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Article

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# Remote Working and Home Learning: How the Italian Academic Population Dealt with Changes Due to the COVID-19 Pandemic Lockdown

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## Special Issue

Promoting Sustainable Work Environments through Diversity and Inclusion

Edited by

Dr. Silvia Platania and Dr. Anna Paolillo



## Article

# Remote Working and Home Learning: How the Italian Academic Population Dealt with Changes Due to the COVID-19 Pandemic Lockdown

Alessandra Macciotta <sup>1</sup>, Domenica Farinella <sup>2</sup> , Giuseppina Dell'Aversana <sup>3</sup>, Marco Fornili <sup>4</sup>, Davide Petri <sup>4</sup> , Laura Baglietto <sup>4</sup>, Michela Baccini <sup>5</sup> , Carmen Berrocal Montiel <sup>6</sup>, Giuseppe Fiorentino <sup>7</sup>, Gianluca Severi <sup>5,8,9</sup>, Fulvio Ricceri <sup>1,\*</sup> , Maria Gabriella Campolo <sup>10</sup>  and Andreina Bruno <sup>11</sup>

- <sup>1</sup> Centre for Biostatistics, Epidemiology, and Public Health (C-BEPH), Department of Clinical and Biological Sciences, University of Turin, 10043 Orbassano, TO, Italy; alessandra.macciotta@unito.it
  - <sup>2</sup> Department of Political Science and Law, University of Messina, 90122 Messina, ME, Italy; domenica.farinella@unime.it
  - <sup>3</sup> Department of Psychology, University of Milan Bicocca, 20126 Milano, MI, Italy; giuseppina.dellaversana@unimib.it
  - <sup>4</sup> Department of Clinical and Experimental Medicine, University of Pisa, 56126 Pisa, PI, Italy; marco.fornili@unipi.it (M.F.); davide.petri@unipi.it (D.P.); laura.baglietto@unipi.it (L.B.)
  - <sup>5</sup> Department of Statistics, Informatics, Applications “Giuseppe Parenti”, University of Florence, 50134 Firenze, FI, Italy; michela.baccini@unifi.it (M.B.); gianluca.severi@gustaveroussy.fr (G.S.)
  - <sup>6</sup> Department of Surgical, Medical and Molecular Pathology, and Critical Care Medicine, University of Pisa, 56126 Pisa, PI, Italy; carmen.berrocalmontiel@unipi.it
  - <sup>7</sup> Italian Naval Academy, 57127 Livornom, LI, Italy; giuseppe.fiorentino@unipi.it
  - <sup>8</sup> CESP, Faculté de médecine-Université Paris-Sud, Faculté de médecine-UVSQ, INSERM, Université Paris-Saclay, 94807 Villejuif, France
  - <sup>9</sup> Gustave Roussy, 94807 Villejuif, France
  - <sup>10</sup> Department of Economics, University of Messina, 98122 Messina, ME, Italy; mariagabriella.campolo@unime.it
  - <sup>11</sup> Department of Education Science, University of Genoa, 16121 Genova, GE, Italy; andreina.bruno@unige.it
- \* Correspondence: fulvio.ricceri@unito.it; Tel.: +39-011-6705440



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**Abstract:** The COVID-19 pandemic introduced changes in people's lives that affected their mental health. Our study aimed to explore the level of psychological distress in the academic population during the lockdown period and investigate its association with the new working or studying conditions. The study sample included 9364 students and 2159 employees from five Italian universities from the study IO CONTO 2020. We applied linear regression models to investigate the association between home learning or remote working conditions and psychological distress, separately for students and employees. Psychological distress was assessed using the Hospital Anxiety and Depression Scale (HADS). In both students and employees, higher levels of distress were significantly associated with study/work–family conflicts, concerns about their future careers, and inadequacy of equipment; in employees, higher levels of distress were significantly associated with a lack of clarity on work objectives. Our results are in line with previous research on the impact of spaces and equipment in remote working/studying from home. Moreover, the study contributes to deepening the association between well-being and telework–family conflict, which in the literature is still equivocal. Practical implications require academic governance to promote sustainable environments both in remote and hybrid work conditions, by referring to a specific management by objectives approach.

**Keywords:** COVID-19; psychological distress; HADS; students; academic workers; teleworking; homeworking; e-learning

## 1. Introduction

The COVID-19 pandemic unexpectedly introduced drastic changes in people's private, social, and working lives, and confronted them with new health concerns. Prior to COVID-19, only two percent of employees in Italy regularly performed some form of telework,

versus the European average of eight percent [1]. This scenario forced one to experiment with new ways of working and studying, with an unknown impact on wellbeing.

Previous research showed an increase of depressive and anxiety symptoms among the general population during the early stages of the COVID-19 pandemic [2,3]. In Italy, a survey indicated that a quarter of respondents had higher levels of anxiety and depression, and almost half had a sleep problem [4].

One of the first lockdown measures in Italy concerned the educational sector, and from 5 March 2020, all universities and schools were closed. Continuing teaching and research activities became an important challenge for the whole academic population. More specifically, some studies focused on the mental health of the academic community and evidenced that students and academic staff could be affected differently by the stressful events related to the COVID-19 breakdown [5]. For example, approximately one third of the academic population reported severe to moderate symptoms of psychological distress, with students showing higher levels than university workers [6,7]. Consistently, in our previous study, severe levels of anxiety or depression were reported by 20% of an academic sample and were associated with being a student [8]. Otherwise, university workers reported more concerns about health, social, and economic issues in comparison to students [7,9].

Hence, the next sections analyze more deeply the pandemic effect on students' and on university workers' well-being.

### *1.1. University Students' Well-Being during the Pandemic*

Students were at a higher depression risk compared to the general population, even in the pre-pandemic period [10]. A recent review has shown a deterioration in students' mental health, noting a higher prevalence of depression, anxiety, and sleep disorders compared to prior to the pandemic [11,12].

Similar findings have been observed in Italian undergraduate students [13], where female students reported more anxiety symptoms than males [6,13–15].

The ongoing outbreak of COVID-19 has radically changed the nature and intensity of risk factors for students' well-being. First, online learning seems to have been a significant stressor for many students [16,17]. Students experienced changes in home learning that affected learning satisfaction and consequently psychological distress. Interruption of in-person activities, change of schedules, and transition of classes to virtual classrooms seem to have had a negative impact on students' quality of life, academic performance, and mental health. Most students reported a decrease in their academic performance [18] and lower satisfaction in the academic activity during the pandemic [19].

Second, changes in learning practice and schedules may have resulted in increased workload and extended work hours. An Italian study showed that many students complained about workload and fatigue due to online lectures, while reporting sufficient average satisfaction for the home learning approach [20]. By contrast, other studies reported a decrease in study hours [18] and students' difficulties in concentrating on their academic work [21].

Third, the home learning environment is another key factor when studying at home. A Slovenian study found that during the pandemic, students had experienced a worsening of study environment conditions, perceiving them as less suitable [22].

Moreover, students perceived a difficulty in combining studies with their family [23], and when compared to male students, female students reported greater interference in their academic work because of their domestic roles [9,20].

In addition, some studies analyzed the impact of the specific stressor of uncertainty on students' mental health. The threat of the pandemic has generated insecurity and concern for the future, affecting students' psychological distress [24–26]. More specifically, some studies revealed that students perceived a high degree of insecurity regarding the near future of the education process [27–29]. Others showed that students' psychological distress was related to the uncertainty of future career prospects [19], and increased concerns about the academic outcomes [15,27,28].



### 1.2. Academic Staff Well-Being during the Pandemic

In recent years, academics have experienced rapid changes that transversely affected all workers in university with health-impairment outcomes [30]. Additionally, the pandemic has brought radical changes for academic workers, but very little is known about how they were affected by new work conditions [31]. Even if pre-pandemic research has already shown that the academic population is at high risk of psychological distress, current studies suggest focusing more precisely on the impact of the adoption of compulsory teleworking during COVID-19 on well-being.

During the pandemic, workers were forced mandatorily and full-time to telework (the so call crisis-induced telework) [32]. These two conditions of telework have had a great impact on employee wellbeing [33].

Pre-pandemic studies emphasized both the advantages and difficulties of teleworking. Teleworking can facilitate flexibility in working spaces and times, greater autonomy, responsibility and work–life balance, reduced travel time, greater concentration on work and privacy [34,35]; but teleworkers have often faced some pitfalls, such as technostress, difficulties to maintain boundaries between work and nonwork, or professional isolation [36–38] and the evidence of the positive effect of telework on well-being and on performance-related outcomes was equivocal [39–41].

Evidence of the effect of telework on well-being remains still inconsistent: some studies described the negative effects of telework during the COVID-19 pandemic on mental health outcomes [42], whilst others involving non-academic workers found high teleworking satisfaction [43–45].

Moreover, several studies investigated the perception of advantages and disadvantages of teleworking in the pandemic, but more rarely, the effect of teleworking satisfaction on well-being, with few exceptions that demonstrated its impact [33,46]. Two Italian studies showed that teleworkers in the field of education and research appreciate teleworking less, and have higher levels of psychological distress, than in other working fields [46,47].

Another Italian study on university teachers showed how satisfaction with distance teaching is a protective factor for depression [48].

In the academic population, multiple teleworking risk factors could affect well-being: first, many perceived a higher workload (both increased workload pressure and longer working hours) [5,23,49,50]. A study during the pandemic on the general population found a larger prevalence of psychological distress in workers with a higher workload [51].

Literature also reported evidence of the negative effects of teleworking on family routines during the pandemic, such as the perception of a loss of boundaries between private and professional life and greater work–family conflict [5,49,52,53]. Several studies also showed an association between having young children and psychological distress [9,54], which seems stronger among females [31]. Teleworkers were more likely to report distress resulting from work–family conflict and being in confined spaces at home [45].

A study found that during the pandemic, academic staff perceived work environments as less suitable [22]. Workers with inadequate working spaces manifested higher levels of distress [46,51]. More specifically, inadequate work equipment resulted in being one major stressor for teleworkers during the pandemic.

Some studies analyzed the role of occupational concerns deriving from the economic crisis during the pandemic. The pandemic casts doubt on the financing of research projects and on the success of publication [53,55]. Workers reported more concerns about working conditions, such as losing jobs and income, than students [7], and job insecurity proved to be a significant predictor of anxiety and depression [52].

Moreover, research during COVID-19 showed that many managers struggled with the effective management of people working from home, and contemporary research, that many workers felt untrusted and micromanaged [56]. Focusing on leadership styles during teleworking in the pandemic, some studies pointed out that authoritarian leadership should be avoided [37] and that managers need to use skills of delegation and empowerment to provide their workers with greater autonomy over their work methods and timing, which

in turn will promote worker health and performance [56]. Since increased autonomy and responsibility in their own work activity is a specificity required of teleworkers, a key element to support remote academic working quality is the reference to a “management by objectives” approach, according to which teleworkers’ goals have to be clearly set and leaders should trust, engage, and empower employees rather than incentivizing or controlling them [57–60]. Clear objectives can help workers in knowing what they need to do in their work, when constant communication is not possible.

