

NOT SO GOOD HYBRID WORK MODEL? RESOURCE LOSSES AND GAINS SINCE THE OUTBREAK OF THE COVID-19 PANDEMIC AND JOB BURNOUT AMONG NON-REMOTE, HYBRID, AND REMOTE EMPLOYEES

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Abstract

Objectives: The COVID-19 pandemic contributing to the dissemination of alternative work models such as fully remote or hybrid work models. The present study focused on these 2 types of unplanned changes in the working environment. The conservation of resources theory, the first aim of this study was to examine the predictive role of resource losses and gains since the outbreak of the COVID-19 pandemic in job burnout. Moreover, the authors investigated how non-remote, remote, and hybrid employees differ in resource losses and gains and job burnout. **Material and Methods:** A cross-sectional online comparative study was conducted a year after the outbreak of the COVID-19 pandemic. The respondents provided sociodemographic data, reported their current work model, and completed validated measures of resource losses and gains and job burnout: the *Conservation of Resources Evaluation* and the *Oldenburg Burnout Inventory*. Based on the data collected from 1000 working adults from the Polish population, the authors tested the differences in losses and gains of different categories of resources and job burnout components between the 3 groups of employees representing distinct working models, i.e., non-remote, hybrid, and remote. **Results:** In general, the associations of losses and gains with job burnout subscales have been confirmed, regardless of the level of analysis of losses and gains. The authors' findings indicated that hybrid workers experienced significantly higher resource losses and gains (both in general and in different domains) in comparison to non-remote and remote workers. In turn, non-remote employees scored significantly higher on disengagement, which is one of the job burnout components. **Conclusions:** Hybrid workers experienced the highest levels of both resource losses and gains during the COVID-19 pandemic, compared to non-remote and remote workers, suggesting that this form of working arrangement involves the greatest changes in different life domains, bringing both positive and negative consequences for the employee. *Int J Occup Med Environ Health.* 2023;36(2)

Key words:

COVID-19, resource, job burnout, hybrid work model, remote work, conservation of resources

INTRODUCTION

Consequences of the COVID-19 pandemic – changes in ways of performing work

The COVID-19 pandemic caused a number of significant changes in the existing ways of performing work, contri-

buting to an acceleration of trends already observed in the earlier, pre-pandemic period in relation to changing work organization, digital transformation of the workplace, and the spread of work from home [1,2]. During the COVID-19 pandemic, in organizations where tasks

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could only be performed with the worker physically present on-site, numerous organizational changes were introduced in order to maintain the utmost level of health care, introducing and complying with the applicable sanitary requirements in force, modifying the physical working space, and making changes to the work rules concerning the time and scope of work performed. However, due to the requirement to periodically close a number of working establishments, institutions, and businesses, and the need to maintain social distancing, a large number of employees took up remote work, which does not require their physical presence on-site at the organization [3–5]. What is extremely important is that for most of them this was a completely new experience and a new form of work performance. It can thus be concluded that the COVID-19 pandemic, due to the lockdowns introduced in the vast majority of countries, became a turning point in the replacement of traditional face-to-face work with remote work. It is worth noting, however, that in the case of some European countries (Finland, the Netherlands, Luxembourg, Austria), the transition to remote work was not a completely new experience; some workers had already been carrying out their tasks in this form before the pandemic [6]. Nevertheless, during that period, remote working was not the norm, it would be undertaken as a result of personal choice and performed for a limited time. For example, before the pandemic, approx. 5% of people in the US worked remotely, and in the EU the respective percentage was only 3.2%. In contrast, during the pandemic, remote work was performed by more than a third of all workers (39%) in the EU, and by approx. half of all workers in the US [7]. In Poland in 2019, 5% of economically active people worked from home, while in late March 2020, already as many as 11% of employed people on average worked remotely [8].

With the pandemic dying down and the restrictions gradually easing, a growing number of organizations and employees with experience of both on-site and remote

work have been turning to the option of hybrid work, combining the 2 models.

Thus, it can be concluded that the COVID-19 pandemic has consolidated 3 core working models: on-site, remote, and hybrid. It is predicted that a return to the widespread form of on-site work from the pre-pandemic period is no longer possible [9–11]. Increasingly numerous groups of workers will therefore be carrying out their tasks remotely or in a hybrid form, which remains in line with the employees' prevailing expectations regarding work organization in a post-pandemic reality [12,13]. Consequently, recognizing the gains and losses resulting from these work models and the latter's consequences for individual burnout, contrasted with the traditional form of on-site work, becomes an important research problem. Additionally, since the COVID-19 pandemic crisis and the accompanying changes in the work environment have significantly affected not only organizations as such, and the way of performing work, but also workers and their subjective well-being [14,15], it seems important to determine how the changes (gains and losses) experienced by workers during the COVID-19 pandemic within the different groups of psychosocial resource are related to the different dimensions of occupational burnout. The results obtained will make it possible to expand knowledge about the differences regarding the positive and negative consequences of working within both traditional and new work models.

Consequences of introducing remote and hybrid working models during the COVID-19 pandemic for the worker

The introduction of remote working in all countries brought this type of work in the early stages of the pandemic to the attention of many researchers. Research into remote working in the pandemic period has focused mainly on its consequences, most often identified in areas such as health, non-work life, and new ways of function-

ing both of individual households and of the broader labor market of the respective country [2,16–18]. From the worker's perspective, researchers have pointed to both positive and negative consequences of introducing remote working during the COVID-19 pandemic [12,13,19–22].

On the other hand, lack of direct contact with co-workers and isolation, as well as a sense of being constantly present at work, are identified as the most negative consequences of remote working during the COVID-19 pandemic [21,23]. Negative effects of remote working also include threatened career advancement, long working hours, being always available, emotional exhaustion, demand for higher cognitive abilities, stress (including technostress), workaholism, overload, and health problems affecting for instance the musculoskeletal system [24,25]. A study conducted in Poland on a group of employees whose work constitutes what is referred to as digital output found that people working remotely displayed lower levels of verve, dedication and preoccupation than people working on-site [10,23,26–31].

