Social Indicators Research (2026) 181:28
https://doi.org/10.1007/s11205-025-03730-7

ORIGINAL RESEARCH

How Covid-19 has Affected Job Satisfaction Over Different time Horizons: a Multidimensional Analysis for Italy

Gianluca Argentin[1] · **Ivana Fellini**[1] · **Giorgio Piccitto**[1]

Received: 31 October 2024 / Accepted: 22 November 2025

Abstract
The coronavirus pandemic drastically disrupted societies, altering daily routines and affecting economies' and labor markets' functioning. In the short-term, the labor market experienced diverse impacts: many workers lost jobs or faced temporary suspensions, while others transitioned to remote work or faced increased workloads in pandemic-critical roles. Despite these deep and heterogeneous impacts, and negative outlooks and expectations regarding the labor market in the initial stages of Covid-19, in the longer-term a "new normality" seems to have taken place; nonetheless, "a new normality" highly differentiated among occupational sectors and jobs. Such scenario may have altered the individual work-related well-being in different ways, affecting in turn quality of life and individual health. This paper sets two analytical goals. First, to examine to what extent the pandemic experience has affected job satisfaction, focusing on the short- (the apex of Covid-19), mid- (one year later) and long- (two and three years later) term. Second, we analyze whether this association has been moderated by some key job characteristics, inspecting heterogeneities both in different dimensions of job satisfaction and across occupations. Using data from the European Labour Force Survey, the study adopts a multi-dimensional approach to job satisfaction, recognizing its complexity as a composite concept. The Italian case is of particular interest, given the country's early and severe exposure to the pandemic, becoming Europe's first viral epicentre, but also considering that Italy entered the pandemic characterized by a labor market displaying several weaknesses. In the short run, we detect a sharp decrease of job satisfaction which is more severe for the extrinsic dimension than for the intrinsic one. But considering the mid- and long-term perspective, it emerges the temporariness of this pattern, and job satisfaction resumed its pre-pandemic increasing trend. We find also that two key job characteristics moderate the association between Covid-19 and job satisfaction: indeed, in the short-term, some heterogeneous outcomes come out based on the precariousness and the essentiality of an occupation. Implications for the analyses of the elation between occupational conditions and job satisfaction are discussed.

Keywords Job satisfaction · Covid-19 · Occupation · Labor market · Well-being · Pandemic

Extended author information available on the last page of the article

Published online: 27 December 2025

1 Introduction and Motivation

The spread of the coronavirus profoundly and abruptly altered the functioning of societies, disrupting daily routines for entire populations within just weeks. Efforts to limit the virus's transmission, including the adoption of various political measures aimed at reducing social interactions (Daly et al., 2020; Lejeune, 2020), had significant consequences for individual psychological well-being (Toffolutti et al., 2022). Lockdowns, social distancing, and the shift to remote work impacted organizations, production processes, and, more broadly, labor markets and economies. Throughout the early months of the pandemic and continuing for some time thereafter, COVID-19 affected workers in diverse and often contradictory ways. We saw a range of dramatic and rapid changes in labor market conditions: many employees lost their jobs or experienced temporary suspensions; others were forced to adapt to remote work with entirely new settings and procedures; and still others, tasked with addressing the pandemic's immediate effects, saw dramatic increases in their workloads and shifts (Truxillo et al., 2020).

Some consequences of these changes have been widely studied, particularly the gendered impact of the pandemic on working conditions, family responsibilities, and other socially relevant issues (Connor et al., 2020; Collischon & Patzina, 2022; Möhring et al., 2021), as well as its effects on specific worker populations, such as healthcare workers—especially nurses, for whom systematic reviews (Yasin et al., 2024) and comparative studies (Makowicz et al., 2022) are available. This focus is not surprising, given that these workers were on the front lines of the emergency (Yi et al., 2022). Another highly studied group is teachers (Li & Yu, 2022; Argentin, 2022), with research primarily addressing their transition to online work (Glaveli et al., 2024).

However, most research on the pandemic's impact on job satisfaction has concentrated on specific subgroups or occupations, often relying on ad hoc surveys conducted shortly after the COVID-19 outbreak (e.g., Barili et al., 2022). In our view, less attention has been paid to the broader picture of workers' overall job satisfaction, as well as the exploration of specific job characteristics that influenced the varied impacts of the pandemic. Moreover, there is a lack of integrated analysis of both short- and long-term heterogeneous effects, which is essential for understanding the extent to which the pandemic-induced labor market shock caused structural changes. Analyzing the entire employee population over an extended period allows us to identify structural job characteristics linked to greater pandemic impacts on job satisfaction. This approach is crucial for avoiding misinterpretations that may arise from an overly narrow focus on pandemic-specific jobs, ensuring a broader external validity in the findings.

In this paper, we explore a specific consequence of the variations in labor market conditions due to the pandemic, namely how they affected the short- and long-term workers' job satisfaction. Our goal is to understand the extent to which the pandemic has been linked to shifts in work-related attitudes. Additionally, we investigate the heterogeneity of COVID-19's impact on job satisfaction, focusing on how certain occupational features either amplified or mitigated the pandemic's effects on employees' attitudes toward their jobs. Specifically, we analyze variations in job satisfaction across different occupations, categorized along four key dimensions of job quality during the pandemic: job precariousness, teleworkability, unsafeness, and essentiality.

We focus on the Italian case, which is particularly relevant as Italy was the first Western country to confront the pandemic, being severely affected from the outset alongside China. By late February 2020, Italy became Europe's viral epicenter (Berardi et al., 2020).

Using data from the European Labour Force Survey conducted by Eurostat, which since 2019 has systematically collected information on various dimensions of job satisfaction, we are able to study changes in job satisfaction throughout the pandemic. This survey allows us to adopt a multi-dimensional definition of job satisfaction, explicitly accounting for its complexity as a composite concept (de Bustillo Llorente et al., 2011).

This work contributes to the literature on the pandemic's impact on subjective well-being and related inequalities (Bambra et al., 2020; Zacher & Rudolph, 2021; Möhring et al., 2021), offering insights from different temporal perspectives. It also highlights the heterogeneity underlying the "new normal" that emerged after the pandemic crisis, shaped by evolving relationships between individuals and their jobs (Codagnone et al., 2021; Vyas, 2022). Specifically, we aim to shed light on two sources of this heterogeneity: first, we examine the various dimensions of job satisfaction that relate to different aspects of work; second, we identify key occupational characteristics that influenced how the pandemic affected workers across different labor market segments.

The paper is organized as follows: in the following section we describe how the pandemic altered the Italian labor market, then in the next section we present our research questions and set of hypotheses, and in Sect. 4 we move to data and methods used in this work. In Sect. 5 the results are presented, and Sect. 6 concludes.

2 How Covid-19 Affected Working Conditions in Italy

The unprecedented outbreak of COVID-19 thrust organizations into uncharted territory, forcing businesses to rapidly adapt and restructure their workforce (Hamouche, 2021; Carnevale & Hattack, 2020). As a result, the pandemic challenged traditional understandings of job quality, both in its objective and subjective dimensions, across organizations. In the short-term, the COVID-19 pandemic triggered significant shifts in work culture, fundamentally altering individuals' daily routines at work.

In Italy, the pandemic spread rapidly. By March 9th, 2020, just days before the World Health Organization (WHO, 2020) declared a global pandemic, and after several weeks of targeted measures in the most affected areas, nationwide mobility restrictions were enacted. Among Western countries, Italy was the first to implement total containment measures (lockdown) to protect the national healthcare system, particularly in the Northern regions, which were hardest hit by the virus. Regarding school closures, the Italian government took stringent actions, with much of the education system transitioning to distance learning for longer periods than in other countries (Pavolini et al., 2021). Despite the broad range of policy measures addressing the complex ethical, public health, legal, and economic challenges, the consequences of the pandemic were severe in Italy (Berardi et al., 2020).

The rapid and severe outbreak of the pandemic forced employers to quickly reshape their economic strategies, while employees were compelled to adjust their daily routines. These changes manifested in various ways, depending on the specific characteristics of each job. The labor market impact of the pandemic varied widely across different categories of European workers, influenced by several key factors. Among these, Flisi &

Santangelo (2022) identified two crucial characteristics: whether occupations were deemed critical and their level of teleworkability, along with the intensity of social interaction required.

To illustrate the heterogeneous impact of COVID-19 on workers' conditions—and, by extension, on their job satisfaction—consider the following examples. Essential workers, while exempt from confinement, faced a heightened risk of infection and were often required to take on harder shifts due to workforce reductions. In contrast, non-essential workers experienced a vastly different set of circumstances, shaped by a complex interplay of economic sectors, job functions, and labor market contracts. For instance, employees in non-essential services saw a reduction in their workload and feared job loss or dependence on subsidies, often without knowing how long their uncertain "working" conditions would last. Fixed-term contract workers experienced a sharper decline in hiring and terminations, though government policies offered some protection from the economic downturn caused by the pandemic (Casarico & Lattanzio, 2022).

It is important to note that even within the same economic sub-sector, the impact of the pandemic varied significantly among workers. For example, while waiters and bartenders experienced a complete reduction in their workloads, sometimes lasting for months, chefs and their assistants returned to work sooner, resuming catering services. Other employees in non-essential sectors did not face a reduction in workload but were instead required to adapt their jobs, performing the same tasks from home rather than from their usual workplaces.

With the imposition of lockdown measures, many office workers were forced to transition to remote work, prompting businesses to quickly adjust to the new circumstances with the support of technological and managerial resources (Fouad, 2020). Even within this scenario, heterogeneity persisted: some workers merely needed to adjust their workstations at home, while others had to completely reinvent the content and structure of their jobs. Teachers, for instance, are a prime example of the latter group, and not surprisingly, the impact of COVID-19 on them has been extensively studied, particularly in countries with prolonged school closures like Italy (Argentin, 2022; Pirro et al., 2022).

Another key issue related to the heterogeneous impact of COVID-19 on workers is its gender dimension. Research has shown that the pandemic's effects were gendered across the globe (Mooi-Reci & Risman, 2021), with women in the labor market facing more severe consequences (Brugiavini et al., 2021), primarily due to their roles as caregivers. The transformation of working conditions interacted more strongly for women with the domestic implications of remote work and the increased need to care for children due to school closures. However, in Italy, the impact on women was less severe than it might have been, thanks to the extension of unemployment insurance, which helped mitigate some of the lockdown's dramatic consequences (Bettin et al., 2024).

Simultaneously, in Italy, low-income individuals faced more adverse labor market outcomes and psychological distress as a result of the pandemic. For both blue-collar and low-income service workers, several key indicators worsened: monthly labor income, working hours, and the proportion of work done from home (Galasso, 2020). A significant increase in labor income inequality was also observed, though these negative impacts were somewhat alleviated by government interventions (Carta & de Philippis, 2021). In other countries, it was also emphasized that the unequal impact of COVID-19 was not only gendered but also racialized, with disparities stemming not just from job segregation but also from broader social inequalities (Auer, 2022).

