estimates reported in this analysis are weighted using these individual weights.

An important aspect investigated in PLUS is personality traits. These are measured by using self-assessed information from the TIPI measure of the Big 5 framework (John and Srivastava 1999). The TIPI includes two questions for each Big 5 category, assessing the positive and negative aspects of each trait. Individuals are asked to rate their perceived level of each trait on a scale from 1 to 7. We aggregate the two measures into a single measure by inverting the negative component (1 = 7; 2 = 6; . . .; 7 = 1) and adding it to the positive component. Each trait ranges from a minimum of 2 to a maximum of 14. The list of all traits and facets is reported in Table 1.

Table 1 - Definition of personality traits

Big 5 Personality Traits	Positive	Negative
Openness (OP)	Open to experience	Conservative
Agreeableness (AG)	Loving/altruistic	Litigious
Conscientiousness (CO)	Self-disciplined	Careless/disorderly
Extraversion (EX)	Exuberant	Quiet/private
Neuroticism (NE)	Anxious	Emotionally stable

Source: John and Srivastava 1999.

We focus on the panel quota for the years 2019–2021, which include 5,256 observations (2,628 individuals) followed for 2 waves and consider only individuals which did not change job between the two waves. Besides, to investigate the role of WFH on job satisfaction, we divide observations in two groups: first, a group – the treatment group - including individuals not working from home in 2019 but working from home both in 2020 and 2021; second, a control group made of individuals not working from home neither in 2019 nor in 2020, nor in 2021.

[11]WFH is measured using the following questions: (1) Before the pandemic, did you ever work from home? (2) In 2020, did you ever work from home? (3) For which proportion of your main work activity, do you work from home? In this case WFH is equal to 1 if they answer is at least 1 day per week.

Job satisfaction is measured on a scale from 1 to 4, where 1 represents completely dissatisfied and 4 means completely satisfied.[12] We also examine specific sub-domains of job satisfaction, along the following ten dimensions: work environment; working hours; workloads; tasks; risk protection; perspectives; earnings; professional growth; stability; and work-life balance.
Finally, we observe an extensive number of individual and job characteristics: age; region of residence; occupation; health conditions; marital status; education level; presence and age of dependent children; occupation WFH capacity[13] and personality traits.

3.1 Descriptive statistics

Our sample is well balanced by gender, age, marital status, education, and geographical area (Table A1 in the Appendix). Approximately 23% of individuals have children below the age of 18 and the average household size is 3. Approximately 25.3% of individuals worked from home both in 2020 and in 2021, and this proportion is slightly higher among women (26.3%) than among men (24.2%) (Table 2).
The average job satisfaction for individual working from home is 3.01 across the two waves, while it is 2.88 for individuals not working from home. The average job satisfaction is 2.91, with almost no difference between man (2.91) and women (2.93).

Table 2 – Proportion of individuals working from home, by gender and observable characteristics.

	Men		**Women**	
	No WFH	WFH	No WFH	WFH
Age <35	0.86	0.14	0.85	0.15
Age 35-54	0.74	0.26	0.65	0.35
Age 55+	0.67	0.33	0.69	0.31
North-West	0.78	0.22	0.72	0.28
North-East	0.75	0.25	0.78	0.22
Centre	0.78	0.22	0.77	0.23
South	0.71	0.29	0.66	0.34
Primary	0.96	0.04	0.97	0.03
Secondary	0.82	0.18	0.80	0.20
Tertiary	0.61	0.39	0.65	0.35
Married	0.72	0.28	0.70	0.30
HH size>3	0.78	0.22	0.72	0.28
Children <18 years	0.73	0.27	0.67	0.33
Poor Health	0.74	0.26	0.68	0.32
High-skilled occupation	0.59	0.41	0.59	0.41
Med-skilled occupation	0.79	0.21	0.81	0.19
Low skilled occupation	0.97	0.03	0.96	0.04
Total	75.8	24.2	73.7	26.3
Observations	1832	586	2110	754

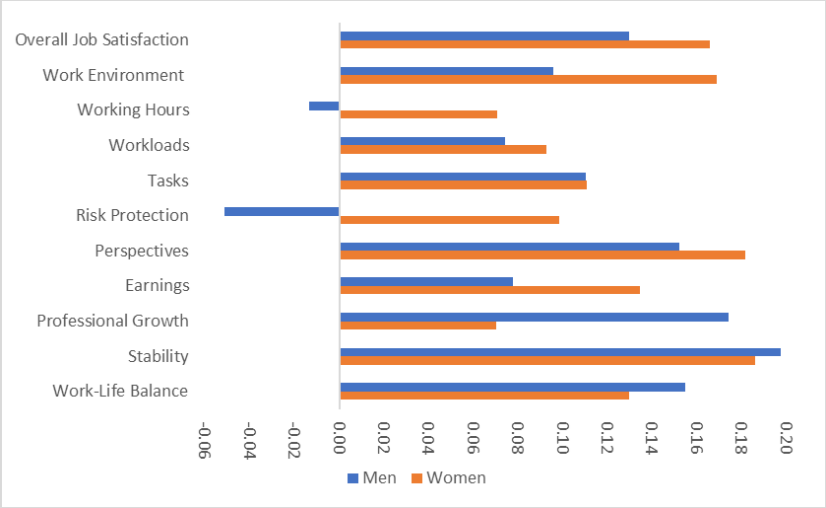
Source: own elaboration of the INAPP-PLUS.

[12] The question about job satisfaction reads: 'What is your overall level of satisfaction with your working condition?'.
[13] A well-recognized indicator of WFH capacity is the Dingel and Neiman (2020) index, which intends to classify occupations according to whether employees can carry out their work entirely remotely.

The proportion of individuals working from home is lower among young individuals (below the age of 35); it is highest in the middle age category (35-54 years old) among women, while it is highest in the oldest category (55+) among men. Working from home is highest in the South of Italy, both among men and women, with a larger percentage of women working from home in the North-West compared to men. By far, working from home is more common among highly educated individuals and not surprisingly in larger households with children below the age of 18. We also observe that working from home is higher among workers in high-skilled occupations. Finally, working from home is disproportionately more likely among individuals who suffer from poor health conditions.

Figure 1 shows changes between 2019 and 2021 in the gap in job satisfaction and its components for individuals working from home and non-working from home. Job satisfaction differences between the two groups are positive among all dimensions except for risk protection and working hours, which are negative for men, i.e., men shifting to working from home experienced a lower increase (higher fall) in job satisfaction with respect to working hours and risk protection. Comparing men and women, the change in job satisfaction from working from home is higher among women for what concerns the working environment, working hours, workloads, risk protection, perspectives, and earnings. Men working from home gain more satisfaction with respect to personal growth, stability, and work life balance.

Figure 1 – Change in the gap in job satisfaction between not WFH and WFH individuals between 2019 and 2021, by gender.



Note: For the total value of job satisfaction and for each dimension of job satisfaction, we report the change in the gap between the average value of among individuals working from home and working from home between 2019 and 2021, by gender.

Table 3 shows means and standard deviations of the Big-Five personality traits by gender and WFH groups. Men do not show relevant differences in the average Big-5 scores except for Agreeableness where WFH individuals show a mean value 0.2 points lower than No-WFH ones. Women working from home show higher levels of openness and lower levels of conscientiousness. As for the other traits, differences are marginal.

Table 3 - Distribution of Personality Traits

	Men		Women	
	No WFH	WFH	No WFH	WFH
Openness	9.20	9.15	8.95	9.14
(s.d.)	(2.36)	(2.30)	(2.38)	(2.31)
Consciousness	11.95	11.94	11.40	11.24
(s.d.)	(2.08)	(1.94)	(2.20)	(2.30)
Extraversion	7.95	8.02	7.46	7.33
(s.d.)	(2.93)	(2.89)	(2.77)	(2.64)
Agreeableness	10.97	10.79	10.59	10.51
(s.d.)	(2.13)	(2.33)	(2.20)	(2.33)
Neuroticism	6.23	6.24	5.64	5.68
(s.d.)	(2.70)	(2.72)	(2.66)	(2.45)

Source: own elaboration of the INAPP-PLUS.