The experiences of working on-site and remotely, enriching both organizations and their employees, led to a growing interest in hybrid working, i.e., work combining the 2 models. Within the hybrid working model, also described as blended working arrangements, the employee combines on-site and off-site working. The most important feature of the hybrid model is therefore the possibility of alternating between working traditionally at the office and from home, or any other location, at any time. The hybrid work model thus gives the employee autonomy in terms of temporal and spatial work organization, as long as they perform their job duties. It is understood that in practice, this form of working is usually made possible through the use of digital technologies, allowing the employee to obtain information relevant to their work and to interact with co-workers. However, unlike other related concepts

used to describe alternative work models (such as telecommuting, telework, flexible work, and virtual work), the hybrid work model is not limited to merely working from home using modern technologies and includes all forms combining remote and on-site work [32].

Hybrid work can be done in different forms. The following models are distinguished most often:

- the at-will model – enables employees to choose the work arrangement best for them on any given day;
- the split-week model – divides the week between working from home 2–3 days a week and working on-site 2–3 days a week;
- shift work – in this model, employees work in a variety of configurations, e.g., day shifts from home, and evening shifts on-site;
- week-by-week – employees alternate between working from home and on-site on a weekly basis [33].

Transformation of the working environment as a result of the COVID-19 pandemic has led to the hybrid work model being seen increasingly often as the optimal work model for the future in a post-COVID environment, with mainly positive implications for employees as well as for their organizations [34,35]. For example, in a survey conducted in 2020 in Kuwait on workplace changes related to the COVID-19 pandemic, more than half of the employees surveyed reported comparable effectiveness of hybrid and on-site work, and preferred working in a hybrid model in the post-pandemic conditions [12].

In turn, data from a report published on the website of the HR platform HIBOB [33] show that employees allowed to work in a hybrid model are more satisfied with their jobs than those working exclusively from home or exclusively on-site. Among employees working in the at-will model from home and on-site, 65% were satisfied with their jobs, while only 53% of those working exclusively on-site and only 57% of those working exclusively from home were satisfied with theirs. The authors of the report attribute this high level of employee satis-

faction with the at-will policy to the sense of freedom experienced by the employees in relation to the place of work. Flexibility is positively linked to increased productivity and job satisfaction. The researchers also noted that employees working on a hybrid basis had a more positive view of their company, in terms of both the ability to adapt to the pandemic and the ability to solve problems related to remote working. They also feel more productive when working from home, which is probably due to the optimal balance maintained between remote and on-site work. Their job satisfaction is higher and they declare better mental health than employees who work exclusively from home or on-site.

From the organization's point of view, the advantages of hybrid working include the possibility to reduce costs, e.g., related to running the office and business travel, greater access to talent, and more opportunities of keeping process continuity and employment stability. Previous research, not directly related to the COVID-19 pandemic situation, showed that the hybrid work model might also lead to potential benefits in terms of higher job satisfaction and worker productivity, as well as stronger integration of workers nearing retirement. In turn, much less is known about the potential negative consequences of the hybrid work model. Possible costs associated with hybrid work arrangements include employees experiencing a sense of isolation due to the lack of face-to-face interpersonal contact with their co-workers, as well as stronger stress and exhaustion due to excessive use of technology [32]. Additionally, asynchronous communication (e.g., using e-mail) within the hybrid model can lead to work overload [35].

Since remote and hybrid forms of work are currently perceived as prospective, it is worth undertaking research to determine their specificities, to identify and compare, among other things, the gains and losses experienced by the employee as a result of performing work in each of these forms in the current labor market. Bearing in

mind the limited number of studies addressing above all the negative consequences and potential difficulties associated with the introduction of the hybrid model [35], from an organizational point of view the results obtained may contribute to the creation of more optimal hybrid work policy solutions.

Resource losses and gains during the COVID-19 pandemic and job burnout among employees working within different working models

The COVID-19 pandemic caused a sudden transformation of the ways of performing work, leading to the distinguishing and consolidation of 3 main working models: that of on-site, remote, and hybrid work. Each of these models came to face unprecedented challenges, each of them is associated with specific losses, with the experience of stress, and with the risk of occupational burnout, while at the same time, for some employees, this is undeniably also a source of specific benefits. The aim of the empirical study presented in this paper was to identify gains and losses with regard to the psychosocial resources held during the COVID-19 pandemic and to determine their relationship to occupational burnout. Additionally, a comparison was made between the level of resource gains and losses and occupational burnout experienced by people working within the work models distinguished (on-site, remote, and hybrid).

The analysis of gains and losses of psychosocial resources was based on the conservation of resources (COR) theory proposed by Hobfoll [36]. The theory is based on the assumption that human activity is centered around seeking, maintaining and also protecting what is valuable and helpful for survival. According to this rule, humans accumulate and use resources that are important to them to regulate the Self and to function socially within the specific community and culture. The loss or threat of loss of resources leads to stress. Individuals with abun-

dant resources are more capable of stopping losses and of achieving further gains, while those with few resources are only able to protect those necessary for survival without investing and enriching themselves with new ones [37].

Hobfoll and colleagues conducted many studies analyzing the resource gains and losses of people in difficult situations, e.g., during the economic transition in Russia [38], comparing the losses incurred and the gains made by disadvantaged women [39], the ability to conserve resources and the adequate coping strategies of people involved in a natural disaster [40]. The results obtained and the resulting practical implementations may suggest that the COR theory provides a good basis for the study of stress faced due to the variability of the environment of human functioning, in relation to both its private and its professional sphere.

Other researchers [41,42] argue that the COR theory can also serve as a theoretical perspective to help in the study of the occupational burnout phenomenon. The occurrence of burnout is related to the inability to apply remedies in a difficult situation, i.e., in the face of stress. In the COR perspective, coping involves effectively managing, moving, replacing and investing resources. Burnout can be seen as a process that develops over time and results from the expenditure, loss or depletion of resources. As a result of repeated losses, the individual's resources become compromised or are insufficiently replenished, which, given the need to spend further resources, leads to an intensified sense of loss. When balance is upset, the individual is unable to manage their resources effectively, which can lead to stress and burnout.

The COVID-19 pandemic forcing workers to adapt to new working conditions [4], may have contributed to significant changes in the amount of resources they held. These changes may have been related to gains and losses within different resource groups, since the pandemic significantly remodeled many aspects of the working environ-

ment [1]. From the workers' point of view, the COVID-19 pandemic, described in the work and organizational psychology literature as a career shock and a crisis situation [43], had not only health-related and economic consequences, but also psychological ones, linked, among other things, to reduced well-being and intensified stress [44]. The COR theory may therefore provide a useful theoretical framework for analyzing hitherto poorly understood changes in the level of gains and losses of resources held by employees working within different work patterns during the COVID-19 pandemic, as well as contribute to a better understanding of the specific forms of burnout.