From a longer-term perspective, early speculations about the impact of COVID-19 on labor market dynamics suggested that the countries most severely affected by the pandemic, such as Italy, would also face the worst employment outcomes. These negative long-term consequences were expected to be driven, in part, by pre-existing vulnerabilities in their economies, such as high unemployment rates and widespread job precariousness (Fana et al., 2020). Additionally, data collected from workers during the crisis revealed systematically negative expectations about recovery, with concerns about job prospects and career advancement (Codagnone et al., 2021).

Additionally, a shift occurred with workers moving across industries in search of better job opportunities. This appears to be the result of changes in their preferences, as some workers are no longer willing to accept poor working conditions (Causa et al., 2022). These changes, coupled with technological and organizational shifts, were particularly evident in countries like Italy, where the pandemic strongly encouraged small and medium-sized enterprises to invest in digital platforms—such as developing new forms of social media marketing (Hu et al., 2023). It also allowed workers to alter their commuting habits and routines, thanks to the widespread adoption of teleworking (Ceccato et al., 2022). Other studies highlight the pandemic's significant impact on demographic behaviors. For instance, examining Italy and taking advantage of regional variability, researchers emphasized that the effects of the pandemic extended far beyond the short-term increase in mortality. They noted more volatile migration flows in the medium term and a long-term decline in fertility rates (Alaimo et al., 2022).

When considering all these medium- and long-term changes together, it becomes clear that the pandemic initiated a series of experiments in work arrangements, challenging traditional occupational relationships and individuals' commitment to their jobs. These dynamics have laid the foundation for a "new normal" (Codagnone et al., 2021; Vyas, 2022), which is now being "normalized" in the post-pandemic world as the changes induced by COVID-19 become integrated into everyday life.

For all the reasons outlined above, it is clear that there is an urgent need to explore the interaction between the temporal dynamics of the pandemic—specifically the normalization of changes brought about by COVID-19—and the heterogeneity of these changes. It is important to recognize that the pandemic affected different labor market sectors and occupations in diverse ways (ILO, 2020).

In this context, the impact of COVID-19 on job satisfaction is both complex and crucial to understand. The way workers were affected by the virus's spread and its societal and economic consequences cannot be directly or linearly translated into changes in their work-related well-being. While the deterioration of labor market conditions might suggest a decline in job satisfaction - due to increased job instability, longer shifts, and the need to adapt workspaces and tasks - satisfaction could have increased as well. This could be the result of worsened general occupational conditions and the sense of contributing to a societal crisis, particularly for workers directly involved in combating the pandemic and providing essential services.

3 The Impact of COVID-19 on Job Satisfaction: Research Questions and Hypotheses

In this study, we address two primary research questions. The first is to explore the extent to which the COVID-19 pandemic in Italy has influenced patterns of job satisfaction, considering not only overall attitudes toward one's job but also satisfaction with specific job facets. The second objective is to examine the heterogeneity of these patterns across different occupational types. Specifically, we aim to assess whether changes in both general and specific job satisfaction have been influenced by factors such as job precariousness, teleworkability, unsafeness, and essentiality.

To address the first objective, we propose two competing hypotheses. During the COVID-19 pandemic, individuals faced numerous stressors that likely lowered subjective well-being, including increased uncertainty, the risk of job loss, health concerns, economic hardship, and limited opportunities for social and physical activities (Möhring et al., 2021). Working conditions deteriorated significantly, with a notable rise in workers experiencing high levels of strain, as described by the "demand-control" model (Karasek et al., 1981). This suggests that many workers were subjected to high job demands with little control over their work (Salas-Nicás et al., 2021). Furthermore, workers had to quickly adapt to uncertain economic and social conditions, often taking on tasks outside their usual roles or adjusting to new job requirements (Truxillo et al., 2020; Benavente et al., 2023). From the perspective of person-environment fit theory (Edwards, 1991), this misalignment between workers' abilities and organizational demands may have negatively affected individual well-being (Kristof, 1996). Therefore, we hypothesize that in the short term, COVID-19 has negatively influenced individual job satisfaction (*Hypothesis 1a*).

Conversely, the COVID-19 pandemic has been associated with what is known as the "eye of the hurricane" paradox (Recchi et al., 2020). This phenomenon refers to a perceived improvement in individuals' health and well-being during the pandemic, despite the deterioration in various aspects of life caused by the crisis. This seemingly paradoxical effect has been explained by the pandemic prompting individuals to reassess their lives, activating mechanisms of downward comparison (Olson et al., 2000). In other words, people adjusted their reference standards for evaluating their own situation, perceiving themselves as relatively less deprived (Walker & Pettigrew, 1984) when compared to those more severely affected by the pandemic. Similar patterns have been observed after other socially disruptive events, such as the Great East Japan Earthquake in March 2011, which led to the Fukushima nuclear disaster (Uchida et al., 2014). Based on this evidence, we hypothesize that in the short term, COVID-19 has positively influenced individual job satisfaction (*Hypothesis 1b*). In light of reflections framing the social and economic processes triggered by the pandemic as the beginning of a "new normality" (Vyas, 2022) and the "dynamic" nature of COVID-19 (Sønderskov et al., 2020), we hypothesize that in the mid- to long-term, job satisfaction patterns will return to their pre-pandemic trends (*Hypothesis 2*).

Turning to the second research question, we hypothesize that the impact of the pandemic on job satisfaction varies across different occupational characteristics. COVID-19 exposed certain occupations to a higher risk of downsizing than others, and the negative effects of the pandemic, such as job loss, were unevenly distributed across occupational groups (Blanas & Oikonomou, 2023). This resulted in some jobs becoming more precarious than others, with the threat of unemployment affecting individuals differently based on their position in the

labor market (Mongey et al., 2021). Therefore, we hypothesize that changes in job satisfaction will be more pronounced in precarious occupations compared to non-precarious occupations in the short term, but similar in both groups in the mid- to long-term (*Hypothesis 3*).

One of the most significant changes brought about by the COVID-19 pandemic was the widespread shift to remote work across various occupations, with work performed via information and communication technologies (ICTs) outside of the employer's premises (Eurofound, 2017). This abrupt transition likely exposed remote workers to substantial psychosocial changes (Kinman et al., 2020). Occupational groups with limited prior experience working from home, such as primary school teachers, were suddenly forced to adapt to these new arrangements (Kramer & Kramer, 2020). Similarly, professionals who preferred not to work remotely also had to adjust to this new reality. Furthermore, challenges related to home-based workstations (Reznik et al., 2022), reduced physical activity (Núñez-Sánchez et al., 2021), and weakened work-related social connections (Moens et al., 2022) may have negatively impacted individual well-being. Thus, we hypothesize that changes in job satisfaction will be more pronounced in highly teleworkable occupations compared to lowly teleworkable occupations in the short term, but similar in both groups in the mid- to long-term (*Hypothesis 4*).

Another job characteristic that was particularly amplified during the COVID-19 pandemic is the unsafeness of certain occupations. Even before the pandemic, a healthy and safe work environment was a key factor influencing job satisfaction. However, the outbreak of COVID-19 brought safety concerns to the forefront, as workers became increasingly aware of the risks associated with exposure to the virus, which significantly impacted their attitudes toward their jobs (Vu et al., 2022). Therefore, we hypothesize that changes in job satisfaction will be more pronounced in unsafe occupations compared to safe occupations in the short term, but similar in both groups in the mid- to long-term (*Hypothesis 5*).

Since the World Health Organization declared COVID-19 a global pandemic on March 11, 2020 (WHO, 2020), the concept of occupational "essentiality" has gained significant importance. Social distancing measures and lockdowns were largely applied to "non-essential" jobs—those deemed not critical to the functioning of society, which represented the majority of occupations. Drawing on the social identity approach (Turner & Reynolds, 2003), this government-imposed distinction between "essential" and "non-essential" jobs, widely publicized through pandemic response policies, may have affected workers' feelings of self-esteem and self-worth, altering their sense of professional identity (van Veelen et al., 2023). In this context, we hypothesize that changes in job satisfaction will be more pronounced in essential occupations compared to non-essential occupations in the short term, but similar in both groups in the mid- to long-term (*Hypothesis 6*).

4 Data and Variables

We utilize the Italian data of the European Labour Force Survey, considering seventeen quarterly-waves (from January-March 2019 to January-March 2023). The European Union Labour Force Survey (EU-LFS) is a cross-sectional representative sample survey among private households providing information on each (older than 15) member of the covered households; it uses a two-stage sample design, where municipalities are the first-stage units and households the second-stage. This survey, based on a household sample, provides data

on both labor market participation and inactivity for individuals aged 15 and over on a quarterly basis: hence, it permits to track market conditions over time. These data are particularly well-suited to our study, as all employed respondents are asked to rate their satisfaction with seven specific job facets: overall job, wage, career, number of hours, stability, interest, and distance. We focus on male and female workers aged 16–65 (N=756,054).

For each job satisfaction facet, respondents provide a score from 0 (not satisfied at all) to 10 (completely satisfied). These job satisfaction indicators have been shown to be unaffected by survey mode and are robust across different statistical methods (Piccitto et al., 2022). The full list of questions is provided in Table 2 in the appendix.

The availability of such a comprehensive set of job satisfaction measures enables us to assess job satisfaction during the pandemic using a multidimensional approach, which explicitly accounts for the fact that job satisfaction can be conceived as a broad attitude referring both to one's overall job and to specific aspects of it (Piccitto et al., 2023).

In order to pursue our research questions, we run a set of ordinary least squares (OLS) regression models. Considering the first research goal, we run the following model (Model 1):

$$\begin{gathered} Job\,sat_i = \alpha + \beta_1 Quarter_i + \\ \beta_2 \left(X_i^{'}\right) + \beta_3 Sector_i + \beta_4 Occ_i + \epsilon_i \end{gathered} \tag{M1}$$

Model 1 estimates the association between yearly quarter ($Quarter_i$) and job satisfaction ($Job\,sat_i$), controlling for a vector of individual characteristics (X_i') which includes: sex (female, male), age, education (lower than secondary, secondary, tertiary or more), area of residence (North, Centre, South and Islands), economic sector (agriculture, industry, construction, trade, other services) and occupation (Isco 08 classification at three digits). These characteristics are known to affect job satisfaction (Clark et al., 1996; Vila & García-Mora, 2005; Piccitto, 2022). The coefficient associated with each quarterly period will help determine how job satisfaction was influenced during the different phases of pandemic.