4. Methodology

We estimate a Difference-in-Differences model to analyse the impact of working from home on job satisfaction. We estimate the following equation:

$$Y_{i(t)} = \alpha_i + \beta_1 2021 + \beta_2 WFH_{it} + \beta_3 (2021 * WFH_{it}) + \beta_4 X'_{it} \varepsilon_{it}, \quad (1)$$

where Y_{it} represents the level of satisfaction with the job (and its various dimensions, as detailed in Section 3). We use the COVID pandemic as treatment, and we construct a binary variable *2021* which takes value 0 for 2019 and 1 for 2021, thus identifying the post-pandemic time. To distinguish the group of treated (i.e., working from home since the pandemics) from the group of controls (never worked from home), we introduce the dummy WFH_{it} which is a binary variable equal to 1 if the individual indicates in the survey that she/he worked from home in 2020 and in 2021 but not in 2019. The control group, for which the WFH dummy is equal to zero includes individuals who did not work from home either in 2019 or in 2020 and 2021. The coefficient of interest is β_3. X_{it} is a vector of independent variables including several individual characteristics (age groups, gender, number of children, household size, area of residence, marital status, level of education, personality traits).

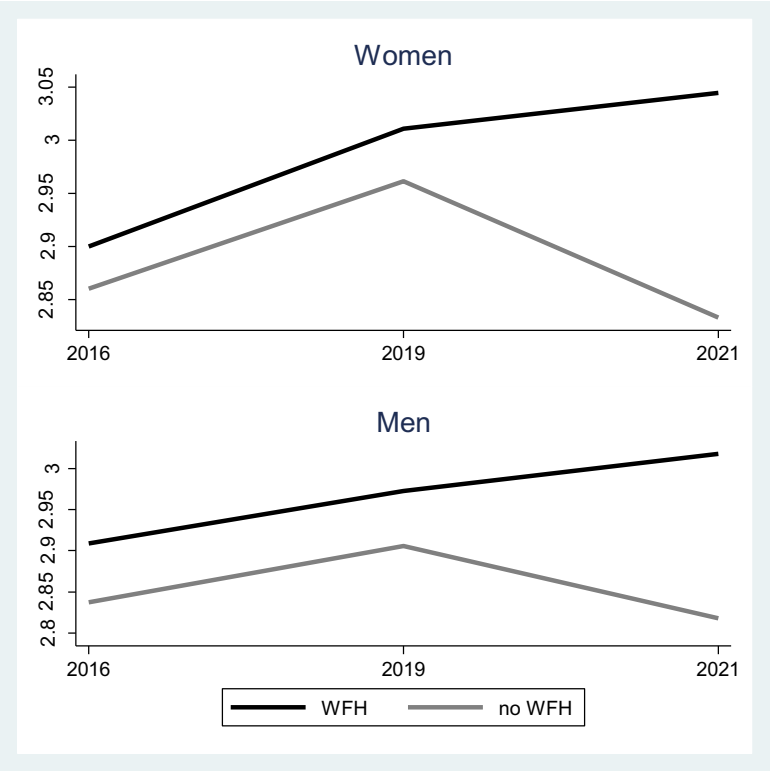
The validity of our econometric strategy relies on the fulfillment of few assumptions. First, the job satisfaction of individuals working and not working from home would have evolved in the same way in the absence of the pandemic (parallel trends assumption). To test for this assumption, we need to add data from the 7th wave of the PLUS dataset collected in 2016. The advantage of this approach is that we have a panel of individuals with observations in 2016, 2018 and 2021; the drawback is the smaller sample as we only have 1196 observations. We report in Figure 2 the average job satisfaction among treated (WFH) and control workers (non-WFH) in the three years of observation. We include figures for men and women, separately. In both figures we observe evidence of a parallel trends between treated and control workers in 2016 and 2018, with a clear divergence in 2021. This evidence supports our hypothesis that the job satisfaction of individuals working and not working from home would have evolved in the same way in the absence of the pandemic. Further evidence will be provided by estimating trend changes on the three-waves panel as a robustness check (see next section and Table 10).

Second, the sample composition of individuals working and not working from home remains the same over time, except for any changes in the observed variables. Treated and control groups should be randomly selected and their composition in terms of main characteristics should be similar and constant

over time. When selection is not random, observable characteristics of the two groups might differ substantially and might change over time.

To overcome this problem, we rely on the selection on observables approach and reweight the samples using the entropy balancing technique (Hainmueller, 2012). Specifically, we balance covariates in the two groups by both mean and variance by using data from 2019 and we apply these weights to the 2021 wave. We report in Table A2 mean and variance differences before and after rebalancing the two groups as well as standardized differences.[14] We show that, when we use entropy balanced weights, both means and variances are equalized between the two groups.[15] Finally, we use the Oster test (Oster, 2019) to assess the potential role of selection on unobservable characteristics. This test indicates the level of selection on unobserved variables (δ) required to drive the treatment effect to zero (assuming proportionality to the level of selection on observed variables).[16] Oster (2019) suggests that a value of δ above 1 is considered an 'acceptable' level of selection.

Figure 2. Parallel trends assumption: average job satisfaction 2016, 2018 and 2021.



Source: own elaboration of the INAPP-PLUS data.

To better understand the reasons why workers may be better or worse off working from home, we break the dependent variable into various dimensions of job satisfaction, as described in the previous section.

[14] Standardized differences are calculated as mean differences divided 0.5 times by the sum of variances.

[15] We also assume that any differences in reporting of job satisfaction either remain constant over time or evolve in the same manner across the two groups.

[16] The assumptions behind these calculations can vary. It is possible to change the assumed value of R-max, defined as the R-squared from a hypothetical regression of the outcome on treatment and both observed and unobserved controls. We follow Oster (2019) and set R-max equal to 1.3 times the R-squared from a regression of the outcome on the treatment and observed control variables.

We therefore estimate several models where we analyse the impact of working from home on each of the ten components. To analyse the effect of working from home on the job satisfaction of various groups of individuals, first we split the results by gender – due also to large heterogeneity in the effect of other controls, and study whether the effect of working from home on job satisfaction is driven by male or female workers.

Next, we estimate additional specifications of Equation (1) using a triple Difference-in-Differences model. Specifically, we interact the variables "2021" and "WFH" with binary variables indicating whether an individual reports high values (above the 66th percentile of the distribution) of personality traits. The resulting model is the following:

$$Y_{i(t)} = \alpha_i + \beta_1 2021 + \beta_2 WFH_{it} + \beta_3 HiPT_{it} + \beta_4(2021 * WFH_{it}) + \beta_5(2021 * GHiPT_{it}) + \beta_6(2021 * WFH_{it} * HiPT_{it}) + \beta_7 X'_{it}\varepsilon_{it}, \quad (2)$$

where $HiPT_{it}$ is a binary variable equal to 1 if the individual belongs to a specific personality group (high openness to experience; high conscientiousness; high agreeableness, etc.) and 0 otherwise, and the coefficient of interest is β_6. To test the robustness of the results, in Table A3 in the Appendix we report the estimates on overall job satisfaction using, alternatively, the 4th quartile and the median as threshold for the high personality scores dummies.

5. Results

In Table 4 we report the results of the estimation of Equation (1), separately estimated for women (Columns 1-3) and men (Column 4-6).[17]

Table 4. Working from home and job satisfaction: basic specification.