Aim and hypotheses

The current study had 2 main purposes. The first was to examine the links of resource losses and gains since the outbreak of the COVID-19 pandemic with job burnout. Based on the conservation of resources theory [45], the authors analyzed the general levels of employees' subjectively evaluated resource losses and gains due to the COVID-19 pandemic and specific categories of losses and gains, referring to different life areas. The authors' study examined both losses and gains of resources in general and within 5 separate subcategories of resources (hedonistic and vital resources, spiritual resources, family resources, economic and political resources, power and prestige resources). Job burnout was, in turn, operationalized in line with the approach by Demerouti et al. [46] as a 2-dimensional construct, entailing exhaustion and disengagement. The second purpose was to examine the differences in resource changes (losses and gains) and job burnout between the 3 distinct groups of employees, performing their work within different work models. More specifically, the authors aimed to compare non-remote employees working traditionally from a workplace, employees working full-time remotely from home, and employees working within the hybrid work model,

which incorporates working both from a workplace and from home during the working week, with regard to the study variables.

Based on the conservation of resources theory [36], the authors sought to replicate the previously reported associations between general levels of losses and gains in psychosocial resources and job burnout [47,48]. The authors also examined how distinct categories of losses and gains would be related to job burnout components. Accordingly, the authors formulated the following hypotheses concerning this part of the study:

- H1. Resource losses since the outbreak of the COVID-19 pandemic (in general and in different domains) will be positively associated with the job burnout dimensions.
- H2. Resource gains since the outbreak of the COVID-19 pandemic (in general and in different domains) will be negatively associated with the job burnout dimensions.

In addition, concerning the group differences among the employees with distinct working arrangements, the authors expected that:

- H3. Non-remote, hybrid, and remote workers would differ in subjective resource changes (losses and gains) and job burnout dimensions.

As the hybrid work model is a relatively new form of working arrangement, whose popularity has increased since the outbreak of the COVID-19 pandemic [12] and whose advantages, as well as potential disadvantages, are still not fully known [34], the latter hypothesis had an exploratory nature. Consequently, the authors did not formulate expectations as to which group of employees would score higher on resource losses and gains and job burnout compared to the other 2.

Ethics statements

The current study was carried out following the human research ethical principles included in the Declaration of Helsinki. All respondents provided written informed consent prior to beginning the survey. The local institutional

review board of the Ethics Committee of the University of Silesia in Katowice approved the study procedure before its commencement (decision No. KEUS.85/02.2021).

MATERIAL AND METHODS

Participants and procedure

The nationwide study sample comprised 1000 working adults from the general population, who completed the online survey. The research was conducted in March 2021 on the online research platform administered by the Polish research company BioStat. Participation in the study was anonymous and voluntary, with the possibility of stopping survey completion at any time. Respondents received an invitation via e-mail or SMS to participate in the study on the self-assessment of gains and losses in the time of the COVID-19 pandemic, and on job burnout. Those who gave informed consent were asked to provide sociodemographic data and to complete a set of self-reported measures, including the Polish validated versions of the *Conservation of Resources – Evaluation* (COR-E) and of the *Oldenburg Burnout Inventory* (OLBI). Given that the authors controlled for fear of COVID-19 in the statistical analyses, the *Fear of COVID-19 Scale* (FCV-19S) was also distributed. In addition, as the present study was a part of a broader research project, the participants provided ratings on other individual difference measures. As those results were irrelevant for this study, the authors did not include them in the further analyses. The participants who completed the survey were compensated with bonus points in their research panel accounts, which could be exchanged for a small reward after exceeding the required number of points.

The respondents provided basic demographic information on their gender (denominated as 1 – female or 2 – male), age (in years), and education (1 – elementary, 2 – vocational, 3 – secondary, 4 – higher). They also provided data about their work experience and employment, including general work and organizational tenure

(both denominated in years), type of contract regulating their employment (1 – permanent work contract, 2 – temporary work contract, 3 – civil law contract, 4 – self-employed as a sole trader/a solopreneur, 5 – an entrepreneur employing other people), the economic sector in which their organization operated (1 – services, 2 – industry, 3 – agriculture), and the number of employees in their organization (1: ≤ 9 employees, 2: 10–49 employees, 3: 50–249 employees, 4: ≥ 250 employees).

The detailed sociodemographic characteristics of participants are displayed in Table 1. Of note, the total sample was predominantly female (65%), ranging of 18–70 years ($M \pm SD$ 38.93 \pm 10.90). Most of the respondents had higher (48.10%) or secondary education (42.6%), followed by those with vocational (8.3%) and elementary education (1.0%). The general work tenure in the total sample ranged 1–48 years ($M \pm SD$ 15.7 \pm 9.98), and organizational tenure ranged 1–42 years ($M \pm SD$ 7.26 \pm 6.9). The majority of the participants were permanent employees (69.5%), working in organizations operating in services (76.1%) and varying in terms of headcount from ≤ 9 employees (19.6%) to ≥ 250 employees (26.2%). As far as the working model is concerned, in fully non-remote employees dominated in the current sample (62.6%), followed by those working under hybrid work arrangements (24.5%) and fully remotely (12.9%).

Measures

Resource losses and gains

Resource losses and gains since the outbreak of the COVID-19 pandemic were assessed using the COR-E questionnaire [45, Polish adaptation 49]. The Polish abridged version of the scale includes 2 separate parts, labeled as A and B. Each part of the measure contains 40 items, constituting a list of different resources, which were collectively classified into 5 domains: hedonistic and vital resources, spiritual resources, family resources, economic and political resources, power and prestige resources.

In part A of the COR-E, the participant is asked to evaluate the subjective importance of each resource on a 5-point Likert scale, ranging from 1 (not at all important) to 5 (very important). Part B refers to self-assessed changes (losses and gains) in resources. In this part of the questionnaire, the respondent separately assesses the extent of changes for the worse (losses) and changes for the better (gains) experienced in the last 12 months. The answers are provided on a 6-point scale ranging from 0 (no loss/no gain) to 5 (very great loss/very great gain). The final indicators of resource losses and gains (both in general and in specific domains) are calculated as the products of multiplication of the subjective importance of each type of resource (obtained in Part A) by their experienced losses and gains, respectively (derived from Part B). The higher the level of the particular indicator, the greater the losses and gains in the relevant subgroup of resources. Cronbach's α coefficients for resource losses in the 5 distinguished subgroups ranged 0.84–0.92, and resource gains in the distinct domains varied 0.89–0.93. In turn, Cronbach's α was 0.96 for total resource losses and 0.98 for total resource gains.