Model 2 is devoted to shed light on the heterogeneity of the association between yearly quarter and job satisfaction across occupations:

$$\begin{gathered} Job\,sat_i = \alpha + \beta_1 Quarter_i + \beta_2 \left(X_i^{'}\right) + \beta_3 Sector_i + \\ \beta_4 Quarter_i * Precar_i + \beta_5 Quarter_i * Telework_i + \\ \beta_6 Quarter_i * Unsafe_i + \beta_7 Quarter_i * Essential_i + \epsilon_i \end{gathered} \tag{M2}$$

This model includes in the equation four interaction terms, aimed at inquiring if occupational characteristics moderate the association between Covid-19 and job satisfaction shifts. In order to proxy job precariousness, we categorized occupations into four groups based on the level of employment loss they experienced during the Covid-19 pandemic. To create these four groups, we followed these steps: first, we calculated the employment loss for each occupation from January-March 2020 to April-June 2020; then, we ranked them according to their downsizing levels and grouped them into quartiles; finally, we defined as precarious occupations those grouped in the fourth quartile (occupations with the strongest employment loss) and not precarious those grouped in the first quartile. Then, we included in our equation the interaction term ($Quarter_i * Precar_i$), that allows to assess if the survey quarter intertwines with the occupational precariousness of a job in driving job satisfaction.

The concept of teleworkability is rendered by means of the technical teleworkability index, based on the prominence of physical tasks (Sostero et al., 2023). As done for precariousness, we ranked occupations according to their degree of teleworkability (low values equal to low teleworkability, high values equal to high teleworkability), we grouped them into quartiles, and we defined high-teleworkable occupations (those in the fourth quartile) and low-teleworkable occupations (those in the first quartile). Then, we used these two occupational groups in interaction with survey quarter ($Quarter_i * Telework_i$) to assess if differences in the association between yearly quarter and job satisfaction does emerge on the basis of occupational teleworkability.

To measure job unsafeness, we classified each job according to its degree of unsafeness by using the scale which has been developed and used by OECD (Basso et al., 2020), we created four quartiles (low values equal to low unsafeness, high values equal to high unsafeness) and we distinguished two groups of occupations: those high-unsafe (occupations in the fourth quartile) and those low-unsafe (occupations in the first quartile). These two occupational groups are then interacted with survey quarter ($Quarter_i * Unsafe_i$), to account for the variation of the job satisfaction in Covid times across occupations with a different degree of unsafeness.

Finally, we focused on the job essentiality, which identifies the key workers (Fasani & Mazza, 2020). In this case, the variable used distinguishes between essential (value 1) and not essential (value 0) occupations; then, we included the interaction term $(Quarter_i * Essential_i)$ in our model equation. All the analyses are run using Stata 18.

To capture the multidimensional nature of job satisfaction while maintaining a balance between explanatory comprehensiveness and parsimony, we focus on three dependent variables in our study. The first variable is the response to the overall job satisfaction question, which reflects general job satisfaction. To derive the other two variables, we conducted an exploratory factor analysis on the remaining seven job satisfaction items, aiming to identify two distinct factors. This analytical, by referring to the classic work psychology and managerial literature (Dyer & Parker, 1975; Brief & Aldag, 1977; Tremblay et al., 2009) approach enabled us to differentiate between extrinsic factors (related to material and economic rewards) and intrinsic factors (related to work content and intangible rewards) of job satisfaction (Herzberg et al., 1959; Weiss et al., 1967; Judge et al., 2017). The factor analysis was performed using the maximum likelihood estimation for extracting the factors; we used the oblique promax rotation method, which allows for correlations between the identified factors. The derived latent variables come from the regression-based factor scores; they are scaled to be approximately standard normal, with mean 0 and variance 1, without correlated residuals. Missing data were handled with listwise deletion.

The results presented in Fig. 1 indicate the presence of two distinct dimensions that clearly represent the intrinsic and extrinsic facets of job satisfaction. As a result, we calculated two new standardized indices, which are used as dependent variables to proxy for extrinsic and intrinsic job satisfaction.

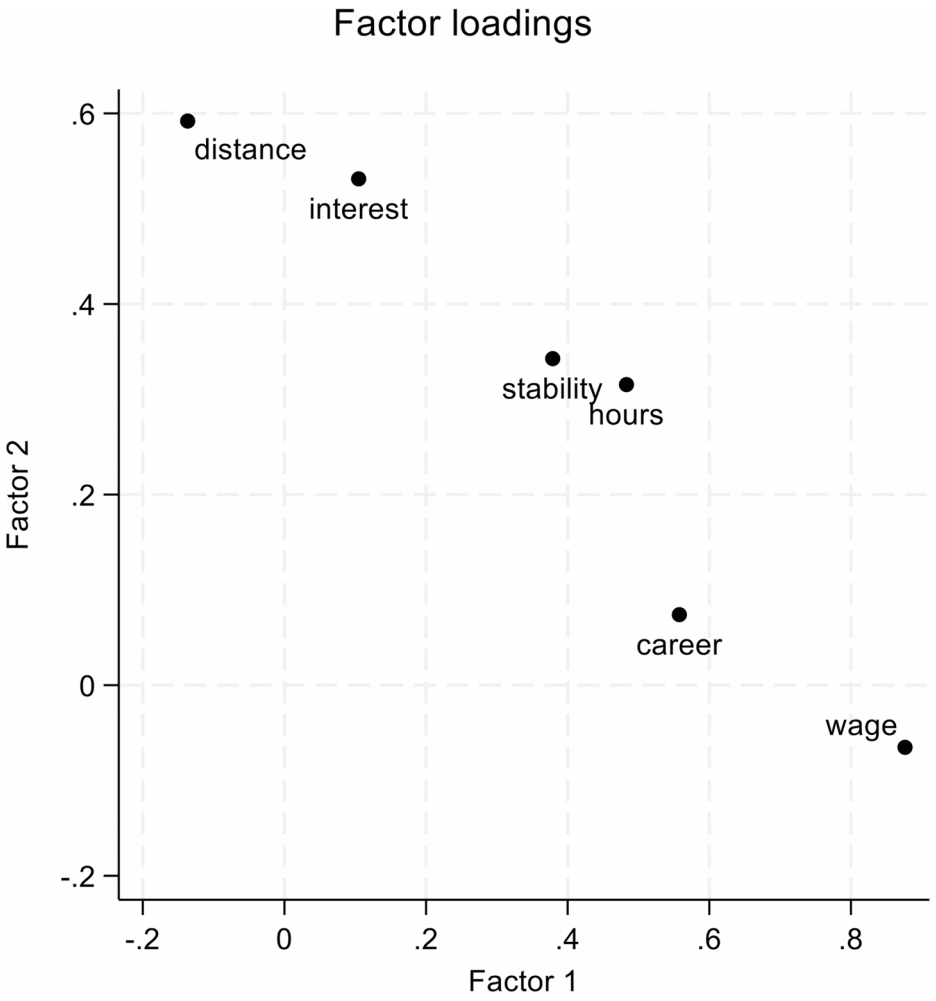

Fig. 1 Loadingplot. Pattern coefficients, oblique promax rotation

5 Empirical Results

Before focusing on the two research questions, we present descriptive statistics of the sample, aggregated across all waves, in Table 1. Inferential test statistics are reported in Table 3 in the appendix. The sample consists primarily of male respondents, with younger individuals (aged 16 to 35) making up only one-fifth of the total. Nearly half of the respondents hold an upper secondary degree. In terms of occupational distribution, there is a predominance of service and sales workers, as evidenced by the fact that more than the 55% are employed in the other services sector. Lastly, a majority of the individuals work in the Northern region of the country, representing more than half of the total sample, the regions earlier and more severely impacted by the pandemic crisis.

Table 1 Descriptive statistics

	%	Mean						
Gender:		Gen.	Wage	Car	Hours	Stab	Int	Dist
Men	55.5	7.7	6.8	6.5	7.3	7.5	8.0	8.0
Women	44.5	7.6	6.9	6.1	7.3	7.6	8.0	8.1
Age:								
16–25	5.5	7.7	7.0	6.6	7.4	7.1	7.8	8.0
26–35	15.5	7.7	7.0	6.6	7.3	7.4	8.0	7.9
36–45	24.9	7.7	6.9	6.4	7.3	7.6	8.0	8.0
46–55	32.7	7.6	6.8	6.2	7.3	7.7	8.0	8.1
56–65	21.4	7.6	6.7	6.1	7.3	7.7	8.0	8.1
Education:								
Lower secondary	28.5	7.5	6.6	6.0	7.2	7.3	7.7	8.0
Upper secondary	47.3	7.7	6.9	6.4	7.4	7.6	8.0	8.1
Tertiary or more	24.2	7.7	6.9	6.6	7.4	7.8	8.4	8.0
Occupation:								
Managers	3.6	7.6	6.8	7.1	7.0	7.3	8.4	8.4
Professionals	15.6	7.9	7.0	6.6	7.4	7.8	8.6	8.1
Technicians and associate professionals	17.5	7.8	7.0	6.7	7.5	7.8	8.3	7.9
Clerical support workers	12.8	7.6	7.1	6.3	7.6	8.0	7.8	8.0
Service and sales workers	17.5	7.6	6.7	6.1	7.1	7.3	7.9	8.2
Skilled agricultural, forestry and fishery workers	2.6	7.5	6.2	6.3	6.9	7.1	8.1	8.5
Craft and related trades workers	12.7	7.6	6.8	6.4	7.3	7.4	8.0	8.0
Plant and machine operators, and assemblers	6.8	7.5	7.0	6.1	7.3	7.6	7.6	8.0
Elementary occupations	10.8	7.2	6.5	5.4	7.0	7.2	7.1	7.8
Economic sector:								
Agriculture	4.1	7.4	6.3	6.0	7.0	6.9	7.8	8.2
Industry	19.3	7.6	7.1	6.4	7.5	7.7	7.8	8.0
Construction	6.1	7.7	6.8	6.6	7.3	7.2	8.0	7.7
Trade	13.4	7.5	6.7	6.4	7.2	7.3	7.9	8.1
Other services	57.1	7.7	6.8	6.3	7.3	7.7	8.1	8.1
Territorial area:								
North	52.8	7.7	7.0	6.3	7.4	7.7	8.0	8.1
Centre	19.9	7.6	6.8	6.4	7.3	7.6	8.0	8.0
South and Islands	27.3	7.5	6.6	6.3	7.1	7.3	7.9	7.9

When analyzing the average job satisfaction across different facets for these groups, several interesting patterns emerge. The differences between men and women are not very pronounced, except for job satisfaction related to career. This finding likely reflects the well-documented glass ceiling effect that hinders women from moving into higher outcome levels, such as earnings or authority, in their work life (Cotter et al., 2001). Generally, younger individuals tend to report higher satisfaction than older, with the notable exception of satisfaction with stability; indeed, especially in the segmented Italian labor market (Barbieri & Scherer, 2009), newcomers often face a more precarious position. The higher job satisfaction observed among more educated individuals can be attributed to their access to better job opportunities (Becker, 1962), which is evident in the satisfaction gradient across various occupations. Territorial differences in job satisfaction values are less pronounced.