	Women			**Men**		
	(1)	(2)	(3)	(4)	(5)	(6)
WFH	0.039	0.057	0.061	0.093*	0.100**	0.101*
	[0.046]	[0.047]	[0.049]	[0.051]	[0.050]	[0.052]
2021	-0.126***	-0.077**	-0.086**	-0.05	-0.037	-0.064
	[0.030]	[0.036]	[0.037]	[0.039]	[0.040]	[0.042]
WFH*2021	**0.166****	**0.123****	**0.131****	**0.081**	**0.073**	**0.102**
	[0.052]	**[0.056]**	**[0.057]**	**[0.066]**	**[0.066]**	**[0.069]**
Delta	3.7	3.7	4.5	1.0	1.9	3.7
R^2	0.016	0.026	0.029	0.016	0.037	0.044
N	2848	2848	2776	2408	2408	2311
Basic controls	Yes	Yes	Yes	Yes	Yes	Yes
Health and HH controls	No	Yes	Yes	No	Yes	Yes
WFH capacity	No	No	Yes	No	No	Yes

Note: Basic controls include basic exogenous control variables: gender, age, tertiary education and geographical macro-area (North, Centre, South and Islands). Health and HH controls include all independent variables from the previous specification plus individual health status, marital status, family size and the Big-five personality traits. WFH capacity also includes a measure of WFH potential - built applying the methodology of Dingel and Neiman (2020) to the INAPP-ICP dataset, the Italian equivalent of the O*NET database -

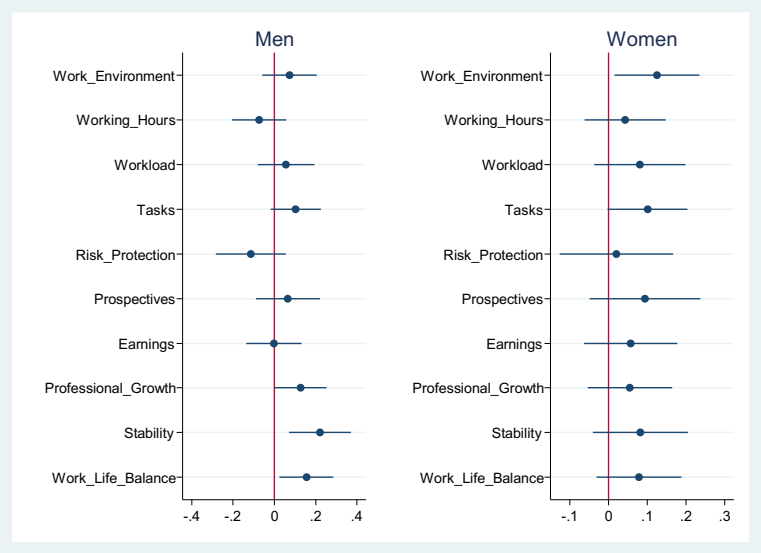
[17] The full set of estimated coefficients is provided in Table A2 in the Appendix.

and a binary variable for blue collars. *Significant at 10% level; **Significant at 5% level; ***Significant at 1% level.

Starting with women, model (1) shows that the treatment effect of working from home since the pandemic is positive, suggesting that women who switched to working from home during the pandemic and maintained this habit in 2021 are more satisfied about their job compared to women who have never worked from home. Results are confirmed in models (2) and (3), in which additional controls are added. When looking at men, there is no significant effect, i.e., job satisfaction is the same whether they work from home or in the office. This result is robust to the inclusion of additional characteristics (models (5) and (6)). Across all models, the estimates of the delta parameter are above 1, consistent with an 'acceptable' level of selection based on the rule-of-thumb suggested in Oster (2019).

We then report the estimates on the different components of job satisfaction. Figure 3 plots the estimated coefficients of the treatment effect (WFH*2021) as well as their 90% confidence intervals for females and males separately. Overall, women show increased job satisfaction with respect to the working environment and the tasks, although both coefficients are marginally significant. Surprisingly, women's satisfaction does not seem to increase in dimensions such as working hours or work life balance. This may be because when working from home, boundaries between working and non-working time become blurry, and women face more competing demands from housework-related tasks, such as childcare. The positive effects of WFH do not seem to be driven by increased ability of reconciling work and family life, and it is therefore important to investigate the role of other characteristics to identify groups of women who may be driving the results. On the other hand, male workers seem to be more satisfied in terms of work-life balance and stability. This result seems to be confirmed by the study of Bloom and Finen (2023) who show that instead of working 9 to 5, workers, and in particular men, spread work out to off hours, dedicating late afternoons to leisure activities.

Figure 3. Effect of switching to teleworking on the components of job satisfaction.



We then further investigate the role of the five personality traits, by estimating a triple Difference-in-Differences model on the specification with the full set of control (Tables 5 and 6).

Table 5. Triple Difference-in-Differences with personality traits (PT) – Women.

Women	OP	CO	AG	EX	NE
WFH	0.106*	0.031	0.121**	0.064	0.036
	[0.057]	[0.057]	[0.055]	[0.063]	[0.058]
2021	-0.052	-0.115**	-0.044	-0.085*	-0.127**
	[0.044]	[0.044]	[0.044]	[0.047]	[0.045]
WFH*2021	0.051	0.171**	0.06	0.135*	0.149**
	[0.066]	[0.068]	[0.066]	[0.073]	[0.068]
WFH*2021*PT	**0.309****	**-0.144**	**0.252***	**-0.007**	**-0.058**
	[0.130]	**[0.125]**	**[0.128]**	**[0.117]**	**[0.124]**
Delta	95.9	-0.7	-8.2	-0.1	-0.4
R^2	0.032	0.031	0.032	0.03	0.031
N	2776	2776	2776	2776	2776

Note: The dependent variable is job satisfaction. The Big-five personality traits include: Openness (OP), Compassion (CO), Agreeability (AG), Extraversion (EX) and Neuroticism (NE). Standard errors in brackets. *Significant at 10% level; **Significant at 5% level; ***Significant at 1% level.

We find that the largest positive impact of working from home on job satisfaction is among the group of women reporting high levels of Openness to Experience (Table 5, column 1). We also find a positive impact of working from home on job satisfaction among the group of women reporting high levels of agreeableness (Table 5, column 3), while the effect of WFH is negative for women with high levels of conscientiousness and neuroticism, although these coefficients are not statistically significant. The interaction between personality traits and WFH after the pandemic is never significant for male workers (Table 6), with the only exception being men with a high-level of extraversion, for whom working from home lowers their job satisfaction.

Table 6. Triple Difference-in-Differences with personality traits (PT) – Men.

Men	OP	CO	AG	EX	NE
WFH	0.062	0.104*	0.153**	0.046	0.114*
	[0.059]	[0.057]	[0.062]	[0.059]	[0.059]
2021	-0.07	-0.059	-0.054	-0.109**	-0.080*
	[0.050]	[0.048]	[0.051]	[0.052]	[0.047]
WFH*2021	0.141*	0.124	0.028	0.183**	0.117
	[0.080]	[0.075]	[0.082]	[0.079]	[0.078]
WFH*2021*PT	**-0.149**	**-0.133**	**0.231**	**-0.288***	**-0.057**
	[0.159]	**[0.186]**	**[0.149]**	**[0.157]**	**[0.166]**
Delta	-1.5	-1.5	-19.1	-1.5	1.27
R^2	0.046	0.046	0.047	0.047	0.045
N	2311	2311	2311	2311	2311

Note: The dependent variable is job satisfaction. The Big-five personality traits include: Openness (OP), Compassion (CO), Agreeability (AG), Extraversion (EX) and Neuroticism (NE). Standard errors in brackets. *Significant at 10% level; **Significant at 5% level; ***Significant at 1% level.