### 1.3. Aim of the Study

Given the strong evidence of the impact of remote learning and working on academic community well-being, even in view of the above controversial data on research, further studies are needed to investigate the role of working and learning from home conditions on mental health. Indeed, since most of the reviewed studies conducted in the academic context investigated the levels of distress [7,9] but more rarely the impact of remote learning/working satisfaction, family–work/study conflict, and concern for the future, a deeper understanding of the impact of these context-specific variables on psychological distress seems important. Moreover, it seems important to consider simultaneously all the variables indicated above and to use a consistent sample size, rarely present in the reviewed studies.

In this direction, the aim of our study was to explore the level of psychological distress in a large sample of the Italian academic population during the lockdown period of the COVID-19 pandemic and to investigate its association with working and studying conditions. In relation to the literature, we tested whether the following factors associated with working and studying from home affect psychological distress: satisfaction with remote learning and working; work/study load; adequacy of the learning and working equipment; conflict with private life; and future uncertainty.

In addition, given the relationship nature of well-being, the study investigates the contribution of context-specific protective factors for mental health in the academic community during the pandemic period, i.e., the learning and work environment. More specifically, we explored the academic learning/work equipment and, only for workers, the clarity of work objectives, which has not yet been explored within the academic population during the COVID-19 pandemic.

In addition, since during the pandemic working women reported higher work–family conflict, as they were expected to devote more time to housework and childcare, we tested if there are gender differences in predictors of distress, by referring specifically to work–family conflict.

This study also expands previous work by exploring whether the contextual factors associated with psychological distress differ across students, faculty members, and administrative staff.

Based on the previous arguments and findings, we propose that psychological distress in the academic population is associated with the described contextual factors of working and studying from home during lockdown. Thus, we hypothesized:

**Hypothesis 1a (H1a).** *Home learning satisfaction will be significantly associated with lower student psychological distress.*

**Hypothesis 1b (H1b).** *Teleworking satisfaction will be significantly associated with lower worker psychological distress.*

**Hypothesis 2a (H2a).** *Increased learning load will be significantly associated with higher student psychological distress.*

**Hypothesis 2b (H2b).** *Increased workload will be significantly associated with higher worker psychological distress.*

**Hypothesis 3a (H3a).** *Adequacy of study equipment will be significantly associated with lower student psychological distress.*

**Hypothesis 3b (H3b).** *Adequacy of work equipment will be significantly associated with lower worker psychological distress.*

**Hypothesis 4a (H4a).** *Study–family conflict will be significantly associated with higher student psychological distress.*

**Hypothesis 4b (H4b).** *Work–family conflict will be significantly associated with higher worker psychological distress.*

**Hypothesis 5a (H5a).** *Concern for the future (studying uncertainty) will be significantly associated with higher student psychological distress.*

**Hypothesis 5b (H5b).** *Concern for the future (working uncertainty) will be significantly associated with higher worker psychological distress.*

**Hypothesis 6 (H6).** *Clarity of work objectives will be significantly associated with lower worker psychological distress.*

**Hypothesis 7 (H7a).** *The negative association between study–family conflict and student psychological distress will be stronger for women than for men.*

**Hypothesis 7 (H7b).** *The negative association between work–family conflict and worker psychological distress will be stronger for women than for men.*

## 2. Materials and Methods

Data were obtained from the project IO CONTO 2020, a study conducted on the academic population of five Italian universities during the first wave of the COVID-19 pandemic, which led to a nationwide lockdown starting from March 2020. Students and employees of the universities of Turin and Genoa (northern Italy), Pisa and Florence (central Italy), and Messina (southern Italy) were asked to complete a questionnaire about personal and familial characteristics, home features, studying and/or working conditions, lifestyle habits (e.g., physical activities, smoking and drinking behavior), health and psychological distress.

The project aimed to evaluate the impact of the restrictions on the psychophysical health of the academic population.

Each university collected data through the Moodle learning platform and dealt with anonymization and analyses at the local level. Aggregated data were then meta-analyzed by one single center.

IO CONTO 2020 was approved by the Bioethics Committee of the University of Pisa (Review No. 10/2020, 3 April 2020).

### 2.1. Study Population

About 220,000 students and 20,000 academic workers were invited to fill in the questionnaire: among them, about 18,000 individuals participated in the online survey (6% of the students and 19% of the employees). For these analyses, working students (those who declared they had a current job, together with their studying activities) were excluded. As regards employees, only teaching–research staff and administrative and support staff who declared they had switched to remote working because of the COVID-19 restrictions were included in the sample.

### 2.2. Personal and Familial Information, Home Features

Some survey questions concerned socio-demographic characteristics. Participants were asked to give personal information, i.e., age and gender, family details, including household monthly income, presence of children, elderly or disabled members, and home features, such as the number of inhabitants and number of rooms. The presence of cohabitants working or studying from home or involved in in-person professional work with the public during the COVID-19 lockdown was recorded, together with changes in the economic situation and concern for the future due to economic uncertainty related to the pandemic.

### 2.3. Remote Working and Home Learning Features

The second section of the survey concerned working and studying features. Comparisons between past and current conditions were asked to participants in terms of workload and satisfaction of the new home-based situation. Five-score Likert scales (between 1, indicating strongly disagree, and 5, strongly agree) were used to measure overload, work (or study)–family conflicts, and concern for future career prospects. Participants were asked to evaluate their work (or study) place in terms of noise, needed technology, and comfort: the mean of the three answers resulted in a 4-score Likert scale able to measure the adequacy of work (or study) equipment (0, poorly equipped, and 3, fully equipped) [58]. Similarly, clarity of work objectives [58] for academic workers was measured by selecting four single items regarding clarity of expectations, clarity of duties and responsibilities, clarity of goals and objectives, and understanding of the role into the overall aim of the organization. The mean of the four answers resulted in a 4-score Likert scale (between 0, scarce clarity, and 3, optimal clarity).

### 2.4. Psychological Distress

Psychological distress was computed through the Italian version of the Hospital Anxiety and Depression Scale (HADS) [61–63], a self-assessment scale composed of 14 items, 7 related to anxiety and 7 to depression. The sum of each item, rated on a 4-score Likert scale from 0 to 3, returns a discrete value between 0 and 42 for the overall scale, and between 0 and 21 for the subscales.

### 2.5. Statistical Analysis

Frequencies and percentages were used to describe categorical variables, while means and standard deviations described continuous variables' distributions.

Linear regression models were fitted to investigate the association between psychological distress and home learning conditions for students or remote working for workers. Models were fitted including, at first, only personal and familial information, and home features, i.e., possible confounders (Model 1), and then confounders and home learning or remote working conditions, i.e., predictors, together (Model 2).

For each model,  $\beta$  coefficients and 95% Confidence Intervals (CI) were computed to estimate the association between predictors and psychological distress, i.e., to test the hypotheses from H1 to H7. Furthermore, the R-squared was computed to evaluate the proportion of variability of the outcome explained by confounders, then by confounders and predictors together.

The moderation effect of gender in the association between study (or work)–family conflicts and psychological distress were investigated through linear regression models of the interaction between gender and study (or work)–family conflicts and adjusted by potential confounders, separately for students and workers (Model 3).

Linear regression analysis was performed separately in each university and the coefficients were combined through a random-effect meta-analysis. The R-squared from each center were combined weighting by the corresponding sample size.

All the analyses were performed in R (4.1.2 version) and Stata (SE17). All statistical tests were two-sided with a significance level of 0.05.

## 3. Results

Nearly half of both teaching–research staff and administrative or support staff were excluded because they had not switched from traditional to remote working after the beginning of lockdown, while approximately 30% of students were excluded because both students and workers (Figure 1). Overall, 11,523 participants (9364 students and 2159 employees) were considered for the analyses.



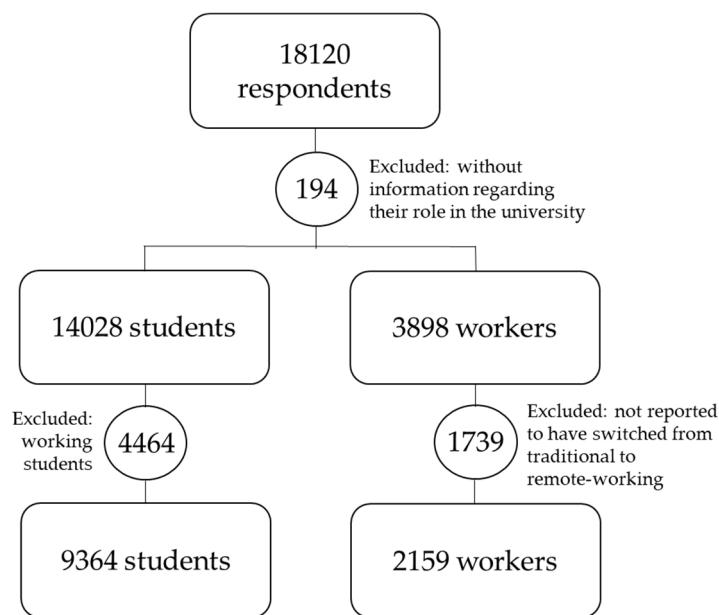


Figure 1. Workflow depicting exclusion criteria adopted for the study.

3.1. Descriptive Analyses—Students and Workers

Table 1 shows the characteristics of the 11,523 respondents considered for the analysis.

Table 1. Descriptive analyses of students and academic workers. Abbreviations: SD = Standard Deviation.

	Level	Overall N (%) Mean (SD)	Students N (%) Mean (SD)	Workers N (%) Mean (SD)
<i>n</i>		11,523	9364	2159
Age, years		27.75 (11.68)	22.85 (4.03)	48.87 (10.28)
Sex	Female	7632 (67.2)	6301 (68.3)	1331 (62.8)
	Male	3718 (32.8)	2930 (31.7)	788 (37.2)
Household monthly income	≤1500	2096 (23.5)	1777 (25.9)	319 (15.6)
	1501–3000	3926 (44.1)	3097 (45.1)	829 (40.6)
	≥3000	2887 (32.4)	1995 (29.0)	892 (43.7)
Sons or Daughters	No	835 (38.9)	-	835 (38.9)
	Yes	1310 (61.1)	-	1310 (61.1)
No. Of Inhabitants/No. Of Rooms		0.51 (0.24)	0.52 (0.24)	0.43 (0.26)
Old or disabled cohabitants (Do you live with old or disabled people?)	No	9021 (84.9)	7295 (84.6)	1726 (86.3)
	Yes	1599 (15.1)	1326 (15.4)	273 (13.7)
Cohabitants involved in activities with the public	No	6212 (56.5)	4648 (52.0)	1564 (76.3)
	Yes	4777 (43.5)	4290 (48.0)	487 (23.7)
Cohabitants working or studying from home	No	3666 (33.5)	2927 (32.9)	739 (35.8)
	Yes	7286 (66.5)	5960 (67.1)	1326 (64.2)
Changes in your familial economic condition	Worse	4498 (41.4)	3960 (45.2)	538 (25.5)
	The same or better	6368 (58.6)	4796 (54.8)	1572 (74.5)
Role	Student	9364 (81.3)	9364 (100)	-
	Professor or Researcher	1025 (8.9)	-	1025 (47.5)
	Administrative Staff	1134 (9.8)	-	1134 (52.5)
Concern for the future of your family (Economic uncertainty)		2.50 (0.86)	2.54 (0.87)	2.31 (0.80)

Table 1. Cont.