After examining the bivariate statistics for our sample, we proceed to a multivariate analysis to explore our set of hypotheses. Figure 2 displays the predicted values and 90% confidence intervals of Model 1, addressing our first research question.

The results presented in Fig. 2 show that, in the short term, general job satisfaction in Italy experienced a significant and widespread decline due to the initial impact of the pandemic. After a steady increase throughout 2019 and into the first quarter of 2020, there was a noticeable drop in the second quarter of 2020 (April-June), coinciding with the peak of Covid-19 cases in Italy. However, by the July-September period, general job satisfaction began to recover, returning to pre-Covid levels. In the mid- and long-term, general job satisfaction continued its upward trajectory, with a particularly noticeable boost toward the end of our observation period.

So far, our analysis has focused exclusively on general job satisfaction, reflecting the overall attitude of respondents toward their jobs. Building on the literature that underscores the multidimensional nature of job satisfaction, we now aim to explore whether and how the trends observed in general satisfaction align with those in various specific dimensions of job satisfaction (Fig.3).

The graph illustrates that the pattern of job satisfaction followed a similar trend when examining both the intrinsic and extrinsic dimensions of individuals' attitudes toward their jobs. After an initial increase in both dimensions, the onset of Covid-19 led to a short-term decline in each. This decline was more pronounced for extrinsic job satisfaction, while the drop in intrinsic job satisfaction was less severe. This suggests that, for some workers, the worsening of objective labor market conditions was accompanied by a heightened sense of their relevance to society, which, in turn, may have boosted their self-esteem. However, in the mid- to long-term, both dimensions of job satisfaction quickly rebounded to pre-Covid levels. By the July-September 2020 period, work-related well-being in both the intrinsic and extrinsic aspects was even higher than it had been before the pandemic.

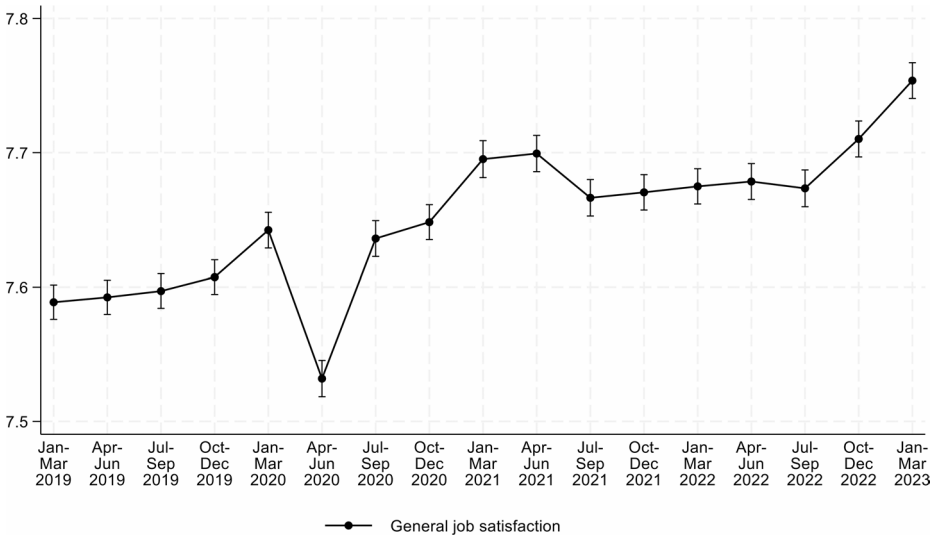

Fig. 2 General job satisfaction by survey quarter (2019–2020). Predicted values and 90% confidence intervals (c.i.): OLS regression. Model 1

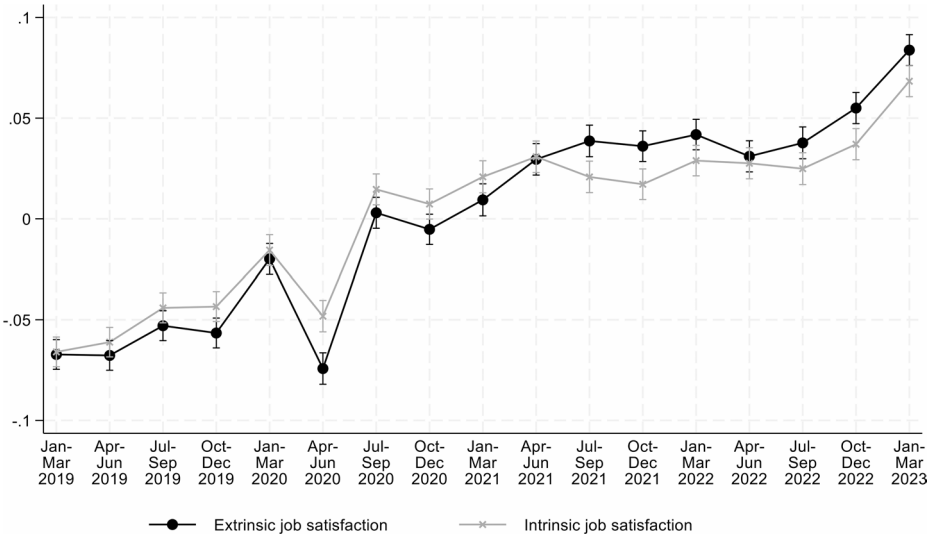

Fig. 3 Standardized extrinsic and intrinsic job satisfaction by survey quarter. Predicted values and 90% confidence intervals (c.i.): OLS regression. Model 1

The first part of the analysis highlights the relationship between the Covid-19 pandemic and changes in different dimensions of job satisfaction, both in the short- and long-term. In the second part of the analysis, we examine the heterogeneity of this relationship. Specifically, we investigate the extent to which the observed changes in job satisfaction (across its general, intrinsic, and extrinsic dimensions) varied in magnitude among workers in occupations with different levels of precariousness, teleworkability, unsafeness, and essentiality. To capture different temporal perspectives, we focus on five quarters: January-March 2020 (pre-pandemic, used as a reference point), April-June 2020 (the peak of the pandemic), January-March 2021 (mid-term perspective), and January-March 2022 and January-March 2023 (long-term perspectives).

Figure 4 illustrates the Average Marginal Effects (AME)[1] and 90% confidence intervals (c.i.) regarding the general job satisfaction by survey quarter and precariousness, teleworkability, unsafeness and essentiality of occupation. The AME values show shifts in job satisfaction from January-March 2020 to April-June 2020\January-March 2021\January-March 2022\January-March 2023, so to account for change in job satisfaction across different occupations both in the short- and in the mid-\long-term.

In the short term, significant differences in job satisfaction emerge based on job precariousness. Workers in high-precarity jobs experienced a notable decline in satisfaction from January-March 2020 to April-June 2020 (AME = −0.17; c.i.: −0.21, −0.13), while those in low-precarity jobs saw no significant change (AME = −0.01; c.i.: −0.05, 0.02). This heterogeneity persists in the mid-term: by January-March 2021, nine months after the pandemic peak, low-precarity workers experienced an increase in satisfaction compared to the pre-pandemic period (AME = 0.06; c.i.: 0.02, 0.10), while precarious workers did not see any change (AME = 0.00; c.i.: −0.04, 0.04). In the long-term (by January-March 2023), job

[1] The values of Average Marginal Effects (AME) and 90% confidence intervals (c.i.) for general, extrinsic and intrinsic job satisfaction are displayed in Table 4.

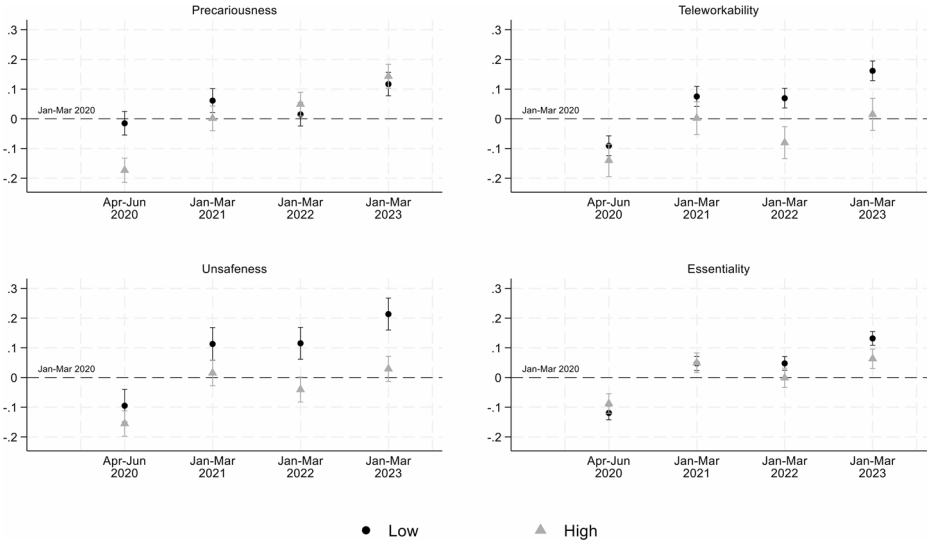

Fig. 4 General job satisfaction by survey quarter and precariousness, teleworkability, unsafeness and essentiality of occupation. Average Marginal Effects (AME) and 90% confidence intervals (c.i.): OLS regression

satisfaction increased similarly for both groups, with AME = 0.11 (c.i.: 0.08, 0.16) for low-precarity workers and AME = 0.14 (c.i.: 0.10, 0.18) for precarious workers.

Patterns of job satisfaction changes are more similar when considering occupations grouped by teleworkability, unsafeness, and essentiality. None of these characteristics appear to moderate job satisfaction shifts in the short term; the drops are of similar magnitude for low- (AME = −0.09; c.i.: −0.12, −0.06) and high- (AME = −0.14; c.i.: −0.19, −0.09) teleworkable jobs, low- (AME = −0.09; c.i.: −0.15, −0.04) and high- (AME = −0.16; c.i.: −0.20, −0.11) unsafe jobs, and essential (AME = −0.09; c.i.: −0.12, −0.15) and non-essential (AME = −0.12; c.i.: −0.14, −0.10) jobs. However, in the mid-term – nine months after the pandemic peak – the upward trend in job satisfaction for workers in occupations with low teleworkability, unsafeness, and essentiality resumed, with these groups reporting higher satisfaction compared to the pre-pandemic period. In contrast, workers in jobs with high teleworkability, unsafeness, and essentiality struggled to catch up with this upward trend even in the mid- to long-term.