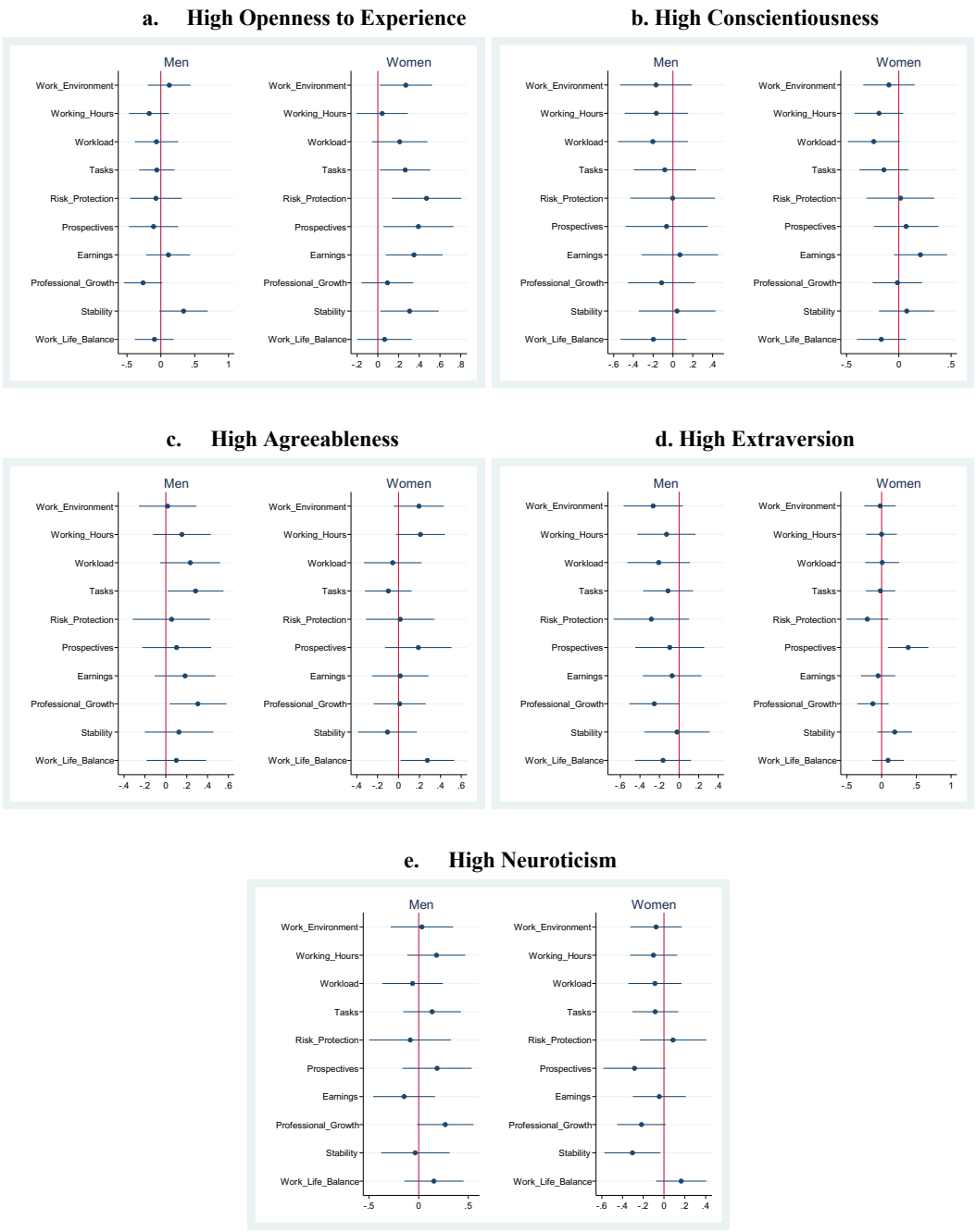
Next, we estimate a set of triple Difference-in-Differences models using the components of job satisfaction as dependent variables (Figure 4). Women with high levels of Openness to Experience are more satisfied with their job in terms of work environment, tasks, risk protection, career expectations, earnings and stability when switching to working from home (Figure 4a). This suggests that women who are more open to changes see working remotely as an opportunity, a positive change in their working conditions. Women with a high level of Agreeableness who work from home seem to benefit in terms of work-life balance (Figure 4c), while those with a high level of Extraversion are more satisfied with their career perspectives (Figure 4d). Finally, women with a high level of Neuroticism who work from home are less satisfied in terms of job stability and perspectives (Figure 4e) and those with high Conscientiousness are less satisfied in terms of working hours and workloads, although both coefficients are only marginally significant (Figure 4b). In contrast, results for men are mostly non-significant, with the only exception of men with a high level of Agreeableness who are happier if they work from home in terms of tasks asked to perform and professional growth.

These results confirm the existence of significant gender difference in the effect of switching to working from home on job satisfaction, and this is particularly true when we take into consideration the role of personality traits. The results also show several important differences by workers' personality, and therefore suggest that it is important to leave workers some freedom to organize their working times based on their personal situation, in order to maximize job satisfaction.

Overall, women seem to benefit more than men from working from home, albeit the picture is quite nuanced, and these results are mostly driven by women with certain personality traits, who are probably more able to adapt to their new professional environment and benefit from it. Women reporting high levels of Openness to Experience (and, to a lower extent, high levels of Agreeableness and Extraversion) are those driving the overall results on the positive effect of working from home on job satisfaction, and satisfaction in terms of earning, tasks, career expectations and stability. This is not a surprising finding, as individuals with high levels of Openness to Experience are more likely to be motivated to seek new experiences and to engage in self-examination, as well as being creative. On the other hand, women with high levels of Conscientiousness and Neuroticism are less satisfied with several aspects of the job, and this may be because difficulties in reconciling work and family are amplified when working from home for women with these traits.

We estimate several other triple Difference-in-Differences models to investigate the heterogeneity of the main effects, based on workers' age, family composition or work contract. Results are available on request but overall do not show any significant differences based on other observable characteristics.

Figure 4. Effect of working from home on the components of job satisfaction: interaction with personality traits



As a robustness exercise, we also estimate Equation (1) on the three-wave panel (2016, 2019 and 2021). We use two different DID techniques: pooled OLS and Individual Fixed Effects (Table 10). With both approaches, we find results in line with the findings reported in Table 2: women are more satisfied with their job when working from home, compared to women who have never worked from home. Males instead do not experience more job satisfaction when working from home.

The non -significance of the coefficient of the interaction between WFH and the 2019 dummy provides further evidence in support of the parallel trend assumption.

Table 10. Three-waves panel estimates.