Job burnout

Job burnout was measured using the OLBI [50, Polish adaptation 51]. The scale contains 16 statements rated on a 4-point scale ranging from 1 (totally agree) to 4 (totally disagree). All items are grouped into 2 subscales, reflecting dimensions of the job burnout syndrome distinguished by Demerouti et al. [50]: exhaustion (8 items) and disengagement (8 items). Exhaustion items assess the physical, emotional, and cognitive aspects of work-related exhaustion (e.g., “I can tolerate the pressure of my work very well”). Disengagement entails an employee's disconnection from work and cynicism toward his or her work (e.g., “This is the only type of work that I can imagine myself doing”). Both subscales include 4 direct items and 4 reverse-coded items. Higher scores in each subscale of the OLBI indicate higher levels of job burnout compo-

Table 1. Sociodemographic characteristics in the total sample of 1000 working adults from the Polish population and in the 3 subgroups of employees differentiated based on their work model (full non-remote, hybrid, full remote), March 2021, Poland

Variable	Participants (N = 1000)			Statistics					Effect size			
	total	full non-remote work (N = 626, 62.6%)	hybrid work (N = 245, 24.5%)	full remote work (N = 129, 12.9%)	χ^2	F	p	ϕ	p	Cramer's V	p	η^2
Age [years] (M±SD)	38.93±10.90	38.86±10.95	38.41±10.41	40.25±11.56	1.88	1.23	0.29	0.04	0.39	0.04	0.39	0.002
Gender [n (%)]												
female	650 (65.0)	409 (65.3)	152 (62.0)	89 (69.0)								
male	350 (35.0)	217 (34.7)	93 (38.0)	40 (31.0)	54.6	<0.001	<0.001	0.23	<0.001	0.17	<0.001	
Education [n (%)]												
elementary	10 (1.0)	9 (1.4)	1 (0.4)	0								
vocational	83 (8.3)	73 (11.7)	10 (4.1)	0								
secondary	426 (42.6)	291 (46.5)	88 (35.9)	47 (36.4)								
higher	481 (48.1)	253 (40.4)	146 (59.6)	82 (63.6)								
General work tenure [years] (M±SD)	15.68±9.98	15.82±10.10	14.94±9.65	16.46±10.04	1.13	0.32	0.83	0.31	<0.001	0.22	<0.001	0.002
Organizational tenure [years] (M±SD)	7.26±6.90	7.17±7.02	7.33±6.49	7.56±7.15	0.18	0.83	<0.001	0.31	<0.001	0.22	<0.001	0.000
Work contract [n (%)]					98.7	<0.001	<0.001	0.31	<0.001	0.22	<0.001	
permanent	695 (69.5)	456 (72.8)	170 (69.4)	69 (53.5)								
temporary	161 (16.1)	104 (16.6)	44 (18.0)	13 (10.1)								
civil	74 (7.4)	45 (7.2)	13 (5.3)	16 (12.4)								
a solopreneur	55 (5.5)	18 (2.9)	9 (3.7)	28 (21.7)								
an entrepreneur employing other people	15 (1.5)	3 (0.5)	9 (3.7)	3 (2.3)								
Organization economic sector [n (%)]					19.1	<0.001	<0.001	0.14	<0.001	0.10	<0.001	
services	761 (76.1)	455 (72.7)	191 (78.0)	115 (89.1)								
industry	216 (21.6)	158 (25.2)	47 (19.2)	11 (8.5)								
agriculture	23 (2.3)	13 (2.1)	7 (2.9)	3 (2.3)								
Employees in the organization [n (%)]					25.9	<0.001	<0.001	0.16	<0.001	0.11	<0.001	
≤9 employees	196 (19.6)	108 (17.3)	44 (18.0)	44 (34.1)								
10–49 employees	281 (28.1)	181 (28.9)	74 (30.2)	26 (20.2)								
50–249 employees	262 (26.2)	157 (25.1)	74 (30.2)	31 (24.0)								
≥250 employees	261 (26.1)	180 (28.8)	53 (21.6)	28 (21.7)								

nents. Cronbach's α coefficients were 0.77 for exhaustion and 0.72 for disengagement.

Work model

The present work model under which the employees were performing work was identified based on the 1-item measure developed for this study ("In what way are you currently performing your work?"). The respondents were asked to choose one of the 3 options, indicating their currently utilized work model: fully non-remote (1 – "I am working exclusively on-site"), hybrid (2 – "I am working partially on-site and partially remotely from home, e.g., on selected days of the week"), and fully remote (3 – "I am working exclusively from home").

Control variables

In the present study, the 3 variables were controlled in the statistical analyses concerning the relations between the study variables. Given the differences between men and women in experiencing job burnout [52], as well as the role of age in its development [53], the authors included both gender and age as control variables. Besides controlling for these sociodemographic variables, the authors also controlled for fear of COVID-19, which was reported to be positively associated with job stress and burnout in the studies on the COVID-19 pandemic consequences for occupational health [54,55]. To measure fear of COVID-19, the authors used the FCV-19S [56, Polish adaptation 57], which is a 7-item measure of an individual's fear in the reaction to COVID-19. The respondents provide answers on a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). The sample item is "I worry a lot about coronavirus-19." Cronbach's α coefficient for the FCV-19S was 0.92.

Statistical analyses

All statistical analyses in this study were calculated in the SPSS Statistics package v. 27.0. Firstly, χ^2 test and one-

way analysis of variance (ANOVA) were used to compare the 3 subgroups of employees (non-remote, hybrid, remote) with regard to the sociodemographic characteristics. Secondly, descriptive statistics (mean, standard deviation, skewness, kurtosis) and Spearman's correlation coefficients were computed for resource losses and gains and job burnout components. In the next step, multiple regression analyses were conducted based on the enter method to test the hypotheses concerning the associations between changes in resources (losses and gains) and job burnout dimensions. Finally, the authors performed the between-group comparisons of non-remote, hybrid, and remote employees with regard to resource losses and gains and job burnout dimensions using the Kruskal-Wallis test (one-way ANOVA on ranks). The Mann-Whitney U test was applied to conduct post-hoc comparisons.