	Level	Overall N (%) Mean (SD)	Students N (%) Mean (SD)	Workers N (%) Mean (SD)
Home learning/Tele working satisfaction compared to traditional learning/working	Worse	5773 (58.1)	4802 (59.3)	971 (52.9)
	The same	1824 (18.4)	1463 (18.1)	361 (19.7)
	Better	2340 (23.5)	1836 (22.7)	504 (27.5)
Workload (now vs. before)	Less	1289 (11.6)	895 (10.0)	394 (18.8)
	The same	6374 (57.5)	5348 (59.5)	1026 (49.0)
	More	3416 (30.8)	2740 (30.5)	676 (32.3)
Overload		2.70 (1.19)	2.74 (1.18)	2.48 (1.18)
Study/Work–family conflicts		2.74 (1.40)	2.79 (1.41)	2.57 (1.35)
Concern for the future (Studying/Working uncertainty)		3.97 (1.15)	4.08 (1.10)	3.46 (1.21)
Adequacy of equipment		2.00 (0.56)	1.98 (0.56)	2.05 (0.55)
Clarity of working objectives		-	-	2.44 (0.56)
HADS anxiety		6.98 (4.26)	7.25 (4.37)	5.82 (3.50)
HADS depression		5.89 (3.60)	6.13 (3.66)	4.92 (3.16)
HADS total		12.91 (7.22)	13.45 (7.36)	10.66 (6.07)
HADS anxiety (categorical)	Normal	6317 (60.5)	4860 (57.5)	1457 (73.5)
	Borderline	2020 (19.3)	1695 (20.0)	325 (16.4)
	Severe	2104 (20.2)	1904 (22.5)	200 (10.1)
HADS depression (categorical)	Normal	6834 (71.0)	5322 (68.7)	1512 (80.4)
	Borderline	1647 (17.1)	1402 (18.1)	245 (13.0)
	Severe	1149 (11.9)	1026 (13.2)	123 (6.5)
HADS total (categorical)	Normal	6941 (73.2)	5373 (70.2)	1568 (85.9)
	Severe	2536 (26.8)	2278 (29.8)	258 (14.1)

In the study sample, 9364 students were included; the mean age was almost 23 years and the majority of them (68.3%) were female.

About 30% of the students reported an increased workload from the beginning of the lockdown, and more than half of students considered home learning worse than traditional methods.

Noteworthy levels of concerns about the future of academic careers were expressed by students from the north to the south of Italy (mean value for the score: above 4 in a 1 to 5 rank).

According to HADS, overall, almost 30% of students were in a severe condition of psychological distress, with more than 22% and 13% presenting severe states of anxiety and depression, respectively, according to the HADS subscales.

Nearly half of academic workers belonged to the administrative staff (52.5%) and half were professors or researchers (47.5%). The majority of workers were female (62.8%) and had at least one child (62.1%).

Nearly half of academic workers expressed a negative judgement regarding teleworking compared to traditional habits, and more than 30% observed an increased workload during the lockdown.

Deep concern for future career prospects emerged from the mean value of its score (above 3 in a 1 to 5 rank), while on average, academic workers reported that their work-objectives were clearly defined and their work equipment was adequate (both above 2 in a 0 to 3 rank). Mean values for overload, work–family conflicts, and concern for household economic uncertainty were close to 2.5 in a 1 to 5 rank.

A severe condition of psychological distress was observed in 14.1% of academic workers according to HADS scores, and 6.5% and 10.1% of workers presented severe states of depression and anxiety, respectively, according to the subscales of HADS.

Tables 2 and 3 show descriptive analyses, separately for each university, for students and workers, respectively.

**Table 2.** Descriptive analyses of students, separately for each university. Abbreviations: SD = Standard Deviation.

	Level	Turin N (%) Mean (SD)	Genoa N (%) Mean (SD)	Pisa N (%) Mean (SD)	Florence N (%) Mean (SD)	Messina N (%) Mean (SD)
<i>n</i>		2209	2222	3256	1359	318
Age, year		22.33 (3.31)	22.79 (4.58)	23.18 (3.97)	22.82 (3.92)	23.71 (5.05)
Sex	Female	1648 (75.4)	1482 (67.6)	1991 (62.4)	953 (70.7)	227 (72.1)
	Male	538 (24.6)	709 (32.4)	1201 (37.6)	394 (29.3)	88 (27.9)
Household monthly income	≤1500	449 (24.8)	390 (25.1)	606 (26.8)	244 (24.2)	88 (36.5)
	1501–3000	814 (45.0)	705 (45.3)	1039 (46.0)	445 (44.2)	94 (39.0)
	≥3000	544 (30.1)	460 (29.6)	614 (27.2)	318 (31.6)	59 (24.5)
No. Of Inhabitants/No. Of Rooms		0.55 (0.24)	0.52 (0.23)	0.51 (0.24)	0.53 (0.24)	0.55 (0.26)
Old or disabled cohabitants (Do you live with old or disabled people?)	No	1770 (84.5)	1678 (83.9)	2539 (85.4)	1070 (85.3)	238 (79.9)
	Yes	325 (15.5)	322 (16.1)	434 (14.6)	185 (14.7)	60 (20.1)
Cohabitants involved in activities with the public	No	928 (43.2)	1035 (49.5)	1899 (61.0)	632 (49.1)	154 (51.5)
	Yes	1220 (56.8)	1056 (50.5)	1213 (39.0)	656 (50.9)	145 (48.5)
Cohabitants working or studying from home	No	694 (32.4)	772 (37.0)	938 (30.4)	414 (32.2)	109 (37.7)
	Yes	1448 (67.6)	1314 (63.0)	2146 (69.6)	872 (67.8)	180 (62.3)
Changes in your familial economic condition	Worse	931 (44.0)	884 (43.2)	1432 (47.0)	597 (47.6)	116 (40.3)
	The same or better	1187 (56.0)	1161 (56.8)	1618 (53.0)	658 (52.4)	172 (59.7)
Concern for the future of your family (Economic uncertainty)		2.47 (0.85)	2.54 (0.88)	2.60 (0.86)	2.54 (0.85)	2.44 (0.91)
Workload (now vs. before)	Less	236 (11.0)	230 (10.8)	297 (9.5)	114 (8.8)	18 (6.0)
	The same	1073 (50.2)	1232 (57.7)	2144 (68.9)	710 (54.6)	189 (63.0)
	More	828 (38.7)	674 (31.6)	669 (21.5)	476 (36.6)	93 (31.0)
Home learning satisfaction compared to traditional learning	Worse	1334 (68.5)	1151 (57.8)	1482 (54.2)	720 (63.2)	115 (39.5)
	The same	274 (14.1)	372 (18.7)	611 (22.4)	157 (13.8)	49 (16.8)
	Better	340 (17.5)	467 (23.5)	639 (23.4)	263 (23.1)	127 (43.6)
Overload		2.95 (1.21)	2.75 (1.18)	2.53 (1.12)	2.88 (1.22)	2.78 (1.19)
Study–family conflicts		2.96 (1.45)	2.75 (1.40)	2.67 (1.38)	2.81 (1.41)	2.95 (1.43)
Concern for the future (Studying uncertainty)		4.10 (1.11)	4.08 (1.12)	4.11 (1.08)	4.04 (1.10)	3.86 (1.19)
Adequacy of equipment		1.95 (0.56)	2.02 (0.56)	1.98 (0.55)	1.97 (0.57)	1.99 (0.61)
HADS anxiety		7.59 (4.53)	6.97 (4.37)	7.08 (4.25)	7.30 (4.33)	8.33 (4.34)
HADS depression		6.06 (3.73)	6.05 (3.70)	6.10 (3.55)	6.25 (3.70)	7.00 (3.78)
HADS total		13.69 (7.58)	13.09 (7.41)	13.26 (7.12)	13.63 (7.36)	15.48 (7.43)
HADS anxiety (categorical)	Normal	1099 (52.9)	1200 (60.6)	1726 (59.6)	709 (57.5)	126 (46.5)
	Borderline	455 (21.9)	353 (17.8)	571 (19.7)	248 (20.1)	68 (25.1)
	Severe	523 (25.2)	428 (21.6)	601 (20.7)	275 (22.3)	77 (28.4)
HADS depression (categorical)	Normal	1356 (69.1)	1219 (68.9)	1821 (69.5)	774 (67.3)	152 (61.5)
	Borderline	343 (17.5)	331 (18.7)	471 (18.0)	209 (18.2)	48 (19.4)
	Severe	264 (13.4)	218 (12.3)	330 (12.6)	167 (14.5)	47 (19.0)
HADS total (categorical)	Normal	1341 (68.9)	1258 (71.4)	1836 (71.4)	788 (70.0)	150 (61.0)
	Severe	606 (31.1)	503 (28.6)	736 (28.6)	337 (30.0)	96 (39.0)

### 3.2. Linear Regression Models—Students

Table 4 shows estimated  $\beta$ -coefficients, 95% CI, and adjusted R-squared obtained through the linear regressions performed on the students' subsamples in every single center, then meta-analyzed.

**Table 3.** Descriptive analyses of academic workers, separately for each university. Abbreviations: SD = Standard Deviation.