When analyzing extrinsic job satisfaction (Fig. 5), a pattern similar to that observed for general job satisfaction emerges across occupations based on precariousness. In the short term, during the pandemic peak, workers in precarious jobs experienced a decline in extrinsic job satisfaction of −0.12 (c.i.: −0.15; −0.10), while those in low-precarious jobs showed no significant change (AME = −0.01; c.i.: −0.04; 0.01). In the mid-term, by January-March 2021, low-precarious workers had resumed an upward trend in satisfaction (AME = 0.06; c.i.: 0.04; 0.08), while precarious workers continued to report lower satisfaction than pre-pandemic levels (AME = −0.04; c.i.: −0.07; −0.02). However, in the long-term, both groups saw similar increases in extrinsic job satisfaction.

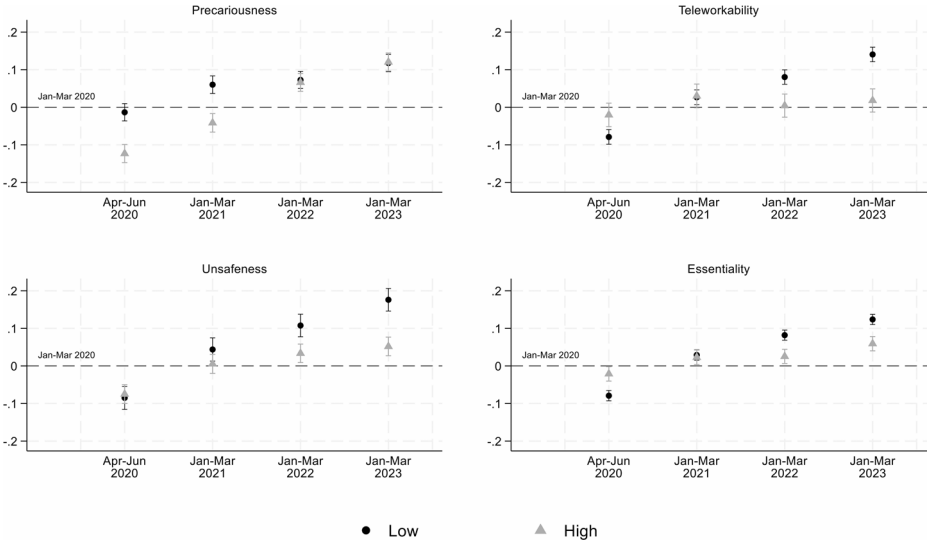

Fig. 5 Standardized extrinsic job satisfaction by survey quarter and precariousness, teleworkability, unsafeness and essentiality of occupation. Average Marginal Effects (AME) and 90% confidence intervals (c.i.): OLS regression

In contrast to general job satisfaction, the teleworkability and essentiality of a job moderate the short-term shifts in extrinsic job satisfaction. While workers in high-teleworkable (AME = −0.02; c.i.: −0.05; 0.01) and essential (AME = −0.02; c.i.: −0.04; 0.00) occupations reported similar satisfaction levels to the pre-pandemic quarter, those in low-teleworkable (AME = −0.08; c.i.: −0.10; −0.06) and non-essential (AME = −0.08; c.i.: −0.09; −0.07) jobs expressed lower levels of extrinsic job satisfaction. This pattern was not observed for unsafeness, with workers in both low-unsafe (AME = −0.08; c.i.: −0.12; −0.05) and high-unsafe (AME = −0.07; c.i.: −0.10; −0.05) jobs reporting a decline of similar magnitude.

For all three characteristics, as seen with general job satisfaction, workers in low-teleworkable, low-unsafe, and non-essential jobs experienced a quicker recovery, with their extrinsic job satisfaction surpassing that of workers in high-teleworkable, high-unsafe, and essential jobs by January-March 2022. This difference peaked in the long-term: for instance, by January-March 2023, the AME for workers in low-teleworkable jobs was 0.14 (c.i.: 0.12; 0.16), compared to just 0.02 (c.i.: −0.01; 0.05) for workers in high-teleworkable jobs.

Finally, when examining intrinsic job satisfaction (Fig. 6), the trends closely resemble those observed for extrinsic job satisfaction, particularly regarding precariousness and essentiality. In the short term, workers in high-precarious jobs experienced a notable decline in intrinsic job satisfaction (AME = −0.08; c.i.: −0.10; −0.05), whereas workers in low-precarious occupations reported no significant change (AME = 0.01; c.i.: −0.01; 0.03). This pattern persisted until January-March 2021, when workers in precarious jobs continued to express lower intrinsic satisfaction compared to one year prior (AME = −0.02; c.i.: −0.05; 0.00), while those in low-precarious jobs resumed an upward trend in this dimension of satisfaction (AME = 0.05; c.i.: 0.03; 0.07).

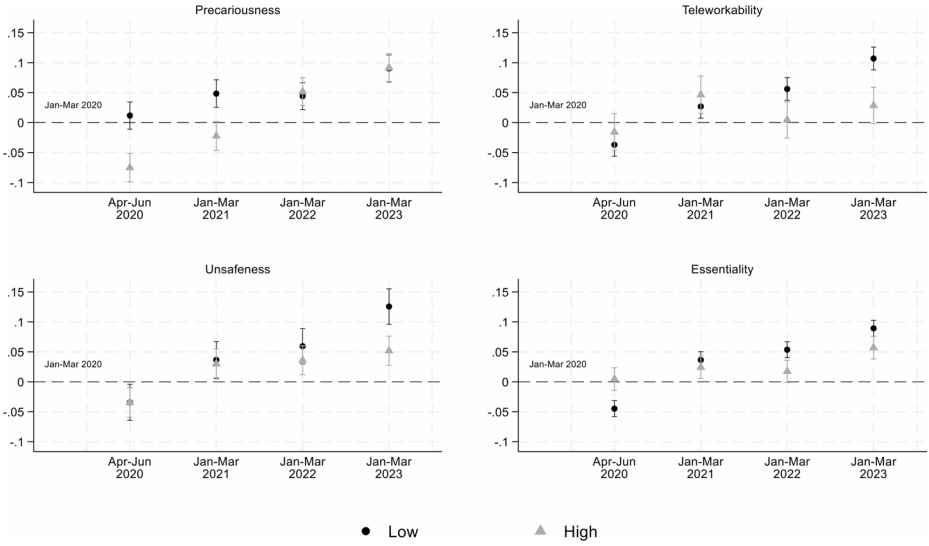

Fig. 6 Intrinsic job satisfaction by survey quarter and precariousness, teleworkability, unsafeness and essentiality of occupation. Average Marginal Effects (AME) and confidence intervals (c.i.): OLS regression

Regarding essentiality, the divergence seen in extrinsic satisfaction also appears in intrinsic satisfaction. In the short term, workers in non-essential jobs experienced a decrease in intrinsic job satisfaction (AME = −0.05; c.i.: −0.06; −0.03), while those in essential jobs were unaffected by the initial impact of Covid-19 (AME = 0.00; c.i.: −0.01; 0.02). In the long term, non-essential workers expressed higher intrinsic job satisfaction relative to pre-Covid levels, both two years (AME = 0.05; c.i.: 0.04; 0.07) and three years later (AME = 0.09; c.i.: 0.08; 0.11). In contrast, this trend was more muted for essential workers, who showed a notable increase in satisfaction only three years post-pandemic (AME = 0.06; c.i.: 0.04; 0.08).

No significant heterogeneity in intrinsic job satisfaction changes was found based on teleworkability or job safeness in the short term, suggesting that in the immediate aftermath of the pandemic peak, these characteristics did not drive changes in intrinsic satisfaction. However, these two characteristics did moderate shifts in intrinsic job satisfaction in the long term: by January-March 2023, workers in low-teleworkable jobs reported intrinsic job satisfaction of 0.11 (c.i.: 0.09; 0.13), while workers in high-teleworkable jobs reported 0.03 (c.i.: 0.00; 0.06). Similarly, workers in low-unsafe jobs expressed intrinsic job satisfaction of 0.13 (c.i.: 0.10; 0.16), while workers in high-unsafe jobs reported 0.05 (c.i.: 0.03; 0.08).

6 Discussion and Conclusions

Covid-19 acted as a powerful external shock to systems, generating an "ecological change" (Weick, 1979, p. 130) that profoundly altered the organization of life as we knew it (Morgeson et al., 2015). The labor market was deeply impacted by this transformation (Stephens et al., 2020), as employees were suddenly faced with new economic uncertainties, health

risks, varying workloads, and a reconfiguration of work arrangements and the work-family balance.

This paper examines the extent to which the changing work landscape during the pandemic translated into shifts in job satisfaction, with a particular focus on Italy—a country that was hit early and severely by the pandemic. As individuals' expectations about the labor market were reshaped (Codagnone et al., 2021), and their perceptions of work were significantly altered (Kramer & Kramer, 2020), what does this mean in terms of job satisfaction? This question is of critical importance, as job satisfaction is closely linked to quality of life and individual health (Faragher et al., 2005; Bialowolski & Weziak-Bialowolska, 2021).

Two specific analytical goals are set in this study. The first is to assess the extent to which the Covid-19 pandemic in Italy has impacted individual job satisfaction, both in the short- and mid-to-long term. Adopting a multidimensional perspective on job satisfaction, we examine both its overall component and two specific dimensions: extrinsic and intrinsic satisfaction. The second goal is to explore the heterogeneity of individual shifts in job satisfaction during the pandemic across different occupations, categorized by key characteristics such as precariousness, teleworkability, unsafeness, and essentiality.

This analytical approach, combined with a focus on the entire labor market and its occupational variety, enables our study to move beyond the commonly studied occupations—typically those in public services directly affected by the pandemic, such as healthcare and education (Li et al., 2022; Yasin et al., 2024). Instead, we investigate the structural relationship between job characteristics and the pandemic's impact on job satisfaction across a broader spectrum of occupations, accounting for the significant variability inherent in such a complex societal transformation.

Our analysis reveals that, in the short-term, there was a significant negative impact on job satisfaction during the peak of the pandemic (April-June 2020), particularly when strict measures such as lockdowns were implemented (*Hypothesis 1a confirmed*). The negative effect was more pronounced on extrinsic job satisfaction, while intrinsic satisfaction was less affected by Covid-19. However, there was no evidence of a shift in people's reference standards that could have led to increased job satisfaction during the pandemic, as suggested by the "eye of the hurricane" phenomenon (*Hypothesis 1b not confirmed*).

When considering a longer-term perspective, the negative impacts on job satisfaction were found to be short-lived, with satisfaction levels returning to pre-pandemic levels within a few months (*Hypothesis 2 confirmed*).