RESULTS

Demographics

Table 1 shows the sociodemographic characteristics of the total sample and the 3 groups of employees working within distinct work models. Firstly, a one-variable χ^2 test for work model was conducted to determine whether the proportion of employees was equal within the 3 work models. The obtained results showed that the proportions did differ by the work model ($\chi^2(3, N = 1000) = 405.63, p < 0.001$). With regard to the basic demographics, the authors found no significant differences according to the working model in age ($F(2,997) = 1.23, p = 0.29$), in gender ($\chi^2 = 1.88, p = 0.39$), in general work tenure ($F(2,997) = 1.13, p = 0.32$) nor in organizational tenure ($F(2,997) = 0.18, p = 0.83$). The 3 groups of employees differed in terms of education level ($\chi^2 = 54.6, p < 0.001$), as a higher percentage of fully non-remote and hybrid workers reported higher education in comparison to non-remote workers. The groups were also different in terms of the type of work contract ($\chi^2 = 98.7, p < 0.001$) with more fully remote employees working on the basis

of a civil law contract and as a solopreneur than the other 2 groups. In addition, differences between the 3 groups of employees were found with regard to the economic sector in which their organizations operated ($\chi^2 = 19.1$, $p < 0.001$), given that the highest percentage of remote employees worked in services in comparison to non-remote and hybrid workers. Similarly, the percentage of remote employees working in microenterprises (with up to 9 employees) was higher than that of both non-remote and hybrid groups ($\chi^2 = 25.9$, $p < 0.001$). The values of phi (ϕ) and Cramer's V for χ^2 tests indicated that the effect sizes were weak for gender, moderate for economic sector of the organization and number of employees in the organization, and strong for education and type of work contract. In turn, the values of partial eta-squared (η^2) for ANOVA tests demonstrated small effect sizes for age and general work tenure, and no differences between the 3 groups of employees working under distinct work models with regard to organizational tenure.

Preliminary analyses

Table 2 presents descriptive statistics, reliability coefficients, and correlations among the study variables. As the distribution of the study variables differed from the normality based on the results of the Shapiro-Wilk test ($p < 0.001$) and skewness values >1 for total gains and most of the losses and gains subtypes, non-parametric tests were used in the present study. Accordingly, the authors calculated Spearman's rank correlation coefficients. In general, the direction of correlations of both general and specific losses and gains with job burnout dimensions were in line with the authors' expectations. All correlations of losses (in total and in the different domains) with exhaustion were positive, albeit weak. Similarly, general losses and specific types of losses (besides spiritual losses) correlated weakly positively with disengagement. In contrast, no statistically significant associations were found between gains (both overall and

specific, reflecting different domains) and exhaustion. Finally, total gains and gains subtypes (besides spiritual gains) were weakly positively correlated with disengagement. In turn, fear of COVID-19 was weakly positively correlated with the exhaustion subscale of the OLBI, resembling previous results obtained from the Polish sample [55]. In addition, Harman's one-factor test was calculated separately for general losses and gains as well as for losses and gains in specific domains. The total variance explained by one factor was 23.029% when taking into account total losses and gains, and 46.209% when including specific losses and gains. As both statistics were less than the threshold of 50%, common method bias does not appear to be a problem in the present study.

Regression analyses

The four multiple regression analyses were employed to test the relationship between resource losses and gains and job burnout dimensions. In order to better elucidate how resource losses and gains (both in general and in distinct domains) contributes to job burnout components, the authors conducted separately 2 regression models with general levels of losses and gains included as predictors, followed by the next 2 models with specific gains and losses in different domains entered as predictors. Age, gender, and fear of COVID-19 were included in all analyses as control variables.

Table 3 displays the first 2 regression models with general losses and gains as predictors, and job burnout subscales (exhaustion and disengagement) serving as outcome variables, respectively. Both models were statistically significant with good overall statistics. For exhaustion, out of control variables, age emerged as a negative predictor, whereas fear of COVID-19 was a positive predictor. With regard to the main predictors, exhaustion was found to be negatively predicted by total resource gains and positively by total resource losses. The model accounted for 8% of the variance in exhaustion. When predicting disengage-

Table 2. Means, standard deviations, skewness, kurtosis, reliability coefficients, and correlation matrix in the total sample (N = 1000), March 2021, Poland

Variable	Correlation																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Age	–																
2. Gender	0.110***	–															
3. Fear of COVID-19	0.152***	–0.042	–														
4. Losses	–0.098**	–0.089**	0.255***	–													
5. Hedonic losses	–0.118***	–0.094**	0.197***	0.939***	–												
6. Spiritual losses	–0.046	–0.008	0.301***	0.827***	0.726***	–											
7. Family losses	–0.047	–0.032	0.298***	0.844***	0.725***	0.764***	–										
8. Economic and political losses	–0.088**	–0.127***	0.160***	0.852***	0.773***	0.560***	0.583***	–									
9. Power and prestige losses	–0.102**	–0.003	0.298***	0.783***	0.707***	0.738***	0.722***	0.527***	–								
10. Gains	–0.108***	–0.049	0.250***	0.451***	0.347***	0.526***	0.490***	0.261***	0.510***	–							
11. Hedonic gains	–0.151***	–0.025	0.200***	0.395***	0.300***	0.476***	0.438***	0.228***	0.441***	0.934***	–						
12. Spiritual gains	–0.096**	–0.030	0.241***	0.449***	0.357***	0.531***	0.478***	0.252***	0.507***	0.900***	0.819***	–					
13. Family gains	–0.069*	–0.092**	0.237***	0.401***	0.306***	0.449***	0.448***	0.247***	0.451***	0.896***	0.758***	0.789***	–				
14. Economic and political gains	–0.052	–0.016	0.261***	0.383***	0.295***	0.484***	0.466***	0.169***	0.474***	0.865***	0.800***	0.772***	0.678***	–			
15. Power and prestige gains	–0.113***	0.010	0.238***	0.424***	0.331***	0.525***	0.486***	0.187***	0.592***	0.827***	0.772***	0.770***	0.694***	0.757***	–		
16. Exhaustion	–0.059	–0.046	0.154***	0.218***	0.209***	0.159***	0.175***	0.217***	0.159***	–0.002	–0.031	0.025	–0.006	0.011	–0.011	–	
17. Disengagement	–0.137***	–0.004	0.005	0.158***	0.163***	0.060	0.108***	0.192***	0.098**	–0.079*	–0.090**	–0.062	–0.0081*	–0.072*	0.653***	–	
M	38.93	1.35	17.64	199.08	62.35	25.24	37.23	60.62	13.64	189.92	54.58	31.58	52.73	35.57	15.45	19.37	19.10
SD	10.91	0.48	6.90	171.64	52.79	32.28	45.38	43.05	21.10	191.50	55.70	34.85	53.51	41.00	22.99	4.40	4.31
S	0.25	–	0.28	1.24	0.90	1.61	1.49	0.50	2.05	1.28	1.16	1.31	1.01	1.25	1.81	–0.12	–0.06
K	–0.61	–	–0.66	1.84	0.58	2.46	1.90	–0.22	4.55	1.39	0.93	1.45	0.31	1.03	3.18	0.05	0.04
α	–	–	0.92	0.96	0.89	0.89	0.92	0.84	0.88	0.98	0.93	0.89	0.93	0.90	0.90	0.77	0.72