	Level	Turin N (%) Mean (SD)	Genoa N (%) Mean (SD)	Pisa N (%) Mean (SD)	Florence N (%) Mean (SD)	Messina N (%) Mean (SD)
<i>n</i>		416	609	608	328	198
Age, years		46.13 (10.38)	49.67 (10.63)	48.65 (10.30)	50.32 (9.99)	50.46 (8.11)
Sex	Female	283 (69.5)	363 (60.2)	378 (63.3)	195 (61.5)	112 (57.4)
	Male	124 (30.5)	240 (39.8)	219 (36.7)	122 (38.5)	83 (42.6)
Household monthly income	≤1500	72 (18.1)	88 (15.5)	82 (14.1)	43 (14.1)	34 (18.0)
	1501–3000	156 (39.3)	228 (40.3)	243 (41.8)	126 (41.2)	76 (40.2)
	≥3000	169 (42.6)	250 (44.2)	257 (44.2)	137 (44.8)	79 (41.8)
Sons or Daughters	No	209 (50.2)	230 (38)	227 (37.7)	107 (32.8)	62 (31.6)
	Yes	207 (49.8)	375 (62.0)	375 (62.3)	219 (67.2)	134 (68.4)
No. Of Inhabitants/No. Of Rooms		0.43 (0.28)	0.40 (0.26)	0.42 (0.25)	0.47 (0.24)	0.44 (0.28)
Old or disabled cohabitants (Do you live with old or disabled people?)	No	350 (88.6)	478 (85.7)	495 (87.9)	269 (87.6)	134 (76.1)
	Yes	45 (11.4)	80 (14.3)	68 (12.1)	38 (12.4)	42 (23.9)
Cohabitants involved in activities with the public	No	305 (76.8)	425 (74.4)	454 (77.3)	230 (73.5)	150 (82)
	Yes	92 (23.2)	146 (25.6)	133 (22.7)	83 (26.5)	33 (18.0)
Cohabitants working or studying from home	No	145 (36.7)	211 (36.5)	205 (34.7)	104 (33)	74 (39.6)
	Yes	250 (63.3)	367 (63.5)	385 (65.3)	211 (67.0)	113 (60.4)
Changes in your familial economic condition	Worse	115 (28.2)	156 (26.4)	146 (24.6)	80 (24.8)	41 (21.1)
	The same or better	293 (71.8)	435 (73.6)	448 (75.4)	243 (75.2)	153 (78.9)
Concern for the future of your family (Economic uncertainty)		2.36 (0.82)	2.34 (0.80)	2.33 (0.79)	2.30 (0.76)	2.11 (0.78)
Role	Professor or Researcher	195 (46.9)	326 (53.5)	294 (48.4)	138 (42.1)	72 (36.4)
	Administrative Staff	221 (53.1)	283 (46.5)	314 (51.6)	190 (57.9)	126 (63.6)
Workload (now vs. before)	Less	87 (21.7)	118 (19.9)	129 (21.8)	42 (13.1)	18 (9.4)
	The same	176 (43.9)	290 (49.0)	313 (52.9)	154 (48.1)	93 (48.7)
	More	138 (34.4)	184 (31.1)	150 (25.3)	124 (38.8)	80 (41.9)
Teleworking satisfaction compared to traditional learning	Worse	187 (51.2)	287 (55.8)	294 (57.9)	142 (50.7)	61 (36.1)
	The same	64 (17.5)	96 (18.7)	103 (20.3)	58 (20.7)	40 (23.7)
	Better	114 (31.2)	131 (25.5)	111 (21.9)	80 (28.6)	68 (40.2)
Clarity of work objectives		2.27 (0.63)	2.52 (0.51)	2.46 (0.57)	2.42 (0.54)	2.60 (0.49)
Overload		2.54 (1.26)	2.38 (1.11)	2.29 (1.05)	2.69 (1.22)	2.88 (1.34)
Work–family conflicts		2.70 (1.41)	2.45 (1.32)	2.44 (1.31)	2.72 (1.36)	2.77 (1.40)
Concern for the future (Working uncertainty)		3.58 (1.22)	3.47 (1.16)	3.50 (1.22)	3.44 (1.21)	3.10 (1.23)
Adequacy of work equipment		1.97 (0.59)	2.07 (0.54)	2.11 (0.52)	1.99 (0.54)	2.11 (0.56)
HADS anxiety		6.39 (3.77)	5.66 (3.32)	5.39 (3.23)	5.68 (3.49)	6.70 (3.97)
HADS depression		5.30 (3.32)	4.92 (3.20)	4.51 (2.90)	4.77 (3.21)	5.65 (3.17)
HADS total		11.71 (6.54)	10.46 (5.88)	9.82 (5.56)	10.33 (6.09)	12.13 (6.45)
HADS anxiety (categorical)	Normal	262 (67.2)	422 (76.2)	433 (77.7)	226 (74.1)	114 (64.8)
	Borderline	73 (18.7)	85 (15.3)	84 (15.1)	53 (17.4)	30 (17.0)
	Severe	55 (14.1)	47 (8.5)	40 (7.2)	26 (8.5)	32 (18.2)
HADS depression (categorical)	Normal	301 (77.0)	396 (79.7)	462 (86.2)	245 (81.7)	108 (69.2)
	Borderline	54 (13.8)	65 (13.1)	52 (9.7)	35 (11.7)	39 (25.0)
	Severe	36 (9.2)	36 (7.2)	22 (4.1)	20 (6.7)	9 (5.8)
HADS total (categorical)	Normal	310 (81.8)	416 (86.3)	464 (89.9)	256 (87.7)	122 (77.7)
	Severe	69 (18.2)	66 (13.7)	52 (10.1)	36 (12.3)	35 (22.3)

**Table 4.** Linear regressions for students considering the total HADS as outcome. Confounders included for adjustment are: age, gender, household monthly income, elderly or disabled members, ratio between number of inhabitants and number of rooms, presence of cohabitants working or studying from home or involved in in-person professional work with the public, changes in the economic situation and concern for the future due to economic uncertainty related to the pandemic. Abbreviations: CI = Confidence Interval, \*  $p$  value < 0.05.

	Model 1: Confounders	Model 2: Predictors and Confounders	Model 3: Interaction Term and Confounders
<b>R<sup>2</sup></b>	0.11	0.29	0.23
<b>Age</b>	−0.068 * (−0.117; −0.020)	−0.074 * (−0.129; −0.019)	−0.095 * (−0.144; −0.046)
<b>Gender (F vs. M)</b>	2.527 * (2.085; 2.968)	1.424 * (0.939; 1.909)	1.185 (−0.467; 2.838)
<b>Household monthly income</b>			
1501–3000 vs <1500	0.086 (−0.440; 0.611)	0.251 (−0.320; 0.822)	0.383 (−0.141; 0.907)
≥3000 vs. <1500	0.206 (−0.532; 0.943)	0.679 * (0.029; 1.329)	0.631 * (0.036; 1.226)
<b>No. Of Inhabitants/No. Of Rooms</b>	0.111 (−1.489; 1.710)	−1.691 (−3.385; 0.002)	−1.000 (−2.446; 0.445)
<b>Old or disabled cohabitants (Y vs. N)</b>	0.752 * (0.187; 1.318)	0.625 * (0.025; 1.224)	0.614 (−0.018; 1.245)
<b>Cohabitants involved in activities with the public (Y vs. N)</b>	0.633 * (0.216; 1.049)	0.555 * (0.105; 1.005)	0.493 * (0.078; 0.907)
<b>Cohabitants working or studying from home (Y vs. N)</b>	0.182 (−0.280; 0.643)	−0.26 (−0.999; 0.478)	0.081 (−0.361; 0.523)
<b>Changes in your familial economic condition (The same or better vs. Worse)</b>	0.081 (−0.582; 0.744)	0.253 (−0.275; 0.781)	0.148 (−0.480; 0.777)
<b>Concern for the future of your family (Economic uncertainty)</b>	2.334 * (2.048; 2.620)	1.133 * (0.814; 1.452)	1.829 * (1.520; 2.139)
<b>Home learning satisfaction compared to traditional learning</b>			
Worse vs. The same	-	0.016 (−0.858; 0.889)	-
Better vs. The same	-	0.302 (−0.625; 1.228)	-
<b>Workload (now vs. before)</b>			
The same vs. Less	-	0.894 (−0.710; 2.498)	-
More vs. Less	-	0.528 (−0.171; 1.228)	-
<b>Overload</b>	-	0.568 * (0.330; 0.806)	-
<b>Study–family conflicts</b>	-	1.138 * (0.933; 1.343)	1.634 * (1.208; 2.060)
<b>Concern for the future (Studying uncertainty)</b>	-	1.211 * (0.966; 1.455)	-
<b>Adequacy of study equipment</b>	-	−2.402 * (−3.351; −1.454)	-
<b>Interaction: Gender#Study–family conflicts</b>	-	-	0.307 (−0.287; 0.902)

In Model 1, the model built considering only the confounders (i.e., personal and familial information, and home features), 11% of the variance was explained.

Adding in Model 1 the studying-related variables increased the proportion of explained variance until 29%, as depicted in Table 4 in the second column (Model 2). An increase in overload during the COVID-19 lockdown was associated with higher HADS score values (H2a:  $\beta = 0.57$ , 95% CI = (0.33; 0.81), while on the contrary, an increase in the score measuring adequacy of the equipment was associated with lower psychological distress (H3a:  $\beta = -2.40$ , 95% CI = (−3.35; −1.45)). The score measuring study–family conflicts was associated with a higher HADS score (H4a:  $\beta = 1.14$ , 95% CI = (0.93; 1.34)), as well as concern for the future (H5a:  $\beta = 1.21$ , 95% CI = (0.97; 1.46)). No significant association was found between home learning satisfaction and psychological distress (H1a).

Similar results were obtained considering as outcome anxiety and depression HADS subscales (Table 5).

### 3.3. Linear Regression Models—Academic Workers

Table 6 reports adjusted R-squared, estimates and 95% CI obtained through the linear regressions performed on the academic workers subsamples and then meta-analyzed.



**Table 5.** Linear regressions for students considering the anxiety and depression HADS as outcomes, separately. Confounders included for adjustment are: age, gender, household monthly income, elderly or disabled members, ratio between number of inhabitants and number of rooms, presence of cohabitants working or studying from home or involved in in-person professional work with the public, changes in the economic situation and concern for the future due to economic uncertainty related to the pandemic. Abbreviations: CI = Confidence Interval, \*  $p$  value < 0.05.

	$\beta$	95% CI	
<b>Model with confounders and all the predictors for HADS anxiety</b>			
<b>Home learning satisfaction compared to traditional learning</b>			
The same vs. Worse	−0.025	(−0.374; 0.325)	
Better vs. Worse	0.331	(0.004; 0.659)	*
<b>Workload (now vs. before)</b>			
The same vs. Less	−0.545	(−1.205; 0.115)	
More vs. Less	−0.295	(−0.815; 0.224)	
<b>Overload</b>	0.331	(0.195; 0.466)	*
<b>Study–family conflicts</b>	0.647	(0.545; 0.749)	*
<b>Concern for the future (Studying uncertainty)</b>	0.761	(0.614; 0.908)	*
<b>Adequacy of equipment</b>	−1.000	(−1.468; −0.532)	*
<b>Model with confounders and all the predictors for HADS depression</b>			
<b>Home learning satisfaction compared to traditional learning</b>			
The same vs. Worse	−0.046	(−0.533; 0.440)	
Better vs. Worse	−0.023	(−0.319; 0.272)	
<b>Workload (now vs. before)</b>			
The same vs. Less	−0.430	(−1.362; 0.502)	
More vs. Less	−0.223	(−1.139; 0.693)	
<b>Overload</b>	0.272	(0.149; 0.396)	*
<b>Study–family conflicts</b>	0.488	(0.361; 0.615)	*
<b>Concern for the future (Studying uncertainty)</b>	0.496	(0.386; 0.606)	*
<b>Adequacy of equipment</b>	−1.276	(−1.812; −0.741)	*

The linear regression model built considering the interaction between gender and study–family conflicts (Model 3 in Table 4) did not show a significant moderation effect of gender in the association between study–family conflicts and the overall HADS score (H7a:  $\beta = 0.31$ , 95% CI = (−0.29; 0.90)).