Concerning the heterogeneity of individual job satisfaction changes, two key job characteristics emerge as particularly significant: precariousness and essentiality. In the short-term, the negative impact of the pandemic on all three dimensions of job satisfaction was notably less severe for more secure workers—those who faced lower downsizing during the outbreak—compared to more precarious workers, who experienced a more substantial decline across all dimensions of job satisfaction. This decline persisted in the mid-term for precarious workers, particularly in terms of extrinsic and intrinsic job satisfaction. In contrast, more secure workers began to see a recovery in their job satisfaction by early 2021, resuming an upward trend (*Hypothesis 3 confirmed*). This finding underscores that Covid-19 exacerbated inequalities and labor market dualities in the short term, although government interventions likely helped mitigate this risk.

On the other hand, the short-term negative impact of the pandemic on extrinsic and intrinsic job satisfaction (but not on general job satisfaction) was significantly smaller for essential workers compared to non-essential workers. However, in the mid- and long-term, non-essential workers experienced a faster rebound in job satisfaction levels (*Hypothesis 6 partly confirmed*). These results suggest that essential workers, who were more directly involved in responding to the crisis, experienced the "eye of the hurricane" paradox, compensating for disruptions in their working habits in the short term (Recchi et al., 2020). However, once their centrality faded, they experienced a negative and persistent rebound effect in the mid- to long-term.

Regarding the other two occupational characteristics—unsafeness and teleworkability—while these factors significantly influenced changes in employees' working conditions, they did not moderate the impact of Covid-19 on job satisfaction (*Hypotheses 4 and 5 rejected*).

Overall, this study has provided valuable insights into the complex processes through which the pandemic influenced job satisfaction among Italian workers. While our analysis is based on a large dataset with detailed and comparable measures of job satisfaction over the required time span, several limitations must be acknowledged.

First, the observational nature of the study design means that our findings offer a descriptive assessment of the issue, rather than allowing for causal inferences about the relationships observed. Second, the dataset's limited scope in terms of the facets of job satisfaction could have constrained the breadth of our analysis. Specifically, considering the unique context of the Covid-19 crisis, it would have been beneficial to include measures of respondents' self-perceived satisfaction with the social utility and recognition of their jobs.

Third, future research could build on work-life balance literature by examining the interaction between worker characteristics—such as household composition and domestic resources—and shifts in job satisfaction.

Finally, a significant limitation arises from the reliance on self-reported assessments in large-scale surveys like the one used in this study. Respondents may not always fully consider objective job quality and well-being in their evaluations (de Bustillo Llorente & Macias, 2005; Bowling et al., 2010). Mechanisms such as coping strategies and other cognitive adjustments can shape individuals' perceptions, making it difficult to determine the extent to which these factors influenced responses during such a turbulent period as the pandemic. Future research could address this issue and provide a deeper understanding of the underlying mechanisms influencing the results presented here.

Results of our analyses provide several implications. While we did not detect evidence of the "eye of the hurricane" phenomenon, the short-lived nature of the negative impact of job satisfaction suggests that state emergency policies may have successfully alleviated individuals' initial discomfort with the new situation (Codagnone et al., 2021). Additionally, our results indicate that, as the pandemic persisted, individuals adapted to this new and unexpected context, reinforcing the idea of a post-pandemic "new normal," characterized by new organizational settings and arrangements (Vyas, 2022).

Considering the heterogeneity of individual job satisfaction changes, precariousness and essentiality emerge as particularly important job characteristics, while unsafeness and teleworkability unsafeness had no moderating effect on the impact of Covid-19 on job satisfaction.

The lack of association with unsafeness may be explained by the increased countermeasures implemented during the first phase of the pandemic (Sischka et al., 2024), which helped mitigate the risks for workers in unsafe occupations. However, the absence of a significant connection between teleworkability and shifts in job satisfaction is more surprising and warrants further investigation. The adoption of remote work varied across organizational contexts (Ishimaru et al., 2021), and in some cases, it provided workers with a better work-life balance, offering them more autonomy and flexibility due to the accelerated digitalization caused by the pandemic. Yet, teleworkability is not inherently beneficial for all workers, as it interacts in complex ways with post-pandemic processes of work acceleration, normalization, and restructuring (Vyas, 2022).

The impact of "hybrid work" on job satisfaction largely depends on workers' preferences, organizational variables (such as company culture, trust, HR policies, and management practices) (Urien, 2023), and broader social arrangements (Charalampous et al., 2019). These considerations were already well established before the pandemic's remote work surge. Therefore, it is not surprising that, both during the initial phase of the crisis and beyond, the shift to remote working did not automatically correlate with increased satisfaction. In some cases, remote work may bring challenges such as work-home interference, poor communication, procrastination, social and professional isolation, and concerns over career advancement (Charalampous et al., 2019; Wang et al., 2021). Our findings highlight the importance of a more thoughtful and well-supported implementation of remote work, which requires substantial social and political efforts (Nomura et al., 2020).

Appendix

Table 2 Job satisfaction variables and questions

Question	Variable
How satisfed are you with your current job?	General
How satisfed are you with earnings?	Wage
How satisfed are you with the possibility of career?	Career
How satisfed are you with the number of working hours?	Number of hours
How satisfed are you with the stability of your job?	Stability
How do you think your job is interesting?	Interest

Table 3 F-tests

	General		Wage		Career		Number of hours		Stability		Interest	
	F	*p*	F	*p*	F	*p*	F	*p*	F	*p*	F	*p*
Gender:	16.7	0.00	43.7	0.00	514.9	0.00	65.6	0.00	188.4	0.00	106.3	0.00
Age:	190.0	0.00	286.8	0.00	429.0	0.00	34.0	0.00	674.9	0.00	73.0	0.00
Edu.:	633.0	0.00	479.0	0.00	1010.9	0.00	311.6	0.00	1016.0	0.00	1988.8	0.00
Occ.:	1213.7	0.00	645.6	0.00	2480.4	0.00	549.2	0.00	1613.5	0.00	5279.4	0.00
Econ. sector:	100.6	0.00	59.9	0.00	80.2	0.00	132.9	0.00	685.2	0.00	644.71	0.00
Territ. area:	1130.1	0.00	883.3	0.00	446.7	0.00	1133.5	0.00	1568.9	0.00	818.1	0.00

Note: *F* F-statistic; *p* p-value

Edu. education, *occ.* occupation, *econ. sector* economic sector, *territ. area* territorial area

Table 4 General, extrinsic and intrinsic job satisfaction by survey quarter and precariousness, teleworkability, unsafeness and essentiality of occupation. Average marginal effects (AME) and 90% confidence intervals (c.i.): OLS regression

General job satisfaction				Extrinsic job satisfaction				Intrinsic job satisfaction			
Precariousness				Precariousness				Precariousness			
	PV	low c.i	high c.i		PV	low c.i	high c.i		PV	low c.i	high c.i
	April-June 2020				April-June 2020				April-June 2020		
Low	-0.01	-0.05	0.02	Low	-0.01	-0.04	0.01	Low	0.01	-0.01	0.03
High	-0.17	-0.21	-0.13	High	-0.12	-0.15	-0.10	High	-0.08	-0.10	-0.05
	January-March 2021				January-March 2021				January-March 2021		
Low	0.06	0.02	0.10	Low	0.06	0.04	0.08	Low	0.05	0.03	0.07
High	0.00	-0.04	0.04	High	-0.04	-0.07	-0.02	High	-0.02	-0.05	0.00
	January-March 2022				January-March 2022				January-March 2022		
Low	0.01	-0.02	0.05	Low	0.07	0.05	0.10	Low	0.04	0.02	0.07
High	0.05	0.01	0.09	High	0.07	0.04	0.09	High	0.05	0.03	0.08
	January-March 2023				January-March 2023				January-March 2023		
Low	0.12	0.08	0.16	Low	0.12	0.09	0.14	Low	0.09	0.07	0.11
High	0.14	0.10	0.18	High	0.12	0.10	0.14	High	0.09	0.07	0.12
General job satisfaction				Extrinsic job satisfaction				Intrinsic job satisfaction			
Teleworkability				Teleworkability				Teleworkability			
	PV	low c.i	high c.i		PV	low c.i	high c.i		PV	low c.i	high c.i
	April-June 2020				April-June 2020				April-June 2020		
Low	-0.09	-0.12	-0.06	Low	-0.08	-0.10	-0.06	Low	-0.04	-0.06	-0.02
High	-0.14	-0.19	-0.09	High	-0.02	-0.05	0.01	High	-0.02	-0.05	0.01
	January-March 2021				January-March 2021				January-March 2021		
Low	0.08	0.04	0.11	Low	0.03	0.01	0.05	Low	0.03	0.01	0.05
High	0.00	-0.05	0.06	High	0.03	0.00	0.06	High	0.05	0.02	0.08
	January-March 2022				January-March 2022				January-March 2022		
Low	0.07	0.04	0.10	Low	0.08	0.06	0.10	Low	0.06	0.04	0.08
High	-0.08	-0.13	-0.03	High	0.00	-0.03	0.04	High	0.00	-0.03	0.03
	January-March 2023				January-March 2023				January-March 2023		
Low	0.16	0.13	0.19	Low	0.14	0.12	0.16	Low	0.11	0.09	0.13
High	0.02	-0.04	0.07	High	0.02	-0.01	0.05	High	0.03	0.00	0.06
General job satisfaction				Extrinsic job satisfaction				Intrinsic job satisfaction			
Unsafeness				Unsafeness				Unsafeness			
	PV	low c.i	high c.i		PV	low c.i	high c.i		PV	low c.i	high c.i
	April-June 2020				April-June 2020				April-June 2020		
Low	-0.09	-0.15	-0.04	Low	-0.08	-0.12	-0.05	Low	-0.03	-0.06	0.00
High	-0.16	-0.20	-0.11	High	-0.07	-0.10	-0.05	High	-0.03	-0.06	-0.01
	January-March 2021				January-March 2021				January-March 2021		
Low	0.11	0.06	0.17	Low	0.04	0.01	0.07	Low	0.04	0.01	0.07
High	0.02	-0.03	0.06	High	0.01	-0.02	0.03	High	0.03	0.00	0.05
	January-March 2022				January-March 2022				January-March 2022		
Low	0.12	0.06	0.17	Low	0.11	0.08	0.14	Low	0.06	0.03	0.09
High	-0.04	-0.08	0.00	High	0.03	0.01	0.06	High	0.04	0.01	0.06
	January-March 2023				January-March 2023				January-March 2023		
Low	0.21	0.16	0.27	Low	0.18	0.15	0.21	Low	0.13	0.10	0.16
High	0.03	-0.01	0.07	High	0.05	0.03	0.08	High	0.05	0.03	0.08
General job satisfaction				Extrinsic job satisfaction				Intrinsic job satisfaction			
Essentiality				Essentiality				Essentiality			

Table 4 (continued)

General job satisfaction				Extrinsic job satisfaction				Intrinsic job satisfaction			
	PV	low c.i	high c.i		PV	low c.i	high c.i		PV	low c.i	high c.i
	April-June 2020				April-June 2020				April-June 2020		
Low	-0.12	-0.14	-0.10	Low	-0.08	-0.09	-0.07	Low	-0.04	-0.06	-0.03
High	-0.09	-0.12	-0.05	High	-0.02	-0.04	0.00	High	0.00	-0.01	0.02
	January-March 2021				January-March 2021				January-March 2021		
Low	0.05	0.02	0.07	Low	0.03	0.02	0.04	Low	0.04	0.02	0.05
High	0.05	0.02	0.08	High	0.02	0.00	0.04	High	0.02	0.01	0.04
	January-March 2022				January-March 2022				January-March 2022		
Low	0.05	0.02	0.07	Low	0.08	0.07	0.10	Low	0.05	0.04	0.07
High	0.00	-0.03	0.03	High	0.03	0.01	0.04	High	0.02	0.00	0.04
	January-March 2023				January-March 2023				January-March 2023		
Low	0.13	0.11	0.15	Low	0.12	0.11	0.14	Low	0.09	0.08	0.10
High	0.06	0.03	0.10	High	0.06	0.04	0.08	High	0.06	0.04	0.08

Funding Open access funding provided by Università degli Studi di Milano - Bicocca within the CRUI-CARE Agreement.