* p < 0.05, ** p < 0.01, *** p < 0.001.

Table 3. Results of multiple regression analysis with overall resource losses and gains as predictors in the total sample (N = 1000), March 2021, Poland

Predictor	Exhaustion					Disengagement				
	B	95% CI	β	t	p	B	95% CI	β	t	p
Age	-0.037	-0.062–(-0.012)	-0.091	-2.911	0.004	-0.059	-0.084–(-0.035)	-0.149	-4.740	0.000
Gender	-0.188	-0.742–0.367	-0.020	-0.664	0.507	0.289	-0.258–0.835	0.032	1.036	0.300
Fear of COVID-19	0.099	0.058–0.141	0.156	4.719	0.000	0.024	-0.016–0.065	0.039	1.167	0.243
Gains	0.006	0.004–0.008	0.233	6.570	0.000	0.005	0.004–0.007	0.212	5.923	0.000
Losses	-0.005	-0.007–(-0.003)	-0.214	-6.072	0.000	-0.005	-0.007–(-0.004)	-0.244	-6.873	0.000
Model statistics	$R^2 = 0.085$, adj. $R^2 = 0.08$, $F(5,994) = 18.354$, $p < 0.001$					$R^2 = 0.074$, adj. $R^2 = 0.069$, $F(5,994) = 15.801$, $p < 0.001$				

ment, age and total losses became the negative predictors, while total gains served as a single positive predictor. All predictors in this model explained 7% of the variance in disengagement.

The 2 other regression models with resource losses and gains in different domains entered as predictors are presented in Table 4. For exhaustion, the results showed that this dimension of job burnout was negatively predicted by age and positively by fear of COVID-19. Similarly to the overall resource losses and gains, exhaustion was positively associated with most of the specific losses and negatively with the majority of specific gains. The only exception in this pattern of relationships were spiritual resources, as exhaustion was negatively predicted by spiritual losses and positively by spiritual gains. However, as spiritual losses were uncorrelated with both dimensions of job burnout, this result might be a statistical artefact. The model with exhaustion as the outcome variable was statistically significant and explained 9% of the variance in this component of job burnout. In the last model, with disengagement being an outcome variable, age accompanied by hedonistic and vital gains emerged as the negative predictors. In turn, family losses, as well as economic and political losses, positively predicted disengagement. The model had overall good statistics and explained 8% of the variance in disengagement.

Comparing employees on resource losses and gains and job burnout

In the next step, the authors compared the 3 groups of employees (non-remote, hybrid, and remote) with regard to resource losses and gains (in general and in different domains) and job burnout dimensions, such as exhaustion and disengagement (Table 5). Given that the Shapiro-Wilk test indicated that the distribution of dependent variables differed from normality, the authors used the Kruskal-Wallis test, which is a non-parametric one-way ANOVA on ranks. A series of post-hoc comparisons between the employee groups was performed with the use of Mann-Whitey U test with Bonferroni correction.

The results of one-way ANOVA on ranks (the Kruskal-Wallis test) revealed that the average levels of losses and gains (both in total and in distinct domains) and disengagement were significantly different between the 3 groups of employees. *Post hoc* comparisons showed that hybrid employees scored significantly higher on total losses and the 3 subtypes of losses (hedonistic and vital losses, family losses, power and prestige losses) than the remaining groups. Compared to non-remote workers, hybrid employees reported significantly higher spiritual losses as well as economic and political losses. Moreover, significant group differences referred to the levels of gains. Hybrid workers scored higher on total gains, hedonistic and vital gains, and spiritual gains than non-remote

Table 4. Results of multiple regression analysis with resource losses and gains domains as predictors in the total sample (N = 1000), March 2021, Poland

Predictor	Exhaustion					Disengagement				
	B	95%CI	β	t	p	B	95%CI	β	t	p
Controls										
age	-0.064	-0.068-(-0.017)	-0.106	-3.320	0.001	-0.064	-0.089-(-0.039)	-0.162	-5.040	0.000
gender	0.383	-0.632-0.494	-0.0007	-0.241	0.810	0.383	-0.172-0.939	0.042	1.355	0.176
fear of COVID-19	0.029	0.061-0.145	0.161	4.827	0.000	0.029	-0.012-0.070	0.047	1.393	0.164
Losses										
hedonistic and vital	0.004	-0.005-0.016	0.062	0.973	0.331	0.004	-0.007-0.014	0.045	0.697	0.486
spiritual	-0.020	-0.031-0.010	-0.080	-1.045	0.296	-0.020	-0.040-0.000	-0.150	-1.954	0.051
family	0.013	-0.007-0.019	0.061	0.918	0.359	0.013	0.000-0.025	0.133	1.972	0.049
economic and political	0.015	0.007-0.027	0.163	3.300	0.001	0.015	0.006-0.025	0.155	3.116	0.002
power and prestige	0.005	-0.024-0.035	0.026	0.362	0.717	0.005	-0.024-0.034	0.025	0.343	0.732
Gains										
hedonistic and vital	-0.016	-0.031-(-0.008)	-0.247	-3.240	0.001	-0.016	-0.028-(-0.004)	-0.205	-2.675	0.008
spiritual	0.009	-0.004-0.033	0.112	1.498	0.134	0.009	-0.009-0.027	0.072	0.956	0.339
family	-0.008	-0.016-0.002	-0.084	-1.462	0.144	-0.008	-0.017-0.001	-0.104	-1.802	0.072
economic and political	0.008	0.000-0.027	0.127	1.958	0.051	0.008	-0.005-0.022	0.078	1.188	0.235
power and prestige	-0.009	-0.043-0.011	-0.083	-1.147	0.252	-0.009	-0.036-0.018	-0.048	-0.659	0.510
Model statistics	$R^2 = 0.102$, adj. $R^2 = 0.09$, $F(13,986) = 8.618$, $p < 0.001$					$R^2 = 0.089$, adj. $R^2 = 0.077$, $F(13,986) = 7.434$, $p < 0.001$				