**Table 6.** Linear regressions for employees (professors, researchers, and administrative staff) considering the total HADS as outcome. Confounders included for adjustment are: age, gender, household monthly income, elderly or disabled members, children, ratio between number of inhabitants and number of rooms, presence of cohabitants working or studying from home or involved in in-person professional work with the public, changes in the economic situation, concern for the future due to economic uncertainty related to the pandemic, and role (professors and researchers or administrative staff). Abbreviations: CI = Confidence Interval, \*  $p$  value < 0.05.

	<b>Model 1: confounders</b>	<b>Model 2: predictors and confounders</b>	<b>Model 3: Interaction Term and confounders</b>
<b>R<sup>2</sup></b>	0.10	0.26	0.18
<b>Age</b>	0.004 (−0.032; 0.039)	0.032 (−0.011; 0.076)	0.026 (−0.011; 0.063)
<b>Gender (F vs. M)</b>	2.068 * (1.310; 2.825)	1.818 * (1.094; 2.541)	1.759 * (0.411; 3.107)
<b>Household monthly income</b>			
1501–3000 vs. <1500	−0.792 (−2.748; 1.165)	−0.04 (−2.090; 2.010)	−0.782 (−2.731; 1.166)
≥3000 vs. <1500	−1.009 (−2.899; 0.880)	−0.228 (−2.373; 1.917)	−1.106 (−2.984; 0.772)
<b>Sons or Daughters (Y vs. N)</b>	0.656 (−0.276; 1.589)	0.312 (−0.674; 1.298)	−0.029 (−0.928; 0.850)

Table 6. Cont.

	Model 1: confounders	Model 2: predictors and confounders	Model 3: Interaction Term and confounders
<b>No. Of Inhabitants/No. Of Rooms</b>	1.018 (−0.515; 2.552)	−0.504 (−2.656; 1.648)	0.085 (−1.493; 1.663)
<b>Old or disabled cohabitants (Y vs. N)</b>	0.84 (−0.160; 1.841)	0.659 (−0.422; 1.740)	0.417 (−0.495; 1.329)
<b>Cohabitants involved in activities with the public (Y vs. N)</b>	0.685 (−0.027; 1.397)	0.359 (−0.474; 1.193)	0.672 (−0.047; 1.390)
<b>Cohabitants working or studying from home (Y vs. N)</b>	−0.351 (−1.046; 0.344)	−0.100 (−0.933; 0.734)	−0.236 (−0.939; 0.466)
<b>Changes in your familial economic condition (The same or better vs. Worse)</b>	0.642 (−0.523; 1.806)	0.597 (−0.322; 1.516)	0.978 (−0.291; 2.247)
<b>Role (administrative staff vs. professors and researchers)</b>	−0.097 (−1.194; 1.000)	0.372 (−0.160; 1.503)	0.512 (−0.630; 1.653)
<b>Concern for the future of your family (Economic uncertainty)</b>	1.798 * (1.375; 2.221)	1.435 * (0.905; 1.964)	1.733 * (1.296; 2.169)
<b>Teleworking satisfaction compared to traditional working</b>			
The same vs. Worse	-	−0.065 (−1.038; 0.909)	-
Better vs. Worse	-	−0.318 (−1.363; 0.726)	-
<b>Workload (now vs. before)</b>			
The same vs. Less	-	−0.223 (−1.168; 0.721)	-
More vs. Less	-	−0.304 (−1.266; 0.659)	-
<b>Overload</b>	-	0.196 (−0.224; 0.616)	-
<b>Work–family conflicts</b>	-	0.637 * (0.165; 1.109)	1.055 * (0.686; 1.423)
<b>Concern for the future (Working uncertainty)</b>	-	1.278 * (0.669; 1.886)	-
<b>Adequacy of work equipment</b>	-	−1.245 * (−2.065; −0.424)	-
<b>Clarity of work objectives</b>	-	−0.998 * (−1.652; −0.344)	-
<b>Interaction: Gender#Work–family conflicts</b>	-	-	0.083 (−0.377; 0.542)

In Model 1, the model built considering only the confounders (i.e., personal and familial information, and home features), 10% of variance was explained.

Similar to what was observed for students, adding in Model 1 the working-related variables increased the proportion of explained variance up to 26%. An increase in the score measuring adequacy of the equipment was associated with lower psychological distress (H3b:  $\beta = -1.25$  \*, 95% CI = (−2.07; −0.42)), as well as an increase in the clarity of working objectives (H6:  $\beta = -1.00$ , 95% CI = (−1.65; −0.34)). The score measuring working–family conflicts was associated with higher HADS score (H4b:  $\beta = 0.64$ , 95% CI = (0.17; 1.11)), as well as concern for the future (H5b:  $\beta = 1.28$ , 95% CI = (0.67; 1.89)). No significant association was found between remote working satisfaction (H1b) or overload (H2b) and psychological distress.

Similar results were obtained for the anxiety and depression subscales of HADS (Table 7).

The linear regression model built considering the interaction between gender and study–family conflicts (Model 3 in Table 6) did not show a significant moderation effect of gender in the association between work–family conflicts and psychological distress (H7b:  $\beta = 0.08$ , 95% CI = (−0.38; 0.54)).

**Table 7.** Linear regressions for employees (professors, researchers, and administrative staff) considering the anxiety and depression HADS as outcomes, separately. Confounders included for adjustment are: age, gender, household monthly income, elderly or disabled members, children, ratio between number of inhabitants and number of rooms, presence of cohabitants working or studying from home or involved in in-person professional work with the public, changes in the economic situation, concern for the future due to economic uncertainty related to the pandemic, and role (professors and researchers or administrative staff). Abbreviations: CI = Confidence Interval, \*  $p$  value < 0.05.

	$\beta$	95% CI	
<b>Model with confounders and all the predictors for HADS anxiety</b>			
<b>Teleworking satisfaction compared to traditional working</b>			
The same vs. Worse	−0.129	(−0.677; 0.418)	
Better vs Worse	−0.195	(−0.785; 0.395)	
<b>Workload (now vs. before)</b>			
The same vs. Less	−0.290	(−0.820; 0.239)	
More vs. Less	−0.158	(−0.703; 0.386)	
<b>Overload</b>	0.094	(−0.183; 0.371)	
<b>Work–family conflicts</b>	0.319	(0.118; 0.520)	*
<b>Concern for the future (Working uncertainty)</b>	0.676	(0.358; 0.993)	*
<b>Adequacy of equipment</b>	−0.402	(−0.814; 0.010)	
<b>Clarity of work objectives</b>	−0.624	(−1.029; −0.219)	*
<b>Model with confounders and all the predictors for HADS depression</b>			
<b>Teleworking satisfaction compared to traditional working</b>			
The same vs. Worse	0.072	(−0.666; 0.810)	
Better vs. Worse	0.010	(−0.554; 0.575)	
<b>Workload (now vs. before)</b>			
The same vs. Less	0.233	(−0.405; 0.871)	
More vs. Less	−0.046	(−0.578; 0.486)	
<b>Overload</b>	0.109	(−0.094; 0.313)	
<b>Work–family conflicts</b>	0.282	(0.024; 0.539)	*
<b>Concern for the future (Working uncertainty)</b>	0.516	(0.261; 0.771)	*
<b>Adequacy of equipment</b>	−0.831	(−1.226; −0.437)	*
<b>Clarity of work objectives</b>	−0.325	(−0.681; −0.031)	*

#### 4. Discussion

Previous studies showed the negative effects of forced lockdown (meaning restrictions on mobility, movement, and relationships) during the COVID-19 pandemic on mental health: isolation and lockdown have increased levels of depression and anxiety in both the whole population [64] and among students [19,65–67].

Our study aimed at investigating psychological distress and its association with working and studying conditions across students, faculty members, and administrative staff from a large Italian academic sample.

In our survey, almost 30% of students evidenced a severe condition of psychological distress. The proportion of students reporting severe levels of anxiety or depression amounted for 22% and 13%, respectively. These proportions are similar to the proportions observed in other European studies on university communities. For example, the percentage of students experiencing high levels of anxiety was 27% and 21% in French [68] and Spanish [7] university samples, respectively. Monteduro [69] observed that nearly 32% of students experienced loneliness, sadness, isolation, and depression. Undergraduate students present higher levels of distress than the general population [19] and university workers [7]. The worsening of social relationships due to isolation and loneliness seems to be particularly relevant to explaining the negative impact of lockdown on young adults' mental health [70].

Students at the University of Messina had the highest levels of anxiety compared to their peers from the other universities (Supplementary Materials). This result is in line

with findings from earlier Italian research comparing three Italian universities located in the South, Centre, and North of Italy (University of Messina, Marche Polytechnic in Ancona, and University of Udine, respectively) [66]. The different levels of psychological distress observed at a territorial level may be linked to the marked spatial heterogeneity of the epidemic spread in Italy [71] and to the regional differences in the Italian socio-economic structure, confirming that the psychological consequences of the pandemic crisis are unequally distributed [72,73].

As expected, the regression models showed that, among students, the levels of HADS scores were exacerbated by the conflicts due to combining and managing family–study roles, the study overloads due to the changes in learning conditions after the beginning of the lockdown, and the future uncertainty about studying. Only an adequate study equipment was able to reduce it, while the home learning satisfaction did not show a significant effect in the multivariable model. Our results confirmed our Hypotheses 4a, 2a, 5a, 3a, and disputed Hypothesis 1a. Our results confirmed previous studies which showed that the transition to virtual classrooms had a negative impact on students' mental health, by increasing workload and family–study conflicts. In addition, uncertainty about the future affected the level of psychological distress. In this regard, it is important to consider that expectations and future uncertainty are risk factors and increase distress levels [74]. Moreover, our results showed the importance of the learning environment as a resource to reduce psychological distress. In particular, the academic learning equipment can be considered a protective factor for students' mental health.

Furthermore, we found that demographic (gender and age), social (living with the disabled, elderly and workers at risk of contagion) and economic (economic uncertainty, income) variables were associated with psychological distress: female students reported higher levels of total HADS, as well as young students compared to older ones [75,76]. In fact, the reduced ability of the youth to tolerate uncertainty about the future could explain these differences in terms of mental health reactions [77]. Our findings, in line with previous analyses, where university students showed high rates of anxiety/depression and financial instability due to the pandemic all over the world [78–80], became more problematic considering the Italian context. Indeed, our Italian labor market still heavily penalizes women and young people who are often trapped in insecure, bad jobs and have a higher degree of precariousness.

As suggested by Brunori et al. [81], youth and women will be one of the most affected groups by the impact of the COVID-19 crisis on the labor market, because they are more exposed to the prospect of unemployment and economic risks. Moreover, Fetzer et al. [82] underlined that young adults and women are two categories at high risk of economic anxiety. This evidence is also confirmed in our research.