Pooled OLS						
	Females			Males		
	(1)	(2)	(3)	(4)	(5)	(6)
WFH	0.034	0.028	0.032	0.106	0.103	0.076
	[0.081]	[0.082]	[0.081]	[0.090]	[0.087]	[0.089]
2021	-0.041	-0.034	-0.045	0.06	0.074	0.061
	[0.060]	[0.060]	[0.061]	[0.072]	[0.072]	[0.073]
WFH*2021	**0.233****	**0.230****	**0.245****	**0.085**	**0.094**	**0.098**
	[0.105]	**[0.106]**	**[0.108]**	**[0.119]**	**[0.118]**	**[0.122]**
Y2019	0.043	0.047	0.049	0.048	0.062	0.061
	[0.060]	[0.059]	[0.060]	[0.074]	[0.073]	[0.073]
WFH*Y2019	0.095	0.095	0.092	-0.084	-0.087	-0.086
	[0.112]	[0.112]	[0.112]	[0.127]	[0.126]	[0.126]
R2	0.018	0.029	0.035	0.02	0.046	0.051
Delta	1.4	1.8	2.1	0.9	0.8	1
N	1196	1196	1176	906	906	882
Basic controls	Yes	Yes	Yes	Yes	Yes	Yes
Health and HH controls	No	Yes	Yes	No	Yes	Yes
WFH capacity	No	No	Yes	No	No	Yes
Panel with Individual Fixed Effects						
	Females			Males		
	(1)	(2)	(3)	(4)	(5)	(6)
2021	-0.012	-0.003	-0.01	0.058	0.064	0.052
	[0.063]	[0.066]	[0.068]	[0.074]	[0.075]	[0.075]
WFH*2021	**0.234****	**0.228****	**0.253****	**0.07**	**0.071**	**0.043**
	[0.101]	**[0.102]**	**[0.103]**	**[0.118]**	**[0.119]**	**[0.120]**
Y2019	0.049	0.051	0.057	0.042	0.048	0.045
	[0.052]	[0.052]	[0.052]	[0.064]	[0.064]	[0.064]
WFH*Y2019	0.104	0.103	0.094	-0.098	-0.098	-0.099
	[0.088]	[0.088]	[0.088]	[0.108]	[0.108]	[0.108]
R2	0.013	0.014	0.022	0.012	0.014	0.014
Delta	1.5	2.1	2.6	1.1	1.2	1.5
N	1196	1196	1176	906	906	882
Basic controls	Yes	Yes	Yes	Yes	Yes	Yes
Health and HH controls	No	Yes	Yes	No	Yes	Yes
WFH capacity	No	No	Yes	No	No	Yes

Note: Basic controls include basic exogenous controls: gender, age, tertiary education, and geographical macro-area (North, Centre, South and Islands). Health and HH controls include all independent variables from the previous specification plus individual health status, marital status, family size and the Big-five personality traits. WFH capacity also includes a measure of WFH potential - built applying the methodology of Dingel and Neiman (2020) to the INAPP-ICP dataset, the Italian equivalent of the O*NET database - and a binary variable for blue collars. *Significant at 10% level; **Significant at 5% level; ***Significant at 1% level.

6. Conclusions

Our study explores the impact of working-from-home (WFH) on job satisfaction using longitudinal data from Italy. We estimate a difference-in-differences model and focus on individuals who transitioned to remote work in 2020 due to the COVID-19 pandemic and kept working from home in 2021. Our analysis explores specifically the role of gender and personality traits, based on the Big-Five framework. Our results provide evidence of an interesting positive influence of working from home on the job satisfaction of women exhibiting high levels of openness to experience, a personality trait commonly associated with a tendency for innovation, curiosity, and adaptability. In contrast, our findings reveal that women with high levels of conscientiousness, which is a trait usually associated with self-discipline, self-control, and regulation, are less satisfied with several aspects of the job, as they may struggle in managing family and work duties while working from home. Similarly, women with high levels of neuroticism, which is a trait usually associated with emotional instability, high level of stress, and pessimism also are less satisfied when working from home. This is in line with studies suggesting that the adverse effects of remote work on mental health are greater when higher levels of neuroticism are present (Wilmot et al., 2019). When looking at men, instead, we find that irrespective of individual personality traits, they exhibit a higher job satisfaction when comparing remote work to the traditional office setting only in terms of stability and work-life balance.

Although increased work flexibility is often regarded as the potential final frontier for achieving gender equality (Goldin, 2014), it is important to explore other potential consequences of an upsurge in remote work. As remote work is anticipated to become the "new normal" in the labor market, its broader repercussions on various dimensions of gender inequality remain largely unexplored and warrant careful consideration. Our paper takes a crucial step in addressing this gap by focusing on the implications of remote work on gender satisfaction, adding valuable insights to the ongoing conversation on gender dynamics in the workplace.

Importantly, our study also emphasizes the need for nuanced considerations of both gender and individual personality traits when evaluating the impact of working from home on job satisfaction. Our findings suggest that crafting tailored remote work policies is not a one-size-fits-all endeavor. Instead, a more nuanced approach, accounting for both gender and individual personality traits, and leaving workers some freedom to choose their location of work where possible, could be instrumental in shaping policies that align with the diverse needs and characteristics of the workforce. The backing for such social policies and investments could find substantial support from the current 'Next Generation' of European Union funds. Notably, in response to the socio-economic consequences resulting from the pandemic, the European Commission's proposal in May 2020 emphasized the necessity for expenditures supporting gender equality and non-discrimination in a balanced recovery package. However, concerns have been raised about the adequacy of these proposals in preventing potential negative impacts or risks of exacerbating inequality, particularly with regards to women (Klatzer and Rinaldi, 2020). Therefore, it is imperative and strongly recommended that future research generates evidence supporting the need for allocating sufficient resources to programs that strive to achieve gender-related objectives through the avenue of working from home.

References

Adams, R. B. (2020). Gender Equality in Work and COVID-19 Deaths. *Covid Economics*, 16, 23–60.

Adams-Prassl A, Boneva T, Golin M, Rauh C (2020) Inequality in the impact of the coronavirus shock: evidence from real time surveys. *Journal of Public Economics* 104245.

Alon T, Doepke M, Rumsey J-O, Tertilt M (2020) The impact of COVID-19 on gender equality. In: NBER Working Papers 26947.

Aksoy, Cevat Giray, Barrero J M, Bloom N, Davis S. J., Dolls M, and Zarate P. (2022) Working from home around the world. NBER Working Papers 30446.

Angelici M, Profeta P (2023) Smart-working: work flexibility without constraints. *Management Science* https://doi.org/10.1287/mnsc.2023.4767

Arntz, M, B. Yahmed Sarra, and F. Berlingieri. (2022). Working from home, hours worked and wages: Heterogeneity by gender and parenthood. *Labour Economics* 76: 102169.

Baert S Lippens L Moens E Sterkens P Weytjens J (2020) How do we think the COVID-19 crisis will affect our careers (if any remain)? *PLOS One* https://doi.org/10.1371/journal.pone.0246899

Barbieri T, Basso G, Scicchitano S (2022) "Italian workers at risk during the COVID-19 epidemic," *Italian Economic Journal* 8(1):175–195.

Barrero, J.-M., Bloom, S., Davis, S. (2021a). Why Working from Home Will Stick. NBER Working Paper No. 28731.

Barrero, J.M., Bloom, N., Davis, S.J., Meyer, B (2021b) Covid-19 is a persistent reallocation shock. *AEA Papers and Proceedings* 111: 287-291.

Barrero, J.-M., Bloom, S., and Davis, S. (2023). The Evolution of Work from Home. NBER Working Paper No. 31686.

Barrington-Leigh, C. (2022). Trends in Conceptions of Progress and Well-being. In World Happiness Report edited by Helliwell, J. F., Layard, R., Sachs, J. D., De Neve, J-E., Aknin, L. B. and Wang S., 53-74.

Basseal, JM, Bennet, CM, Collignon, P., Currie, BJ, Durreheim, DN., Leask, J (2022) Key lessons from the COVID-19 public health response in Australia. *The Lancet Regional Health*. https://doi.org/10.1016/j.lanwpc.2022.100616.

Beland, LP, Brodeur, A., Mikola, D., Wright, T. (2022) The short-term economic consequences of COVID-19: Occupation tasks and mental health in Canada. *Canadian Journal of Economics* 55(S1): 214-247.

Bellmann, Lutz, and Olaf Hübler, O. (2021). Working from home, job satisfaction and work–life balance — Robust or heterogeneous links? *International Journal of Manpower* 42(3): 424-441.

Bergeaud, A., and S. Ray. (2021). "Adjustment Costs and Factor Demand: New Evidence from Firms' Real Estate." *The Economic Journal* 131 (633): 70–100.

Bertocchi, G. (2020). COVID-19 susceptibility, women, and work. VoxEU.org, 23.

Bertocchi G and Dimico A (2020) COVID-19, race, and redlining. GLO Discussion Paper, No. 603, Global Labor Organization (GLO), Essen

Bertoni, M., Cavapozzi, D., Pasini, G., Pavese, C. (2023) Remote Working and Mental Health during the First Wave of COVID-19 Pandemic. IZA DP 14773.