Data Availability Data are gathered by Istat under informed consent. The data are available upon request to Istat (https://www.istat.it/).

Declarations

Conflicting Interest the author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

References

Alaimo, L. S., Ciommi, M., Vardopoulos, I., Nosova, B., & Salvati, L. (2022). The medium-term impact of the COVID-19 pandemic on population dynamics: The case of Italy. *Sustainability*, *14*, 13995.

Argentin, G. (2022). Bending but not breaking. The Covid-19 pandemic and teacher job satisfaction. *Rassegna Italiana di Sociologia, 3*, 621–648.

Auer, D. (2022). Firing discrimination: Selective labor market responses of firms during the COVID-19 economic crisis. *PLoS One, 17*(1), e0262337.

Bambra, C., Riordan, R., Ford, J., & Matthews, F. (2020). The COVID-19 pandemic and health inequalities. *Journal of Epidemiology and Community Health, 74*(11), 964–968.

Barbieri, P., & Scherer, S. (2009). Labour market flexibilization and its consequences in Italy. *European Sociological Review*, *25*(6), 677–692.

Barili, E., Bertoli, P., Grembi, V., & Rattini, V. (2022). Job satisfaction among healthcare workers in the aftermath of the COVID-19 pandemic. *PLoS One, 17*(10), e0275334.
Basso, G., Boeri, T., Caiumi, A., & Paccagnella, M. (2020). The new hazardous jobs and worker reallocation. *OECD, Social, Employment and Migration Working Papers, 247*.
Becker, G. (1962). Investment in human capital: A theoretical analysis. *Journal of Political Economy, 70*(5), 9–49.
Benavente, P., Ronda, E., & Diaz, E. (2023). Occupation-related factors affecting the health of migrants working during the COVID-19 pandemic–a qualitative study in Norway. *International Journal for Equity in Health*, *22*(1), 1–11.
Berardi, C., Antonini, M., Genie, M. G., Cotugno, G., Lanteri, A., Melia, A., & Paolucci, F. (2020). The COVID-19 pandemic in Italy: Policy and technology impact on health and non-health outcomes. *Health Policy and Technology, 9*(4), 454–487.
Bettin, G., Giorgetti, I., & Staffolani, S. (2024). The impact of Covid-19 lockdown on the gender gap in the Italian labour market. *Review of Economics of the Household*, *22*, 1–33.
Bialowolski, P., & Weziak-Bialowolska, D. (2021). Longitudinal evidence for reciprocal effects between life satisfaction and job satisfaction. *Journal of Happiness Studies*, *22*(3), 1287–1312.
Blanas, S., & Oikonomou, R. (2023). COVID-induced economic uncertainty, tasks and occupational demand. *Labour Economics*, *81*, 102335.
Bowling, N. A., Eschleman, K. J., & Wang, Q. (2010). A meta-analytic examination of the relationship between job satisfaction and subjective well-being. *Journal of Occupational and Organizational Psychology, 83*(4), 915–934.
Brief, A. P., & Aldag, R. J. (1977). The intrinsic-extrinsic dichotomy: Toward conceptual clarity. *Academy of Management Review*, *2*(3), 496–500.
Brugiavini, A., Buia, R. E., & Simonetti, I. (2021). Occupation and working outcomes during the coronavirus pandemic. *European Journal of Ageing*, *1*, 20.
Carnevale, J. B., & Hatak, I. (2020). Employee adjustment and well-being in the era of COVID-19: Implications for human resource management. *Journal of Business Research*, *116*, 183–187.
Carta, F., & de Philippis, M. (2021). The impact of the COVID-19 shock on labour income inequality: evidence from Italy. *Bank of Italy Occasional Paper*, 606.
Casarico, A., & Lattanzio, S. (2022). The heterogeneous effects of COVID-19 on labor market flows: Evidence from administrative data. *Journal of Economic Inequality*, *20*, 537–558.
Causa, O., Abendschein, M., Luu, N., Soldani, E., & Soriolo, C. (2022). The post-COVID-19 rise in labour shortages. *OECD Economics Department Working Papers*, *1721*, OECD Publishing, Paris.
Ceccato, R., Baldassa, A., Rossi, R., & Gastaldi, M. (2022). Potential long-term effects of Covid-19 on telecommuting and environment: An Italian case-study. *Transportation Research Part D: Transport and Environment, 109*, Article 103401.
Charalampous, M., Grant, C. A., Tramontano, C., & Michailidis, E. (2019). Systematically reviewing remote e-workers' well-being at work: A multidimensional approach. *European Journal of Work and Organizational Psychology*, *28*(1), 51–73.
Clark, A., Oswald, A., & Warr, P. (1996). Is job satisfaction U-shaped in age? *Journal of Occupational and Organizational Psychology*, *69*(1), 57–81.
Codagnone, C., Bogliacino, F., Gómez, C., Folkvord, F., Liva, G., Charris, R., Montealegre, F., Lupiañez Villanueva, F., & Veltri, G. A. (2021). Restarting normal life after Covid-19 and the lockdown: Evidence from Spain, the United Kingdom, and Italy. *Social Indicators Research, 158*, 241–265.
Collischon, M., & Patzina, A. (2022). COVID-19 and gender differences in social trust: Causal evidence from the first wave of the pandemic. *Socius: Sociological Research for a Dynamic World, 8*, Article 23780231221117910.
Connor, J., Madhavan, S., Mokashi, M., Amanuel, H., Johnson, N. R., Pace, L. E., & Bartz, D. (2020). Health risks and outcomes that disproportionately affect women during the Covid-19 pandemic: A review. *Social Science & Medicine*, *266*, 113364.
Cotter, D. A., Hermsen, J. M., Ovadia, S., & Vanneman, R. (2001). The glass ceiling effect. *Social Forces, 80*(2), 655–681.
Daly, M., Ebbinghaus, B., Lehner, L., Naczyk, M., & Vlandas, T. (2020). *Oxford supertracker: The global directory for COVID policy trackers and surveys*. Department of Social Policy and Intervention.
de Bustillo Llorente, R. M., & Macias, E. F. (2005). Job satisfaction as an indicator of the quality of work. *Journal of Socio-Economics, 34*(5), 656–673.
de Bustillo Llorente, R. M., Fernández-Macías, E., Antón, J. I., & Esteve, F. (2011). *Measuring more than money: The social economics of job quality*. Edward Elgar Publishing.
Dyer, L., & Parker, D. F. (1975). Classifying outcomes in work motivation research: An examination of the intrinsic-extrinsic dichotomy. *Journal of Applied Psychology*, *60*(4), 455.

Edwards, J. R. (1991). Person-job fit: A conceptual integration, literature review, and methodological critique. In C. L. Cooper & I. T. Robertson (Eds.), *International Review of Industrial and Organizational Psychology* (Vol. Vol. 6, pp. 283–357). Wiley.

Eurofound. (2017). *Working anytime, anywhere: The effects on the world of work*. Publications Office of the European Union.

Fana, M., Torrejón Pérez, S., & Fernández-Macías, E. (2020). Employment impact of COVID-19 crisis: From short term effects to long terms prospects. *Journal of Industrial and Business Economics, 47*, 391–410.

Faragher, E. B., Cass, M., & Cooper, C. L. (2005). The relationship between job satisfaction and health: A meta-analysis. *Occupational and Environmental Medicine*, *62*(2), 105–112.

Fasani, F., & Mazza, J. (2020). Immigrant key workers: their contribution to Europe's COVID-19 response. *Institute of Labor Economics (IZA) Discussion papers, 142.*

Flisi, S., & Santangelo, G. (2022). Occupations in the European labour market during the COVID-19 pandemic. *Intereconomics*, *57*, 120–126.

Fouad, N. A. (2020). Editor in Chief's introduction to essays on the impact of COVID-19 on work and workers. *Journal of Vocational Behavior, 119*, Article 103441.

Galasso, V. (2020). COVID: Not a great equalizer. *CESifo Economic Studies*, *66*(4), 376–393.

Glaveli, N., Manolitzas, P., Tsourou, E., & Grigoroudis, E. (2024). Unlocking teacher job satisfaction during the COVID-19 pandemic: A multi-criteria satisfaction analysis. *Journal of the Knowledge Economy*, *15*(1), 1264–1285.

Hamouche, S. (2021). Human resource management and the COVID-19 crisis: Implications, challenges, opportunities, and future organizational directions. *Journal of Management & Organization*, 1–31.

Herzberg, F., Mausner, B., & Snyderman, B. B. (1959). The motivation to work. Wiley.

Hu, L., Olivieri, M., & Rialti, R. (2023). Dynamically adapting to the new normal: Unpacking smes' adoption of social media during COVID-19 outbreaks. *Journal of Business & Industrial Marketing*, *38*(8), 1675–1688.

International Labour Organization (2020). *ILO Monitor: COVID-19 and the World of Work* (4th ed.)

Ishimaru, T., Nagata, M., Hino, A., Yamashita, S., Tateishi, S., Tsuji, M., & Fujino, Y. (2021). Workplace measures against COVID-19 during the winter third wave in Japan: Company size-based differences. *Journal of Occupational Health, 63*(1), e12224.

Judge, T. A., Weiss, H. M., Kammeyer-Mueller, J. D., & Hulin, C. L. (2017). Job attitudes, job satisfaction, and job affect: A century of continuity and of change. *Journal of applied psychology, 102*(3), 356.