An unexpected result is that the students with a high household monthly income have the highest level of psychological distress. This can be partially explained by the different lifestyles between low- and high-income households. Students with a high income generally spend more time on leisure, social, and cultural activities and therefore, may have been more affected by the lack of these activities during the lockdown.

Other factors affecting psychological distress are related to social aspects or care work into the family: it is greater in students who live with elderly or disabled people or with family members or other people involved in activities where there is close contact with people and therefore, a potentially greater risk of contagion.

Finally, even though in our study both the variables, study–family conflict and gender were significantly associated with psychological distress, their interaction was not (Hypothesis 7a), suggesting that both males and females struggled with balancing studying and familial conditions, equally.

In relation to the results involving the academic staff, the lockdown measures imposed a new organization of work for professors, researchers, and administrative staff transforming their work in working remotely.

According to the literature [64], greater levels of anxiety, depression, and stress commonly affect people with higher levels of education, making academic staff a particularly relevant sample to evaluate the impact of the current pandemic on psychological distress.

In our study, 14.1% of academic workers reported severe conditions of psychological distress, and 6.5% and 10.1% showed, respectively, severe states of depression and anxiety.

For the academic workers, the variables associated with the increase in the level of stress mainly concern the work and organizational sphere and work–family balance. In fact, clarity of work objectives and equipment adequacy decreased the level of general psychological distress, confirming Hypotheses 6 and 3b. This seems to suggest the level of distress was not directly associated with the general satisfaction for remote work or overload (indeed H1b and H2b were disputed), but more precisely, with the two organizational key elements, which are specifically related to remote working: the adequacy of work equipment and the clarity of work objectives, that are significant also in the multivariable model.

In relation to the first element, the results show the importance of the managerial approach specifically used for remote working. Having experienced high levels of clarity of work objectives was a protective factor for employees' mental health, considering the difficulties and uncertainties of the rapid transition to new ways of working. In relation to the second element, our study is in line with previous research that has highlighted the impact of adequate working spaces and equipment on teleworking from home during the pandemic [43,46]. These findings contribute to understanding the importance of the management model used for teleworking in the academic context and underline the centrality of university governance in managing remote work and promoting appropriate policies.

Besides, we found that the level of general psychological distress increases for individuals that have experienced work–family conflicts during the pandemic, as well as for those subjects worried about the economic uncertainty and their working future, confirming the Hypotheses 4b and 5b. These results are in line with the literature. The limitation of time dedicated to work because of family constraints during the pandemic can be derived from an increase in the domestic activities connected, for example, to the impossibility of receiving paid help.

Furthermore, we observed higher levels of psychological distress in women compared to men. For Carreri and Dordoni [83], compared to men, academic women had to struggle more during the pandemic due to the greater burden in housework, family care, and emotional support. As suggested by Minello et al. [84], gender disparities were present in the academy, even before the lockdown, but the pandemic may have aggravated the sense of insecurity and their fear for the future of their careers.

Even though we hypothesized a potential interaction between work–family conflict and gender, our analyses did not support it, disputing Hypothesis 7b. This could be related to the fact that during the lockdown men also experienced an increased level of family–work conflict compared to the past, which tends to level out gender differences. Due to the forced confinement for the COVID-19 pandemic, maintaining boundaries between work and nonwork has been perceived as difficult especially for workers with school-age children during the closure of educational activities and because of the impossibility of receiving paid help. A further research development could be to consider not only the moderation effect of gender on the family–work conflict, but the status of “parenthood” and the presence of pre-school or school-age children (for a literature review, see Shirmohammadi et al. [85]).

## 5. Limitations and Conclusions

Our study presents some limitations.

At first, the research design is cross-sectional, which reduces the internal validity of conclusions. As such, further investigation of the study should involve a longitudinal analysis to test how the relations investigated vary over time.

Then, psychological distress was measured through a self-reported questionnaire within an online survey, whereas an expert-administered clinical interview protocol could have contained the risks of bias related to self-administration.



In addition, there was a high non-response rate and the volunteer participation to the study may have led to a sample selection problem: it is therefore not possible to generalize the results to the universe (the Italian university population).

Despite these limitations, we can acknowledge the following strengths.

Firstly, our results demonstrated the importance of contextual and organizational variables to protect academic well-being. For both students and academic workers, uncertainty about the future (both economic and working/studying) increased psychological distress, while the adequacy of study/work equipment decreased it.

Secondly, our results confirmed that the management by objectives approach could reduce academic workers' psychological distress.

Our exploratory analysis of factors associated with psychological distress in the academic population could be enriched with further in-depth-analysis: e.g., distinguishing the role of risk and protective factors between professors–researchers and administrative staff or investigating the role played by parenthood and by the presence of children of school and pre-school age in work/learning–family conflict under remote working/learning conditions.

Thirdly, the practical implications of the study: the importance of realizing and implementing strategies for prevention, assessment, and intervention, of psychological distress in academic contexts, with specific attention to remote work and study. The study highlighted the need for taking into account the responsibility of academic governance in promoting sustainable environments both for academic workers and students, even in remote or hybrid work and learning. Monitoring and preventing the vulnerability of the academic population seems to require specific devices, such as university counselling services, and most of all, a managerial approach sensitive to workers' quality of life, even by including specific target needs and managing by diversity approach. In fact, during the lockdown, universities often arranged remote work and online teaching, with a scarcity of alternative managerial models, guidelines, and policies, in the way best definable as working-from-home. The flexibility of location and working time that telework is supposed to offer was no longer allowed, nor in many cases were the technological infrastructures, as well as an adequate working environment, provided.

**Supplementary Materials:** The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/su14138161/s1>, Table S1. Descriptive analyses of students, separately for each university. Abbreviations: SD = Standard Deviation. Table S2. Descriptive analyses of academic workers, separately for each university. Abbreviations: SD = Standard Deviation. Table S3. Linear regressions for students considering the anxiety and depression HADS as outcomes, separately. Confounders included for adjustment are: age, gender, household monthly income, elderly or disabled members, ratio between number of inhabitants and number of rooms, presence of cohabitants working or studying from home or involved in in-person professional work with the public, changes in the economic situation and concern for the future due to economic uncertainty related to the pandemic. Abbreviations: CI = Confidence Interval, \*  $p$  value < 0.05. Table S4. Linear regressions for employees (professors, researchers, and administrative staff) considering the anxiety and depression HADS as outcomes, separately. Confounders included for adjustment are: age, gender, household monthly income, elderly or disabled members, children, ratio between number of inhabitants and number of rooms, presence of cohabitants working or studying from home or involved in in-person professional work with the public, changes in the economic situation, concern for the future due to economic uncertainty related to the pandemic, and role (professors and researchers or administrative staff). Abbreviations: CI = Confidence Interval, \*  $p$  value < 0.05.

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**Data Availability Statement:** Data cannot be shared publicly. Data are available from Bioethics Committees of the University of Pisa, Florence, Turin, Genoa and Messina (contact via the corresponding author and the Bioethics Committee of the University of Pisa [comitatobioetico@unipi.it](mailto:comitatobioetico@unipi.it)) for researchers who meet the criteria for access to confidential data.

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## References

- Messenger, J.C. Conclusions and recommendations for policy and practice. In *Telework in the 21st Century. An Evolutionary Perspective*; The ILO Future of Work Series; Messenger, J.C., Ed.; Edward Elgar Publishing: Cheltenham, UK, 2019; pp. 286–316.
- Dozois, D.J.A.; Mental Health Research Canada. Anxiety and depression in Canada during the COVID-19 pandemic: A national survey. *Can. Psychol./Psychol. Can.* **2021**, *62*, 136–142. [[CrossRef](#)]
- Sibley, C.G.; Greaves, L.M.; Satherley, N.; Wilson, M.S.; Overall, N.C.; Lee, C.H.J.; Milojev, P.; Bulbulia, J.; Osborne, D.; Milfont, T.L.; et al. Effects of the COVID-19 pandemic and nationwide lockdown on trust, attitudes toward government, and well-being. *Am. Psychol.* **2020**, *75*, 618. [[CrossRef](#)] [[PubMed](#)]
- Gualano, M.R.; Lo Moro, G.; Voglino, G.; Bert, F.; Siliquini, R. Effects of COVID-19 Lockdown on Mental Health and Sleep Disturbances in Italy. *Int. J. Environ. Res. Public Health* **2020**, *17*, 4779. [[CrossRef](#)] [[PubMed](#)]
- Serralta, F.B.; Zibetti, M.R.; Evans, C. Psychological distress of university workers during COVID-19 pandemic in Brazil. *Int. J. Environ. Res. Public Health* **2020**, *17*, 8520. [[CrossRef](#)] [[PubMed](#)]
- Marelli, S.; Castelnuovo, A.; Somma, A.; Castronovo, V.; Mombelli, S.; Bottoni, D.; Leitner, C.; Fossati, A.; Ferini-Strambi, L. Impact of COVID-19 lockdown on sleep quality in university students and administration staff. *J. Neurol.* **2021**, *268*, 8–15. [[CrossRef](#)] [[PubMed](#)]
- Odrizola-González, P.; Planchuelo-Gómez, Á.; Irurtia, M.J.; de Luis-García, R. Psychological effects of the COVID-19 outbreak and lockdown among students and workers of a Spanish university. *Psychiatry Res.* **2020**, *290*, 113108. [[CrossRef](#)] [[PubMed](#)]
- Fornili, M.; Petri, D.; Berrocal, C.; Fiorentino, G.; Ricceri, F.; Macciotta, A.; Bruno, A.; Farinella, D.; Baccini, M.; Severi, G.; et al. Psychological distress in the academic population and its association with socio-demographic and lifestyle characteristics during COVID-19 pandemic lockdown: Results from a large multicenter Italian study. *PLoS ONE* **2021**, *16*, e0248370. [[CrossRef](#)]
- Der Feltz-Cornelis, V.; Maria, C.; Varley, D.; Allgar, V.L.; De Beurs, E. Workplace stress, presenteeism, absenteeism, and resilience amongst university staff and students in the COVID-19 lockdown. *Front. Psychiatry* **2021**, *11*, 1284. [[CrossRef](#)]
- Ibrahim, A.K.; Kelly, S.J.; Adams, C.E.; Glazebrook, C. A systematic review of studies of depression prevalence in university students. *J. Psychiatr. Res.* **2013**, *47*, 391–400. [[CrossRef](#)]
- Deng, J.; Zhou, F.; Hou, W.; Silver, Z.; Wong, C.Y.; Chang, O.; Drakos, A.; Zuo, Q.K.; Huang, E. The prevalence of depressive symptoms, anxiety symptoms and sleep disturbance in higher education students during the COVID-19 pandemic: A systematic review and meta-analysis. *Psychiatry Res.* **2021**, *301*, 113863. [[CrossRef](#)]
- Wang, X.; Hegde, S.; Son, C.; Keller, B.; Smith, A.; Sasangohar, F. Investigating mental health of US college students during the COVID-19 pandemic: Cross-sectional survey study. *J. Med. Internet Res.* **2020**, *22*, e22817. [[CrossRef](#)]
- Romeo, A.; Benfante, A.; Castelli, L.; Di Tella, M. Psychological distress among Italian university students compared to general workers during the COVID-19 pandemic. *Int. J. Environ. Res. Public Health* **2021**, *18*, 2503. [[CrossRef](#)]
- Di Consiglio, M.; Merola, S.; Pascucci, T.; Violani, C.; Couyoumdjian, A. The Impact of COVID-19 Pandemic on Italian University Students' Mental Health: Changes across the Waves. *Int. J. Environ. Res. Public Health* **2021**, *18*, 9897. [[CrossRef](#)]
- Appleby, J.A.; King, N.; Saunders, K.E.; Bast, A.; Rivera, D.; Byun, J.; Cunningham, S.; Khera, C.; Duffy, A.C. Impact of the COVID-19 pandemic on the experience and mental health of university students studying in Canada and the UK: A cross-sectional study. *BMJ Open* **2022**, *12*, e050187. [[CrossRef](#)]
- Sundarasan, S.; Chinna, K.; Kamaludin, K.; Nurunnabi, M.; Baloch, G.M.; Khoshaim, H.B.; Hossain, S.F.A.; Sukayt, A. Psychological Impact of COVID-19 and Lockdown among University Students in Malaysia: Implications and Policy Recommendations. *Int. J. Environ. Res. Public Health* **2020**, *17*, 6206. [[CrossRef](#)]
- Sahu, P. Closure of universities due to coronavirus disease 2019 (COVID-19): Impact on education and mental health of students and academic staff. *Cureus* **2020**, *12*, e7541. [[CrossRef](#)]
- Aucejo, E.M.; French, J.; Araya, M.P.U.; Zafar, B. The impact of COVID-19 on student experiences and expectations: Evidence from a survey. *J. Public Econ.* **2020**, *191*, 104271. [[CrossRef](#)]
- Aristovnik, A.; Keržič, D.; Ravšelj, D.; Tomaževič, N.; Umek, L. Impacts of the COVID-19 Pandemic on Life of Higher Education Students: A Global Perspective. *Sustainability* **2020**, *12*, 8438. [[CrossRef](#)]