Table 5. One-way ANOVA on ranks (Kruskal–Wallis tests) results with resource losses and gains and job burnout dimensions as the dependent variables, March 2021, Poland

Variable	Full non-remote work			Hybrid work			Full remote work			Kruskal-Wallis H test	P	Mann-Whitney U test (significant only)
	M	SD	M rank	M	SD	M rank	M	SD	M rank			
Losses	188.86	171.86	478.24	236.92	182.17	567.95	176.81	136.76	480.42	17.71	<0.001	1-2, p = 0.000 2-3, p = 0.016
hedonistic and vital	58.29	53.01	473.53	74.74	53.61	574.01	58.49	46.52	491.79	21.48	<0.001	1-2, p = 0.000 2-3, p = 0.026
spiritual	23.94	31.94	484.97	31.26	35.83	550.03	20.14	24.52	481.79	9.89	0.007	1-2, p = 0.007
family	35.44	45.62	481.36	45.53	47.48	563.17	30.14	37.61	474.35	15.72	<0.001	1-2, p = 0.000 2-3, p = 0.013
economic and political	58.68	43.23	487.13	66.82	42.85	542.33	58.26	41.78	485.94	6.82	0.033	1-2, p = 0.033
power and prestige	12.51	20.03	483.20	18.56	24.79	569.33	9.79	16.61	453.75	21.94	<0.001	1-2, p = 0.000 2-3, p = 0.000
Gains	182.66	189.70	487.98	223.38	199.38	553.80	161.60	177.57	460.03	12.06	0.002	1-2, p = 0.007 2-3, p = 0.008
hedonistic and vital	51.54	54.59	484.88	64.96	57.83	553.90	49.60	54.87	474.86	11.28	0.004	1-2, p = 0.004 2-3, p = 0.035
spiritual	29.91	34.17	486.53	38.24	36.95	554.98	27.05	32.47	464.84	12.32	0.002	1-2, p = 0.005 2-3, p = 0.012
family	51.78	53.63	492.93	60.08	54.63	544.51	43.37	49.16	453.66	9.62	0.008	2-3, p = 0.011
economic and political	35.16	41.11	498.44	40.35	42.02	535.10	28.53	37.57	444.80	8.55	0.014	2-3, p = 0.011
power and prestige	14.26	21.68	489.14	19.76	25.90	542.01	13.04	22.45	476.78	7.64	0.022	1-2, p = 0.032
Exhaustion	19.42	4.44	502.81	19.46	4.32	513.10	18.91	4.38	465.38	2.43	0.297	-
Disengagement	19.39	4.31	520.43	18.76	4.27	475.49	18.33	4.29	451.29	8.62	0.013	1-3, p = 0.039

All p values for group comparisons with Mann-Whitney U test are with Bonferroni correction.

and remote groups. They also had higher levels of the 2 other types of gains (family gains, economic and political gains) than those who worked fully remotely. Regarding hybrid and non-remote workers, these 2 groups significantly differed in reported power and prestige gains, which was higher among hybrid workers. The significant differences between the 3 groups also emerged for disengagement with non-remote employees demonstrated its higher levels compared to remote employees.

DISCUSSION

The purpose of the present study was 2-fold. First, based on Hobfoll's theory of gains and losses [36,45], the relationships between different categories of resource gains and losses during the COVID-19 pandemic among employees and dimensions of occupational burnout (exhaustion and disengagement) were analyzed. Secondly, a comparison was made between 3 groups of employees working during the pandemic under different models (stationary, hybrid and remote) in terms of declared levels of gains and losses and burnout.

The results confirmed a negative association of resource gains with job burnout and a positive association of resource losses with job burnout. This relationship occurred both for gains and losses calculated at the general level and for specific resource subtypes, which remains consistent with the general assumptions of the COR theory [36] and with previous, pre-pandemic findings on the pattern of relationships between the variables under study [47,48]. However, the values of R^2 in most regression models did not exceed 0.1, suggesting that other factors than resource losses and gains (e.g., job characteristics, employee's job attitudes or coping strategies) might add to explaining the job burnout variance. Alternatively, other types of resources besides those selected in the authors' study could also explain the burnout variance. At the subscale level for both dimensions of occupational burnout, economic/political losses were the strongest positive predictor, and hedo-

nistic/vital gains were the strongest negative predictor. This result suggests that the negative changes in the economic and political sphere experienced in the pandemic situation within a year of its outbreak, mainly related to the shaken sense of stability in employment, income, access to medical care, as well as the shaken overall economic stability of the country, may have significantly contributed to the experiencing of occupational burnout by employees.

These results are in line with other reports in this area. Lack of direct contact with co-workers and isolation, as well as a sense of being constantly present at work, are identified as the most negative consequences of remote working during the COVID-19 pandemic [10,21,23]. Negative effects of remote working also include threatened career advancement, long working hours, being always available, emotional exhaustion, demand for higher cognitive abilities, technostress, workaholism, overload, and health problems affecting for instance the musculoskeletal system [24–26,58,59].

Another frequently indicated consequence of working from home is the blurring of the boundaries between work and personal life, the extension of working hours, and intensification of work, including in particular e-mail activity [22]. The ambiguity of work and leisure time can cause conflicts that threaten employee well-being, disrupt the work-home balance, cause stress, and affect employee productivity [27].

The negative consequences associated with the spread of the remote working model also include upsetting the work-life balance [28–31].

On the other hand, hedonistic/vital gains probably related on the one hand to a redefined approach to one's own life, passions and experience of pleasure (e.g., through increased perception of the positive aspects of life), and on the other hand to an increased possibility of pursuing one's own interests due to reduced working time, e.g., as a result of lockdown, seem to be a factor reducing the risk of burnout. This is also confirmed by other studies.