Karasek, R., Baker, D., Marxer, F., Ahlbom, A., & Theorell, T. (1981). Job decision latitude, job demands, and cardiovascular disease: A prospective study of Swedish men. *American Journal of Public Health*, *71*(7), 694–705.

Kinman, G., Grant, C., Fraser, J., Bell, N., Breslin, G., Colville, T., & MacKey, G. (2020). *Working from home: Healthy sustainable working during the COVID-19 pandemic and beyond*. British Psychological Society.

Kramer, A., & Kramer, K. Z. (2020). The potential impact of the COVID-19 pandemic on occupational status, work from home, and occupational mobility. *Journal of Vocational Behavior, 119*, 103442.

Kristof, A. L. (1996). Person-organization fit: An integrative review of its conceptualizations, measurement, and implications. *Personnel Psychology, 49*(1), 1–49.

Lejeune, O. (2020). *Coronavirus Counter-measures Tracker*. https://coronavirusmeasures.herokuapp.com/

Li, M., & Yu, Z. (2022). Teachers' satisfaction, role, and digital literacy during the COVID-19 pandemic. *Sustainability*, *14*(3), 1121.

Makowicz, D., Lisowicz, K., Bryniarski, K., Dziubaszewska, R., Makowicz, N., & Dobrowolska, B. (2022). The impact of the COVID-19 pandemic on job satisfaction among professionally active nurses in five European countries. *Frontiers in Public Health*, *10*, 1006049.

Moens, E., Lippens, L., Sterkens, P., Weytjens, J., & Baert, S. (2022). The COVID-19 crisis and telework: A research survey on experiences, expectations and hopes. *European Journal of Health Economics, 23*(4), 729–753.

Möhring, K., Naumann, E., Reifenscheid, M., Wenz, A., Rettig, T., Krieger, U., & Blom, A. G. (2021). The COVID-19 pandemic and subjective well-being: Longitudinal evidence on satisfaction with work and family. *European Societies*, *23*(sup1), S601–S617.

Mongey, S., Pilossoph, L., & Weinberg, A. (2021). Which workers bear the burden of social distancing? *The Journal of Economic Inequality*, *19*(3), 509–526.

Mooi-Reci, I., & Risman, B. J. (2021). The gendered impacts of COVID-19: Lessons and reflections. *Gender & Society*, *35*(2), 161–167.

Morgeson, F. P., Mitchell, T. R., & Liu, D. (2015). Event system theory: An event-oriented approach to the organizational sciences. *Academy of Management Review*, *40*(4), 515–537.

Nomura, S., Yoneoka, D., Tanoue, Y., Kawashima, T., Shi, S., Eguchi, A., & Miyata, H. (2020). Time to reconsider diverse ways of working in Japan to promote social distancing measures against the COVID-19. *Journal of Urban Health*, *97*, 457–460.

Núñez-Sánchez, J. M., Gómez-Chacón, R., Jambrino-Maldonado, C., & García-Fernández, J. (2021). Corporate well-being programme in COVID-19 times. The Mahou San Miguel case study. *Sustainability, 13*(11), Article 6189.

Olson, J. M., Buhrmann, O., & Roese, N. J. (2000). Comparing comparisons: An integrative perspective on social comparison and counterfactual thinking. In J. Suls & L. Wheeler (Eds.), *Handbook of social comparison: Theory and research* (pp. 379–398). Springer.

Pavolini, E., Argentin, G., Falzetti, P., Galanti, T. M., Campodifiori, E., & Le Rose, G. (2021). Tutti a casa. Il sistema di istruzione italiano alla prova del Covid-19. *Politiche Sociali, Social Policies, 2*, 255–280.

Piccitto, G. (2022). *Donne, Uomini e lavori: Qualità Del lavoro e soddisfazione Lavorativa in Italia*. Ledizioni.

Piccitto, G., Liefbroer, A. C., & Emery, T. (2022). Does the survey mode affect the association between subjective well-being and its determinants? An experimental comparison between face-to-face and web mode. *Journal of Happiness Studies*, *23*(7), 3441–3461.

Piccitto, G., Schadee, H. M., & Ballarino, G. (2023). Job satisfaction and gender in Italy: A structural equation modeling approach. *Social Indicators Research, 169*(3), 775–793.

Pirro, F., Toscano, E., Di Nunzio, D., & Pedaci, M. (2022). When school 'stayed home'. A sociology of work approach on the remote work of teachers during the lockdown for the COVID-19 pandemic: The case of Italy. *International Review of Sociology, 32*(3), 529–540.

Recchi, E., Ferragina, E., Helmeid, E., Pauly, S., Safi, M., Sauger, N., & Schradie, J. (2020). The "eye of the hurricane" paradox: An unexpected and unequal rise of well-being during the COVID-19 lockdown in France. *Research in Social Stratification and Mobility, 68*, Article 100508.

Reznik, J., Hungerford, C., Kornhaber, R., & Cleary, M. (2022). Home-based work and ergonomics: Physical and psychosocial considerations. *Issues in Mental Health Nursing*, *43*(10), 975–979.

Salas-Nicás, S., Moncada, S., Llorens, C., & Navarro, A. (2021). Working conditions and health in Spain during the COVID-19 pandemic: Minding the gap. *Safety Science*, *134*, 105064.

Sischka, P. E., Schmidt, A. F., & Steffgen, G. (2024). COVID-19 countermeasures at the workplace, psychological well-being, and mental health-a nationally representative latent class analysis of Luxembourgish employees. *Current Psychology*, *43*(14), 13202–13218.

Sønderskov, K. M., Dinesen, P. T., Santini, Z. I., & Østergaard, S. D. (2020). Increased psychological well-being after the apex of the COVID-19 pandemic. *Acta Neuropsychiatrica*, *32*(5), 277–279.

Sostero, M., Milasi, S., Hurley, J., Fernandez-Macias, E., & Bisello, M. (2023). Teleworkability and the COVID-19 crisis: Potential and actual prevalence of remote work across Europe. *IZA Journal of Labor Policy*, *13*(1), 1–25.

Stephens, K. K., Jahn, J. L., Fox, S., Charoensap-Kelly, P., Mitra, R., Sutton, J., Jahn, Jody L. S.., Waters, Eric D.., Xie, Bo., & Meisenbach, R. J. (2020). Collective sensemaking around COVID-19: Experiences, concerns, and agendas for our rapidly changing organizational lives. *Management Communication Quarterly, 34*(3), 426–457.

Toffolutti, V., Plach, S., Maksimovic, T., Piccitto, G., Mascherini, M., Mencarini, L., & Aassve, A. (2022). The association between COVID-19 policy responses and mental well-being: Evidence from 28 European countries. *Social Science & Medicine*, *301*, 114906.

Tremblay, M. A., Blanchard, C. M., Taylor, S., Pelletier, L. G., & Villeneuve, M. (2009). Work extrinsic and intrinsic motivation scale: Its value for organizational psychology research. *Canadian Journal of Behavioural Science = Revue Canadienne Des Sciences Du Comportement, 41*(4), 213.

Truxillo, D. M., Cadiz, D. M., & Brady, G. M. (2020). COVID-19 and its implications for research on work ability. *Work, Aging and Retirement, 6*(4), 242–245.

Turner, J. C., & Reynolds, K. J. (2003). The social identity perspective in intergroup relations: Theories, themes, and controversies. In R. Brown & S. L. Gaertner (Eds.), *Handbook of Social Psychology: Intergroup Processes* (pp. 133–152). Blackwell.

Uchida, Y., Takahashi, Y., & Kawahara, K. (2014). Changes in hedonic and eudaimonic well-being after a severe nationwide disaster: The case of the great East Japan earthquake. *Journal of Happiness Studies, 15*(1), 207–221.

Urien, B. (2023). Teleworkability, preferences for telework, and well-being: A systematic review. *Sustainability*, *15*(13), 10631.

van Veelen, R., Kruger, J. S., Derks, B., Manzi Cembrano, M. F., Vink, M., & Yerkes, M. A. (2023). *Declared non-essential during the COVID-19 pandemic: Effects on Professional Identity*. https://osf.io/preprints/psyarxiv/ekqsa

Vila, L. E., & García-Mora, B. (2005). Education and the determinants of job satisfaction. *Education Economics, 13*(4), 409–425.

Vu, T. V., Vo-Thanh, T., Nguyen, N. P., Van Nguyen, D., & Chi, H. (2022). The COVID-19 pandemic: Workplace safety management practices, job insecurity, and employees' organizational citizenship behavior. *Safety Science*, *145*, 105527.

Vyas, L. (2022). New normal at work in a post-COVID world: Work–life balance and labor markets. *Policy and Society, 41*(1), 155–167.

Walker, I., & Pettigrew, T. F. (1984). Relative deprivation theory: An overview and conceptual critique. *British Journal of Social Psychology, 23*(4), 301–310.

Wang, B., Liu, Y., Qian, J., & Parker, S. K. (2021). Achieving effective remote working during the COVID-19 pandemic: A work design perspective. *Applied Psychology*, *70*(1), 16–59.

Weick, K. E. (1979). *The Social Psychology of Organizing*. Addison–Wesley.

Weiss, D. J., Dawis, R. V., England, G. W., & Lofquist, L. H. (1967). *Manual for the Minnesota Satisfaction Questionnaire, Minnesota studies in Vocational Rehabilitation*. Industrial Relations Center, University of Minnesota.

WHO (2020). *WHO Director-General's Opening Remarks at the Media Briefing on COVID-19–11 March 2020*. WHO. https://www.who.int/directorgeneral/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefingon-covid-19---11-march-2020

Yasin, Y. M., Alomari, A., Al-Hamad, A., & Kehyayan, V. (2024). The impact of COVID-19 on nurses' job satisfaction: A systematic review and meta-analysis. *Frontiers in Public Health*, *11*, 1285101.

Yi, M., Jiang, D., Wang, J., Zhang, Z., Jia, Y., Zhao, B., Guo, Lei, & Chen, O. (2022). Relationships among thriving at work, organisational commitment and job satisfaction among Chinese front-line primary public health workers during COVID-19 pandemic: A structural equation model analysis. *BMJ Open, 12*(6), Article e059032.

Zacher, H., & Rudolph, C. W. (2021). Individual differences and changes in subjective wellbeing during the early stages of the COVID-19 pandemic. *American Psychologist*, *76*(1), 50–62.

Authors and Affiliations

Gianluca Argentin[1] · Ivana Fellini[1] · Giorgio Piccitto[1]

✉ Giorgio Piccitto
giorgio.piccitto@unimib.it

Gianluca Argentin
gianluca.argentin@unimib.it

Ivana Fellini
ivana.fellini@unimib.it

[1] Dipartimento di Sociologia e Ricerca Sociale, Università degli Studi di Milano-Bicocca, Piazza dell'Ateneo Nuovo, 1, Milano 20126, Italy