20. Russo, M.; Colombini, S. Indagine Sulle Condizioni di Vita e di Studio Degli Studenti di UNIMORE al Tempo del Coronavirus. 2020. Available online: <https://iris.unimore.it/handle/11380/1203517> (accessed on 2 April 2022).
21. Son, C.; Hegde, S.; Smith, A.; Wang, X.; Sasangohar, F. Effects of COVID-19 on college students' mental health in the United States: Interview survey study. *J. Med. Internet Res.* **2020**, *22*, e21279. [[CrossRef](#)]
22. Drašler, V.; Bertonecelj, J.; Korošec, M.; Pajk Žontar, T.; Poklar Ulrih, N.; Cigić, B. Difference in the attitude of students and employees of the University of Ljubljana towards work from home and online education: Lessons from COVID-19 pandemic. *Sustainability* **2021**, *13*, 5118. [[CrossRef](#)]
23. Leal Filho, W.; Wall, T.; Rayman-Bacchus, L.; Mifsud, M.; Pritchard, D.J.; Lovren, V.O.; Farinha, C.; Petrovic, D.S.; Balogun, A.L. Impacts of COVID-19 and social isolation on academic staff and students at universities: A cross-sectional study. *BMC Public Health* **2021**, *21*, 1213. [[CrossRef](#)]
24. Paredes, M.R.; Apaolaza, V.; Fernandez-Robin, C.; Hartmann, P.; Yanez-Martinez, D. The impact of the COVID-19 pandemic on subjective mental well-being: The interplay of perceived threat, future anxiety and resilience. *Personal. Individ. Differ.* **2021**, *170*, 110455. [[CrossRef](#)]
25. Capone, V.; Caso, D.; Donizzetti, A.R.; Procentese, F. University Student Mental Well-Being during COVID-19 Outbreak: What Are the Relationships between Information Seeking, Perceived Risk and Personal Resources Related to the Academic Context? *Sustainability* **2020**, *12*, 7039. [[CrossRef](#)]
26. Butnaru, G.I.; Haller, A.P.; Dragolea, L.L.; Anichiti, A.; Tacu Hârșan, G.D. Students' Wellbeing during Transition from Onsite to Online Education: Are There Risks Arising from Social Isolation? *Int. J. Environ. Res. Public Health* **2021**, *18*, 9665. [[CrossRef](#)]
27. Meda, N.; Pardini, S.; Slongo, I.; Bodini, L.; Zordan, M.A.; Rigobello, P.; Visioli, F.; Novara, C. Students' mental health problems before, during, and after COVID-19 lockdown in Italy. *J. Psychiatr. Res.* **2021**, *134*, 69–77. [[CrossRef](#)]
28. Cao, W.; Fang, Z.; Hou, G.; Han, M.; Xu, X.; Dong, J.; Zheng, J. The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry Res.* **2020**, *287*, 112934. [[CrossRef](#)]
29. Quintiliani, L.; Sisto, A.; Vicinanza, F.; Curcio, G.; Tambone, V. Resilience and psychological impact on Italian university students during COVID-19 pandemic. Distance learning and health. *Psychol. Health Med.* **2022**, *27*, 69–80. [[CrossRef](#)]
30. Brondino, M.; Signore, F.; Zambelli, A.; Ingusci, E.; Pignata, S.; Manuti, A.; Giancaspro, M.L.; Falco, A.; Girardi, D.; Guglielmi, D.; et al. A New Academic Quality at Work Tool (AQ@workT) to Assess the Quality of Life at Work in the Italian Academic Context. *Int. J. Environ. Res. Public Health* **2022**, *19*, 3724. [[CrossRef](#)]
31. Bonanomi, A.; Facchin, F.; Barello, S.; Villani, D. Prevalence and health correlates of Online Fatigue: A cross-sectional study on the Italian academic community during the COVID-19 pandemic. *PLoS ONE* **2021**, *16*, e0255181. [[CrossRef](#)]
32. Carillo, K.; Cachat-Rosset, G.; Marsan, J.; Saba, T.; Klarsfeldt, A. Adjusting to epidemic-induced telework: Empirical insights from teleworkers in France. *Eur. J. Inf. Syst.* **2021**, *30*, 69–88. [[CrossRef](#)]
33. Blahopoulou, J.; Ortiz-Bonnin, S.; Montañez-Juan, M.; Torrens Espinosa, G.; García-Buades, M.E. Telework satisfaction, wellbeing and performance in the digital era. Lessons learned during COVID-19 lockdown in Spain. *Curr. Psychol.* **2022**, *41*, 2507–2520. [[CrossRef](#)] [[PubMed](#)]
34. Athanasiadou, C.; Theriou, G. Telework: Systematic literature review and future research agenda. *Heliyon* **2021**, *7*, e08165. [[CrossRef](#)] [[PubMed](#)]
35. Allen, T.D.; Golden, T.D.; Shockley, K.M. How Effective Is Telecommuting? Assessing the Status of Our Scientific Findings. *Psychol. Sci. Public Interest* **2015**, *16*, 40–68. [[CrossRef](#)] [[PubMed](#)]
36. Wadsworth, L.L.; Facer, R.L.; Arbon, C.A. Alternative work schedules in local government: Cui bono? *Rev. Public Pers. Adm.* **2010**, *30*, 322–340. [[CrossRef](#)]
37. Cooper, C.D.; Kurland, N.B. Telecommuting, professional isolation, and employee development in public and private organizations. *J. Organ. Behav. Int. J. Ind. Occup. Organ. Psychol. Behav.* **2002**, *23*, 511–532. [[CrossRef](#)]
38. Spagnoli, P.; Molino, M.; Molinaro, D.; Giancaspro, M.L.; Manuti, A.; Ghislieri, C. Workaholism and technostress during the COVID-19 emergency: The crucial role of the leaders on remote working. *Front. Psychol.* **2020**, *11*, 3714. [[CrossRef](#)]
39. De Menezes, L.M.; Kelliher, C. Flexible working and performance: A systematic review of the evidence for a business case. *Int. J. Manag. Rev.* **2011**, *13*, 452–474. [[CrossRef](#)]
40. Engelen, L.; Chau, J.; Young, S.; Mackey, M.; Jeyapalan, D.; Bauman, A. Is activity-based working impacting health, work performance and perceptions? *Syst. Rev. Build. Res. Inf.* **2019**, *47*, 468–479. [[CrossRef](#)]
41. Omondi, A.; K'Obonyo, P. Flexible work schedules: A critical review of literature. *Strateg. J. Bus. Change Manag.* **2018**, *5*, 2069–2086.
42. Oakman, J.; Kinsman, N.; Stuckey, R.; Graham, M.; Weale, V. A rapid review of mental and physical health effects of working at home: How do we optimise health? *BMC Public Health* **2020**, *20*, 1825. [[CrossRef](#)]
43. Workers Want to Telework but Long Working Hours, Isolation and Inadequate Equipment Must Be Tackled. Eurofound. 2021. Available online: <https://www.eurofound.europa.eu/publications/article/2021/workers-want-to-telework-but-long-working-hours-isolation-and-inadequate-equipment-must-be-tackled> (accessed on 2 April 2022).
44. Sousa-Uva, M.; Sousa-Uva, A.; Sampayo, M.M.; Serranheira, F. Telework during the COVID-19 epidemic in Portugal and determinants of job satisfaction: A cross-sectional study. *BMC Public Health* **2021**, *21*, 2217. [[CrossRef](#)]
45. Niu, Q.; Nagata, T.; Fukutani, N.; Tezuka, M.; Shimoura, K.; Nagai-Tanima, M.; Aoyama, T. Health effects of immediate telework introduction during the COVID-19 era in Japan: A cross-sectional study. *PLoS ONE* **2021**, *16*, e0256530. [[CrossRef](#)]