Binder, Martin. (2016) "… Do it with joy!"– Subjective well-being outcomes of working in non-profit organizations. *Journal of Economic Psychology* 54: 64-84.

Bonacini, L., Gallo, G., Scicchitano, S. (2021) Working from home and income inequality: risks of a 'new normal' with COVID-19. *Journal of Population Economics* 34,303–360.

Bonacini, L., Gallo, G., Scicchitano, S. (2023) Does working from home increase the gender wage gaps? Insights from an Italian survey of occupations, *Feminist Economics*, forthcoming.

Card, D. & DiNardo, J. E. 2002. "Skill-Biased Technological Change and Rising Wage Inequality: Some Problems and Puzzles," *Journal of Labor Economics*, University of Chicago Press, vol. 20(4), pages 733-783, October.

Caselli, M, Fracasso, A. & Scicchitano, S. (2022). "From the lockdown to the new normal: individual mobility and local labor market characteristics following the COVID-19 pandemic in Italy," *Journal of Population Economics* 35(4): 1517-1550.

Çoban, S. (2021). Gender and Telework: Work and Family Experiences of Teleworking Professional, Middle Class, Married Women with Children during the Covid-19 Pandemic in Turkey. *Gender Work and Organization*, 29(1), 241–255.

Corsi, M., Ilkkaracan, I. (2023). COVID-19, Gender, and Labor. In: Zimmermann, K.F. (eds) Handbook of Labor, Human Resources and Population Economics. Springer, Cham. https://doi.org/10.1007/978-3-319-57365-6_323-1

Costa, P.T. and McCrae, R.R. 1992. Four Ways Five Factors are Basic. *Personality and Individual Differences* 13(6), 653–665

Craig, L., & Churchill, B. (2021). Working and Caring at Home: Gender Differences in the Effects of Covid-19 on Paid and Unpaid Labor in Australia. *Feminist Economics*, 27(1–2), 310–326.

Cullen, Z.B. and Perez-Truglia, R., (2019). *The old boys' club: Schmoozing and the gender gap* (No. w26530). National Bureau of Economic Research.

Delventhal, M.J., Parkhomenko, A., (2021). Spatial Implications of Telecommuting. Working Paper. Available online at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3746555

Dingel, Jonthan I., and Brent Neiman, B. (2020). How many jobs can be done at home? *Journal of Public Economics* 189: 104235.

Dockery, A.M., Bawa, S. (2014) Is Working from Home Good Work or Bad Work? Evidence from Australian Employees. *Australian Journal of Labour Economics* 17(2): 163-190.

Esposito, P.& Scicchitano, S., (2022). "Educational mismatch and labour market transitions in Italy: Is there an unemployment trap?," *Structural Change and Economic Dynamics*, Elsevier, vol. 61(C), pages 138-155.

Fan, W, and P Moen. 2023. Ongoing remote work, returning to work at work, or in between during COVID-19: What promotes subjective well-being? *Journal of Health and Social Behavior* 64(1): 152-171.

Felstead, A and G Henseke. 2017. Assessing the growth of remote working and its consequences for effort, well-being and work-life balance. New Technology, *Work and Employment* 32(3): 195-212.

Del Boca, D., N. Oggero, P. Profeta, and M.C. Rossi. (2022)"The impact of COVID-19 on the gender division of housework and childcare: Evidence from two waves of the pandemic in Italy." *IZA Journal of Labor Economics* 11, no. 1.

Delventhal, M. J., E. Kwon, and A. Parkhomenko. "JUE Insight: How do cities change when we work from home?." *Journal of Urban Economics* 127 (2022): 103331.

Esposito, P and Scicchitano, S, (2023). "Drivers of skill mismatch among Italian graduates: the role of personality traits," *Applied Economics* 55(40): 4642-4663.

Farré, L., Fawaz, Y., Gonzalez, L., & Graves, J. (2021). Gender Inequality in Paid and Unpaid Work During Covid-19 Times. *Review of Income and Wealth* 68: 323-347.

Folbre, N., Gautham, L., & Smith, K. (2020). Essential Workers and Care Penalties in the United States. *Feminist Economics*, 1–15.

Golden, T D. 2006. Avoiding depletion in virtual work: Telework and the intervening impact of work exhaustion on commitment and turnover intentions. *Journal of Vocational Behavior* 69(1): 176-187.

Goldin C (2014) A grand gender convergence: its last chapter. *American Economic Review* 104(4):1091–1119.

Gottlieb C, Grobovšek J, Poschke M, Saltiel F (2021) Working from home in developing countries. *European Economic Review* 133:103679

Gajendran, R S., and D. A. Harrison. 2007. The good, the bad, and the unknown about telecommuting: Meta-analysis of psychological mediators and individual consequences. *Journal of Applied Psychology* 92(6): 1524-1541.

Gueguen, G., and Senik, C. (2023). Adopting telework: The causal impact of working from home on subjective well-being. *British Journal of Industrial Relations* 61: 832-868.

Ham, S. (2021). Explaining Gender Gaps in the South Korean Labor Market During the COVID-19 Pandemic. *Feminist Economics*, 27(1–2), 133–151.

Hupkau, C., & Petrongolo, B. (2020). Work, care and gender during the covid-19 crisis. *Covid Economics*, 54, 1–28.

İlkkaracan, İ., & Memiş, E. (2021). Transformations in the Gender Gaps in Paid and Unpaid Work During the COVID-19 Pandemic: Findings from Turkey. *Feminist Economics*, 27(1–2), 288–309.

International Labour Organization (ILO) (2016) Non-standard employment around the world: Understanding challenges, shaping prospects International Labour Office – Geneva: ILO. 2016

International Labour Organization (ILO) (2020). Teleworking during the COVID-19 Pandemic and Beyond – A practical guide, Geneva.

Karácsony, P. (2021). Impact of teleworking on job satisfaction among Slovakian employees in the era of COVID-19. *Problems and Perspectives in Management* 19(3): 1- 9.

Koren M, P. R (2020) Business disruptions from social distancing. *PLoS ONE* 15(9):e0239113

Kosteas, V.D., Renna, F., Scicchitano, S. (2022). Covid-19 and Working from Home. In: Zimmermann, K.F. (eds) Handbook of Labor, Human Resources and Population Economics. Springer, Cham. https://doi.org/10.1007/978-3-319-57365-6_325-1

Klatzer, E., & Rinaldi, A. (2020). Next Generation EU Leaves Women Behind. *Gender Impact Assessmentof the European Commission Proposals for the EU Recovery Plan. Study commissioned by The Greens/EFA Group in the European Parliament, initiated by Alexandra Geese, MEP (Juni 2020)*.

Kröll, C., and S. Nüesch. (2019). The effects of flexible work practices on employee attitudes: Evidence from a large-scale panel study in Germany. *International Journal of Human Resource Management* 30(9): 1505-1525.

Laß, I., and M.Wooden. (2023). Working from home and work-family conflict. *Work, Employment & Society* 37(1): 176-195.

Lewandowski, P., Lipowska, K., & Magda, I. (2020). The gender dimension of occupational exposure to contagion in Europe, *Feminist Economics*, 27(1–2), 48–65.

Lundberg, S., and Stearns, J. (2019). Women in economics: Stalled progress. *Journal of Economic Perspectives*, *33*(1), 3-22.

Makridis, C., and J. D. Schloetzer. 2022. Does working from home increase job satisfaction and retention? Evidence from the COVID-19 pandemic. Georgetown McDonough School of Business Research Paper no. 4016657. Washington DC: McDonough School of Business, Georgetown University.

Mas, A., Pallais, A., 2017. Valuing alternative work arrangements. *American Economic Review* 107 (12), 3722–3759.