The following positive effects of remote work at the individual level, referring to the worker, were distinguished most frequently: time saved due to the lack of need to commute, adaptation of work to personal needs, and the possibility to maintain work-life balance [21]. Studies comparing remote work with traditional work have also shown that the former would cause the need to reduce the number of working hours, less often than the latter, and would lead less often to job loss, and people working remotely did not experience a decline in earnings to the same extent as those continuing to work in the traditional way [22]. According to employees, remote working compared to the conventional, pre-pandemic employment model, fostered greater autonomy and flexibility in terms of fulfilling job responsibilities without reducing work efficiency [12,13]. Researchers have also documented another important positive change that occurred in employee communication patterns in large cities in North America, Europe and the Middle East after the introduction of the remote working model. According to their findings, compared to the pre-COVID-19 period, the number of meetings increased, but this greater number was compensated by their reduced length, meaning an overall reduction of the time spent in meetings [22].

A comparative analysis of workers employed under 3 distinct work models (stationary, hybrid and remote) showed that the individual groups differed in terms of gains and losses during the pandemic and in terms of occupational burnout. The group that experienced relatively both the strongest losses and strongest gains of resources globally and in most specific areas were the hybrid workers. This result suggests that working within the hybrid model, compared to the other models, in the long-term perspective, can generate the strongest changes (both positive and negative) in different areas of life. This means that, although empirical reports to date have mainly emphasized the positive consequences of hybrid work [35], in practice the hybrid work model may also be accompanied

by a number of negative effects in the form of losses of different categories of psychosocial resources.

For example, in a survey conducted in 2020 in Kuwait on workplace changes related to the COVID-19 pandemic, more than half of the employees surveyed reported comparable effectiveness of hybrid and on-site work, and preferred working in a hybrid model in the post-pandemic conditions [12].

Previous research, not directly related to the COVID-19 pandemic situation, showed that the hybrid work model might also lead to potential benefits in terms of higher job satisfaction and worker productivity, as well as stronger integration of workers nearing retirement. In turn, much less is known about the potential negative consequences of the hybrid work model. Possible costs associated with hybrid work arrangements include employees experiencing a sense of isolation due to the lack of face-to-face interpersonal contact with their co-workers, as well as stronger stress and exhaustion due to excessive use of technology [32]. Additionally, asynchronous communication (e.g., using e-mail) within the hybrid model can lead to work overload [35].

As far as intergroup differences with regard to occupational burnout are concerned, employees working in the on-site model declared a significantly higher level of disengagement compared to employees performing their occupational tasks remotely. This result may be due to the specific nature of the work of those belonging to the group working remotely during the pandemic. In the presented study, the remote worker group included the largest share of people with higher education, working in the services sector and in microenterprises. It is possible that these individuals work under conditions of greater autonomy or perform work with a higher level of complexity, which may contribute to a higher level of engagement in remote versus on-site work. However, this conjecture should be verified in further empirical studies. This issue requires further research.

Limitations of the study and future research directions

Limitations of the study include the unequal number of women (65%) and men in the occupational groups studied, which may have determined the study results. Authors of other studies indicate that women differ from men in terms of the types of risk identified, they may react differently to stress and assess the importance of the impact of various factors in the work environment differently from men [58–60].

Another important aspect, not taken into account in the presented research, is the position of the survey respondents in the organizational structure and the related influence on the shaping of their own working conditions. Studies indicate [59–61] that the higher that position, the more positive the assessment of the changes implemented, of which the employee is a co-creator. Most of the survey respondents were full-time employees (69.5%), working in organizations operating in services (76.1%) with a varying number of employees: from ≤ 9 (19.6%) to ≥ 250 (26.2%). It should therefore be borne in mind that the survey respondents represent the sector of the economy with the greatest potential to adapt to the change from on-site to remote working. Work in services would already be carried out remotely to some extent before the pandemic period. In addition, small and large organizations show the greatest flexibility in responding to changes required due to the impact of the external environment. Small businesses base their readiness for change on flexible structures, while large companies rely on well-functioning internal units responsible for change implementation, and on economic potential. The research presented in this paper did not take these organizational features into account.

An additional limitation of the study is its cross-sectional and retrospective nature, making it impossible to infer with full certainty the fluctuation of resources during the pandemic. Therefore, in order to better capture the trajectories of resource changes in the analyzed period, it would also

be valuable to enrich the research methodology by adding qualitative methods, such as the daily diary method or interviews with employees. This would make it possible to obtain a better insight into their feelings and constitute a source of important information with regard to the studied variables. It would also be desirable to supplement the research model both with the organizational determinants related to the specific nature of work of individual occupational groups and with selected psychological traits related to the processes of the individual's adaptation to change. The performance of longitudinal studies, enriched with qualitative methods, taking into account the potential adaptation of employees to new conditions over time vs. building resistance to change and the associated psychological costs may constitute a further area of research explorations within the post-pandemic labor market.

CONCLUSIONS

Based on Hobfoll's conservation of resources theory [36], the study presented here analyzed the relationship between resource gains and losses during the COVID-19 pandemic and occupational burnout, and compared on-site, hybrid and remote workers in terms of gains and losses and occupational burnout. The results confirmed a positive association of occupational burnout with resource losses and a negative association with resource gains in terms both of the overall level of losses and gains and of their specific areas, with economic/political losses and hedonistic/vital gains identified as the strongest predictors of occupational burnout. Comparative analyses showed in turn that workers employed in the hybrid model experienced significantly higher both gains and losses in the pandemic situation compared to the other 2 groups of workers. This result may suggest that working in a hybrid model brings about the largest number of changes, both positive and negative in their nature.

The practical implications resulting from the above research can relate to a wide spectrum of measures aimed at preserving people's well-being in the working condi-

tions currently being created. Remote and hybrid working will undoubtedly become an increasingly common experience for many individuals and organizations. Reducing its potentially negative impact on employee well-being requires impact on the legislative, organizational, and psychological levels. The results of the research presented in the paper, as well as reports from other researchers indicate the need to address aspects such as the following:

- organizational regulations setting the limits of employee's involvement in terms of working time, transport accessibility, and maintaining privacy in their own living space;
- developing solutions reducing feelings of alienation and of limitation of social relationships, fostering the sense of community, contributing to the creation of teamwork potential, and reducing separation anxiety;
- creating new foundations for the development of professional and personal skills to shape careers in the new working conditions;
- education with regard to occupational hygiene, ergonomics and the psychophysical determinants of work performance.

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