46. Bertino, V.; Nisticò, V.; D'Agostino, A.; Gambini, O.; Demartini, B. Telework during COVID-19 outbreak: Impact on mental health among Italian workers. *Eur. Psychiatry* **2021**, *64*, S678. [CrossRef]
47. Mari, E.; Lausi, G.; Frascchetti, A.; Pizzo, A.; Baldi, M.; Quagliari, A.; Burrai, J.; Barchielli, B.; Avallone, F.; Giannini, A.M. Teaching during the pandemic: A comparison in psychological wellbeing among smart working professions. *Sustainability* **2021**, *13*, 4850. [CrossRef]
48. Casacchia, M.; Cifone, M.G.; Giusti, L.; Fabiani, L.; Gatto, R.; Lancia, L.; Cinque, B.; Petrucci, C.; Giannoni, M.; Ippoliti, R.; et al. Distance education during COVID 19: An Italian survey on the university teachers' perspectives and their emotional conditions. *BMC Med. Educ.* **2021**, *21*, 335. [CrossRef]
49. Wray, S.; Kinman, G. Supporting Staff Wellbeing in Higher Education. 2021. Available online: <https://www.educationsupport.org.uk/media/x4jdvxpl/es-supporting-staff-wellbeing-in-he-report.pdf> (accessed on 2 April 2022).
50. Knight, H.; Carlisle, S.; O'connor, M.; Briggs, L.; Fothergill, L.; Al-Oraibi, A.; Yildirim, M.; Morling, J.R.; Corner, J.; Ball, J.; et al. Impacts of the COVID-19 Pandemic and Self-Isolation on Students and Staff in Higher Education: A Qualitative Study. *Int. J. Environ. Res. Public Health* **2021**, *18*, 10675. [CrossRef]
51. De Sio, S.; Cedrone, F.; Nieto, H.A.; Lapteva, E.; Perri, R.; Greco, E.; Mucci, N.; Pacella, E.; Buomprisco, G. Telework and its effects on mental health during the COVID-19 lockdown. *Eur. Rev. Med. Pharmacol. Sci.* **2021**, *25*, 3914–3922.
52. Wood, S.J.; Michaelides, G.; Inceoglu, I.; Hurren, E.T.; Daniels, K.; Niven, K. Homeworking, well-being and the COVID-19 pandemic: A diary study. *Int. J. Environ. Res. Public Health* **2021**, *18*, 7575. [CrossRef]
53. Rodrigues, M.; Silva, R.; Franco, M. Teaching and Researching in the Context of COVID-19: An Empirical Study in Higher Education. *Sustainability* **2021**, *13*, 8718. [CrossRef]
54. Carr, E.; Davis, K.; Bergin-Cartwright, G.; Lavelle, G.; Leightley, D.; Oetzmann, C.; Polling, C.; Stevelink, S.A.M.; Wickersham, A.; Razavi, R.; et al. Mental health among UK university staff and postgraduate students in the early stages of the COVID-19 pandemic. *Occup. Env. Med.* **2022**, *79*, 259–267. [CrossRef]
55. Myers, K.; Tham, W.Y.; Yin, Y.; Cohodes, N.; Thursby, J.G.; Thursby, M.; Schiffer, P.; Walsh, J.; Lakhani, K.R.; Wang, D. Quantifying the Immediate Effects of the COVID-19 Pandemic on Scientists. *arXiv* **2020**, arXiv:2005.11358. [CrossRef]
56. Parker, S.K.; Knight, C.; Keller, A.C. Remote Managers are Having Trust Issues. *Harvard Business Review*. 2020. Available online: <https://hbr.org/2020/07/remote-managers-are-having-trust-issues> (accessed on 2 April 2022).
57. Grant, C. Concepts, Terms and Measurement in Agile Working. In *Agile Working and Well-Being in the Digital Age*; Grant, C., Russell, E., Eds.; Palgrave Macmillan: Cham, Switzerland, 2020; pp. 19–32.
58. Miglioretti, M.; Gagnano, A.; Margheritti, S.; Picco, E. Not All Telework is Valuable. *J. Work Organ. Psychol.* **2021**, *37*, 11–19. [CrossRef]
59. Kreitner, R.; Kinicki, A. *Organizational Behavior*, 10th ed.; The McGraw-Hill Companies, Inc.: New York, NY, USA, 2013.
60. Peters, P.; den Dulk, L. Cross cultural differences in managers' support for home-based telework: A theoretical elaboration. *Int. J. Cross Cult. Manag.* **2003**, *3*, 329–346. [CrossRef]
61. Zigmond, A.S.; Snaith, R.P. The hospital anxiety and depression scale. *Acta Psychiatr. Scand.* **1983**, *67*, 361–370. [CrossRef]
62. Costantini, M.; Musso, M.; Viterbori, P.; Bonci, F.; Del Mastro, L.; Garrone, O.; Venturini, M.; Morasso, G. Detecting psychological distress in cancer patients: Validity of the Italian version of the Hospital Anxiety and Depression Scale. *Supportive Care Cancer* **1999**, *7*, 121–127. [CrossRef]
63. Bjelland, I.; Dahl, A.A.; Haug, T.T.; Neckelmann, D. The validity of the Hospital Anxiety and Depression Scale: An updated literature review. *J. Psychosom. Res.* **2002**, *52*, 69–77. [CrossRef]
64. Salari, N.; Hosseinian-Far, A.; Jalali, R.; Vaisi-Raygani, A.; Rasoulpoor, S.; Mohammadi, M.; Rasoulpoor, S.; Khaledi-Paveh, B. Prevalence of stress, anxiety, depression among the general population during the COVID-19 pandemic: A systematic review and meta-analysis. *Global Health* **2020**, *16*, 57. [CrossRef]
65. Liyanage, S.; Saqib, K.; Khan, A.F.; Thobani, T.R.; Tang, W.C.; Chiarot, C.B.; AlShurman, B.A.; Butt, Z.A. Prevalence of Anxiety in University Students during the COVID-19 Pandemic: A Systematic Review. *Int. J. Environ Res. Public Health* **2021**, *19*, 62. [CrossRef]
66. Busetta, G.; Campolo, M.G.; Fiorillo, F.; Pagani, L.; Panarello, D.; Augello, V. Effects of COVID-19 lockdown on university students' anxiety disorder in Italy. *Genus* **2021**, *77*, 25. [CrossRef]
67. Busetta, G.; Campolo, M.G.; Panarello, D. Economic expectations and anxiety during the COVID-19 pandemic: A one-year longitudinal evaluation on Italian university students. *Qual. Quant.* **2022**. Online ahead of print. [CrossRef]
68. Wathelet, M.; Duhem, S.; Vaiva, G.; Baubet, T.; Habran, E.; Veerapa, E.; Debien, C.; Molenda, S.; Horn, M.; Grandgenèvre, P.; et al. Factors Associated with Mental Health Disorders Among University Students in France Confined During the COVID-19 Pandemic. *JAMA Netw. Open* **2020**, *3*, e2025591. [CrossRef]
69. Monteduro, G. (Ed.) *Sotto Esame. La Vita Degli Studenti Universitari al Tempo del COVID-19*; Erickson: Trento, Italy, 2021.
70. Bozzetti, A.; De Luigi, N. Il benessere degli studenti universitari durante la pandemia di Covid-19: Servizi e misure per una popolazione eterogenea. *Auton. Locali Serv. Soc.* **2021**, *3*, 611–632.
71. Bertuzzo, E.; Mari, L.; Pasetto, D.; Miccoli, S.; Casagrandi, R.; Gatto, M.; Rinaldo, A. The geography of COVID-19 spread in Italy and implications for the relaxation of confinement measures. *Nat. Commun.* **2020**, *11*, 4264. [CrossRef]
72. Crayne, M.P. The traumatic impact of job loss and job search in the aftermath of COVID-19. *Psychol. Trauma* **2020**, *12*, S180–S182. [CrossRef]



73. Lu, H.; Nie, P.; Qian, L. Do Quarantine Experiences and Attitudes Towards COVID-19 Affect the Distribution of Mental Health in China? A Quantile Regression Analysis. *Appl. Res. Qual. Life* **2021**, *16*, 1925–1942. [[CrossRef](#)]
74. Codagnone, C.; Bogliacino, F.; Gómez, C.; Folkvord, F.; Liva, G.; Charris, R.; Montealegre, F.; Lupiáñez Villanueva, F.; Veltri, G.A. Restarting 'normal' life after Covid-19 and the lockdown: Evidence from Spain, the United Kingdom, and Italy. *Soc. Indic. Res.* **2021**, *158*, 241–265. [[CrossRef](#)]
75. Amerio, A.; Lugo, A.; Stival, C.; Fanucchi, T.; Gorini, G.; Pacifici, R.; Odone, A.; Serafini, G.; Gallus, S. COVID-19 lockdown impact on mental health in a large representative sample of Italian adults. *J. Affect. Disord.* **2021**, *292*, 398–404. [[CrossRef](#)]
76. Aylie, N.S.; Mekonen, M.A.; Mekuria, R.M. The psychological impacts of COVID-19 Pandemic Among University Students in Bench-Sheko Zone, South-west Ethiopia: A community-based cross-sectional study. *Psychol. Res. Behav. Manag.* **2020**, *13*, 813–821. [[CrossRef](#)]
77. Ettman, C.K.; Abdalla, S.M.; Cohen, G.H.; Sampson, L.; Vivier, P.M.; Galea, S. Prevalence of Depression Symptoms in US Adults Before and During the COVID-19 Pandemic. *JAMA Netw. Open* **2020**, *3*, e2019686. [[CrossRef](#)]
78. Esteves, C.S.; de Oliveira, C.R.; Argimon, I.I.L. Social Distancing: Prevalence of Depressive, Anxiety, and Stress Symptoms Among Brazilian Students during the COVID-19 Pandemic. *Front. Public Health* **2021**, *8*, 589966. [[CrossRef](#)]
79. Garvey, A.M.; García, I.J.; Otal Franco, S.H.; Fernández, C.M. The Psychological Impact of Strict and Prolonged Confinement on Business Students during the COVID-19 Pandemic at a Spanish University. *Int. J. Environ. Res. Public Health* **2021**, *18*, 1710. [[CrossRef](#)]
80. Jones, H.E.; Manze, M.; Ngo, V.; Lamberson, P.; Freudenberg, N. The Impact of the COVID-19 Pandemic on College Students' Health and Financial Stability in New York City: Findings from a Population-Based Sample of City University of New York (CUNY) Students. *J. Urban Health* **2021**, *98*, 187–196. [[CrossRef](#)]
81. Brunori, P.; Sciclone, N.; Ravagli, L.; Maitino, M.L. Distant and different? Lockdown and inequalities in Italy. *Econ. Pubblica* **2021**, *48*, 39–54.
82. Fetzer, T.; Hensel, L.; Hermle, J.; Roth, C. Coronavirus perceptions and economic anxiety. *Rev. Econ. Stat.* **2021**, *103*, 968–978. [[CrossRef](#)]
83. Carreri, A.; Dordoni, A. Academic and Research Work from Home during the COVID-19 Pandemic in Italy: A Gender Perspective. *Ital. Sociol. Rev.* **2020**, *10*, 821–845.
84. Minello, A.; Martucci, S.; Manzo, L.K. The pandemic and the academic mothers: Present hardships and future perspectives. *Eur. Soc.* **2021**, *23*, S82–S94. [[CrossRef](#)]
85. Shirmohammadi, M.; Au, W.C.; Beigi, M. Remote work and work-life balance: Lessons learned from the COVID-19 pandemic and suggestions for HRD practitioners. *Hum. Resour. Dev. Int.* **2022**, *25*, 163–181. [[CrossRef](#)]