McCrae, R.R. and Costa, P.T., Jr. 2008. The Five-Factor Theory of Personality. In O.P. John, R.W. Robins, and L.A. Pervin (eds.), Handbook of Personality: Theory and Research, 159–181. New York, NY, US: Guilford Press.

Niebuhr, F., P. Borle, F. Börner-Zobel, and S. Voelter-Mahlknecht. 2022. Healthy and happy working from home? Effects of working from home on employee health and job satisfaction. *International Journal of Environmental Research and Public Health* 19(3): 1122.

Reuschke, D. 2019. The subjective well-being of homeworkers across life domains. *Environment and Planning A: Economy and Space* 51(6): 1326-1349.

Oakman, J., Kinsman, N., Stuckey, R., Graham, M., Weale, V. (2020) A rapid review of mental and physical health effects of working at home: how do we optimise health? *BMC Public Health* 20:1825.

Oster, E, 2019. "Unobservable Selection and Coefficient Stability: Theory and Evidence", *Journal of Business & Economic Statistics*, 37:2, 187-204.

Senik, C., Clark, A., D'Ambrosio, C., Lepinteur, A., Schroeder, C. (2022) Teleworking and Life Satisfaction during COVID-19: The Importance of Family Structure. IZA DP 15715. Available online at: https://docs.iza.org/dp15715.pdf.

Sevilla, A., & Smith, S. (2020). Baby steps: The gender division of childcare during the COVID19 pandemic. Oxford Review of Economic Policy 36: 169-186.

Sousa-Uva, M., A. Sousa-Uva, M. Mello e Sampayo, and F. Serranheira. 2021. Telework during the COVID-19 epidemic in Portugal and determinants of job satisfaction: A cross-sectional study. *BMC Public Health* 21: 2217.

Toscano, F., and S. Zappalà. 2020. Social isolation and stress as predictors of productivity perception and remote work satisfaction during the COVID-19 pandemic: The role of concern about the virus in a moderated double mediation. *Sustainability* 12(23): 9804.

Yang L., Holtz D., Jaffe S., Suri S., Sinha S., Weston J., Joyce C., Shah N., Sherman K., Hecht B., Teevan J. (2021). The effects of remote work on collaboration among information workers. *Nature Human Behaviour*, 6(1), 1–12.

Yang, D., Kelly, E. L., Kubzansky, L. D., & Berkman, L. (2023). Working from Home and Worker Well-being: New Evidence from Germany. *ILR Review*, 76(3), 504–531. Https://doi.org/10.1177/00197939221148716.

Yu, J., and Y. Wu. 2021. The impact of enforced working from home on employee job satisfaction during COVID-19: An event system perspective. *International Journal of Environmental Research and Public Health* 18(24): 13207.

Vij, A, Souza, F. Barrie, H. Anilan, V. Sarmiento, S. Wasngton, L. (2023) Employee preferences for working from home in Australia, *Journal of Economic Behavior & Organization*, Volume 214, 2023, Pages 782-800, https://doi.org/10.1016/j.jebo.2023.08.020.

Wheatley, D. (2012). Good to be home? Time-use and satisfaction levels among homebased teleworkers. New Technology, *Work and Employment* 27(3): 224-241.

Wheatley, D. (2017) Employee satisfaction and use of flexible working arrangements. *Work, Employment and Society* 31(4): 567-585.

Wilmot, M. P., C. R. Wanberg, J. D. Kammeyer-Mueller, and D. S. Ones. "Extraversion advantages at work: A quantitative review and synthesis of the meta-analytic evidence." Journal of Applied Psychology 104, no. 12 (2019): 1447.

Zamarro, G., & Prados, M. J. (2021) Gender differences in couples' division of childcare, work and mental health during COVID-19. *Review of Economics of the Household*, 19, 11–40, https://doi.org/10.1007/s11150-020-09534-7.

Appendix

Table A1: Summary statistics

	Obs	Mean	Std. Dev.	Min	Max
Job satisfaction	5,256	2.915	0.720	1	4
Job Satisfaction with:					
Working Environment	5,101	3.105	0.798	1	4
Work hours	5,184	3.010	0.808	1	4
Workload	5,186	2.875	0.803	1	4
Tasks	5,210	3.029	0.756	1	4
Risk	5,046	2.925	0.971	1	4
Prospectives	5,016	2.441	0.964	1	4
Earnings	5,186	2.533	0.860	1	4
Prospectives	5,152	2.959	0.800	1	4
Stability	5,174	2.944	0.970	1	4
Work-Life balance	5,213	2.868	0.811	1	4
High Openness (OP)	5,256	0.257	0.437	0	1
High Agreeableness (AG)	5,256	0.287	0.452	0	1
High Conscentiousness (CO)	5,256	0.254	0.435	0	1
High Extraversion (EX)	5,256	0.352	0.478	0	1
High Neuroticism (NE)	5,256	0.291	0.454	0	1
Age <35	5,256	0.354	0.478	0	1
Age 35-54	5,256	0.355	0.478	0	1
Age 55+	5,256	0.291	0.454	0	1
Women	5,256	0.542	0.498	0	1
North-West	5,256	0.319	0.466	0	1
North-East	5,256	0.234	0.424	0	1
Centre	5,256	0.232	0.422	0	1
South	5,256	0.214	0.410	0	1
Primary Education	5,256	0.074	0.262	0	1
Secondary Education	5,256	0.481	0.500	0	1
Tertiary Education	5,256	0.445	0.497	0	1
Married	5,256	0.541	0.498	0	1
Children < 18 years	5,256	0.228	0.420	0	1
Married	5,286	0.540	0.498	0	1
HH size	5,256	3.023	1.183	1	9
Poor health	5,256	0.049	0.216	0	1
WFH capacity	5,092	54.66	14.83	8.82	85.02
High-skilled occupations	5,138	0.354	0.478	0	1
Med-skilled occupations	5,138	0.515	0.500	0	1
Low-skilled occupations	5,138	0.131	0.337	0	1

Source: own elaboration of the INAPP-PLUS data.

Table A2 - Summary statistics before and after entropy balancing.

	Sample weights					Entropy balancing weights			
	WFH		No WFH		Standardized Differences	WFH		No WFH	
	Mean	Variance	Mean	Variance		Mean	Variance	Mean	Variance
Women	0.52	0.25	0.46	0.25	0.19	0.52	0.25	0.52	0.25
WFH capacity	59.84	175.10	49.66	220.10	-0.21	59.34	165.10	59.32	165.10
High Openness (OP)	0.26	0.19	0.23	0.18	0.08	0.26	0.19	0.26	0.19
High Agreeability (AG)	0.30	0.21	0.29	0.20	0.09	0.30	0.21	0.30	0.21
High Conscentiousness (CO)	0.22	0.17	0.26	0.19	0.05	0.22	0.17	0.22	0.17
High Extraversion (EX)	0.35	0.23	0.34	0.22	0.11	0.35	0.23	0.35	0.23
High Neuroticism (NE)	0.28	0.20	0.30	0.21	0.07	0.28	0.20	0.28	0.20
Tertiary education	0.50	0.25	0.20	0.16	0.35	0.50	0.25	0.50	0.25
Low-skilled occupations	0.03	0.03	0.26	0.19	0.00	0.03	0.03	0.03	0.03
Children <18 years	0.32	0.22	0.25	0.19	0.12	0.32	0.22	0.32	0.22
Age 35-44	0.54	0.23	0.36	0.24	0.26	0.52	0.25	0.52	0.25
Age >55+	0.27	0.20	0.20	0.16	0.10	0.27	0.20	0.27	0.20
HH size	3.02	1.63	3.09	1.49	0.15	3.02	1.63	3.02	1.63
Married	0.58	0.24	0.47	0.25	0.24	0.58	0.24	0.58	0.24
North-East	0.21	0.17	0.25	0.19	0.05	0.21	0.17	0.21	0.17
Center	0.21	0.17	0.22	0.17	0.06	0.21	0.17	0.21	0.17
South/	0.27	0.20	0.20	0.16	0.10	0.27	0.20	0.27	0.20
Poor health	0.06	0.06	0.06	0.06	0.02	0.06	0.06	0.06	0.06

Table A3 - Working from home and job satisfaction: basic specification.

	Females			Males		
	(1)	(2)	(3)	(4)	(5)	(6)
WFH	0.039	0.057	0.061	0.093*	0.100**	0.101*
	[0.046]	[0.047]	[0.049]	[0.051]	[0.050]	[0.052]
WFH*2021	**0.166****	**0.123****	**0.131****	**0.081**	**0.073**	**0.102**
	[0.058]	**[0.061]**	**[0.063]**	**[0.072]**	**[0.071]**	**[0.075]**
2021	0.126***	0.077**	0.086**	-0.05	-0.037	-0.064
	[0.031]	[0.038]	[0.040]	[0.043]	[0.043]	[0.047]
Age 45-55	0.067**	0.027	0.018	0.083*	0.034	0.03
	[0.032]	[0.041]	[0.042]	[0.049]	[0.052]	[0.055]
Age 55+	0.039	0.041	0.030	0.093*	0.036	0.025
	[0.035]	[0.045]	[0.046]	[0.048]	[0.056]	[0.059]
North-West	0.070**	0.077*	0.066	-0.080*	0.097**	-0.094*
	[0.033]	[0.040]	[0.041]	[0.046]	[0.046]	[0.049]
Centre	-0.001	0.006	-0.009	0.122**	0.142**	0.147**
	[0.037]	[0.043]	[0.044]	[0.051]	[0.050]	[0.053]
South/Islands	0.019	0.074*	0.046	-0.041	-0.07	-0.055
	[0.040]	[0.043]	[0.044]	[0.049]	[0.049]	[0.052]
Tertiary education	-0.007	-0.036	-0.059*	0.011	0.03	0.057
	[0.028]	[0.032]	[0.033]	[0.035]	[0.036]	[0.039]
Openness (OP)		-0.038	-0.032		0.006	-0.018
		[0.035]	[0.036]		[0.043]	[0.045]
Agreeability (AG)		-0.037	-0.029		-0.065	-0.069*
		[0.036]	[0.037]		[0.040]	[0.041]
Conscientiousness (CO)		0.029	0.03		0.072	0.081
		[0.034]	[0.035]		[0.047]	[0.050]
Extraversion (EX)		0.043	0.029		0.016	0.039
		[0.032]	[0.032]		[0.042]	[0.043]
Neuroticism (NE)		-0.035	-0.036		0.110**	0.121**
		[0.034]	[0.035]		[0.044]	[0.046]
Family size		0.030**	0.025*		0.024	0.029*
		[0.014]	[0.015]		[0.017]	[0.017]
Married		0.034	0.048		0.108**	0.116**
		[0.036]	[0.037]		[0.046]	[0.048]
Health status		0.201**	0.184**		-0.145*	-0.132
		[0.076]	[0.077]		[0.080]	[0.085]
WFH capacity			0.002**			0.000
			[0.001]			[0.002]
Blue Collar			-0.223			0.095
			[0.146]			[0.078]
R^2	0.016	0.026	0.029	0.016	0.037	0.044
Delta	3.7	3.7	4.5	1	1.9	3.7
N	2848	2848	2776	2408	2408	2311
Basic controls						
Health and HH controls	No	Yes	Yes	No	Yes	Yes
WFH capacity	No	No	Yes	No	No	Yes

Note: Basic controls include basic exogenous controls: gender, age, tertiary education and geographical macro-area (North, Centre, South and Islands). Health and HH controls include all independent variables from the previous specification plus individual health status, marital status, family size and the Big-five personality traits. WFH capacity also includes a measure of WFH capacity and a binary variable for blue collars. *Significant at 10% level; **Significant at 5% level; ***Significant at 1% level.

Table A3 - Robustness check: different thresholds of the Personality Traits dummies

	4th Quartile Women					
	Baseline	OP	CO	AG	EX	NE
WFH	0.06	0.106*	0.031	0.039	0.029	0.056
	[0.049]	[0.057]	[0.057]	[0.052]	[0.057]	[0.054]
2021	-0.089**	-0.052	-0.115**	-0.113**	-0.093**	-0.128**
	[0.038]	[0.044]	[0.044]	[0.040]	[0.042]	[0.042]
WFH*2021	0.132**	0.052	0.172**	0.173**	0.158**	0.133**
	[0.057]	[0.066]	[0.068]	[0.060]	[0.065]	[0.063]
WFH*2021*PT		0.307**	-0.144	-0.321*	-0.097	-0.022
		[0.131]	[0.124]	[0.182]	[0.133]	[0.143]
R^2	0.029	0.031	0.029	0.03	0.029	0.032
N	2776	2776	2776	2776	2776	2776
	4th Quartile Men					
	Baseline	OP	CO	AG	EX	NE
WFH	0.101*	0.065	0.107*	0.093*	0.061	0.127**
	[0.052]	[0.059]	[0.057]	[0.055]	[0.057]	[0.055]
2021	-0.066	-0.073	-0.062	-0.065	-0.086*	-0.067
	[0.042]	[0.050]	[0.048]	[0.045]	[0.049]	[0.045]
WFH*2021	0.101	0.141*	0.124	0.084	0.152**	0.086
	[0.069]	[0.080]	[0.076]	[0.074]	[0.076]	[0.075]
WFH*2021*PT		-0.152	-0.136	0.153	-0.274	0.135
		[0.159]	[0.186]	[0.212]	[0.184]	[0.190]
R^2	0.046	0.047	0.047	0.047	0.048	0.048
N	2311	2311	2311	2311	2311	2311
	Median Women					
	Baseline	OP	CO	AG	EX	NE
WFH	0.059	0.133**	0.012	-0.012	0.062	0.081
	[0.049]	[0.065]	[0.068]	[0.066]	[0.064]	[0.066]
2021	-0.089**	-0.021	-0.117**	-0.140**	-0.085*	-0.146**
	[0.038]	[0.047]	[0.050]	[0.048]	[0.047]	[0.051]
WFH*2021	0.133**	0.029	0.192**	0.226**	0.135*	0.128
	[0.057]	[0.074]	[0.078]	[0.076]	[0.073]	[0.079]
WFH*2021*PT		0.248**	-0.126	-0.216*	-0.006	0.008
		[0.116]	[0.114]	[0.115]	[0.117]	[0.115]
R^2	0.031	0.034	0.032	0.033	0.031	0.033
N	2776	2776	2776	2776	2776	2776
	Median Men					
	Baseline	OP	CO	AG	EX	NE
WFH	0.103**	0.08	0.127*	0.067	0.048	0.088
	[0.052]	[0.064]	[0.065]	[0.066]	[0.059]	[0.065]
2021	-0.064	-0.071	-0.074	-0.057	-0.109**	-0.087*
	[0.042]	[0.057]	[0.054]	[0.053]	[0.052]	[0.051]
WFH*2021	0.099	0.173*	0.125	0.161*	0.181**	0.141
	[0.069]	[0.090]	[0.086]	[0.088]	[0.079]	[0.088]
WFH*2021*PT		-0.175	-0.068	-0.161	-0.287*	-0.111
		[0.138]	[0.144]	[0.141]	[0.157]	[0.142]
R^2	0.042	0.043	0.043	0.044	0.044	0.042
N	2311	2311	2311	2311	2311	2311

Note: Standard errors in brackets. *Significant at 10% level; **significant at 5% level; ***significant at 1% level.