



## RESEARCH ARTICLE

# The impact of the Covid-19 pandemic on young and elderly psychological well-being: the role of social and cultural participation. A cross-sectional exploratory study

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## ABSTRACT

**Background:** In the last 20 years a growing literature has highlighted the role of social and cultural activities in fostering individual and community well-being. The Covid-19 pandemic had an important impact on individuals and communities given the lockdown policies enacted, causing the unexpected and forced abandonment of these activities.

**Aims:** The present work investigates the impact caused by Covid-19 and the consequent suspension of all associated social and cultural opportunities for young and elderly individual subjective well-being.

**Methods:** We undertook a cross-sectional survey in January 2020 (t1, pre-pandemic), and a second carried out one year later in February 2021 (t2 post-pandemic), on a sample of individuals from 18 to 34 years old and >64 years old in a town lying within the metropolitan area of Milan (Italy). We employed the PGWBI - Psychological General Well-Being Index to assess the psychological aspect and to measure the influence of the social and cultural dimensions. P-value, Cohen g and Pearson r statistical techniques were employed.

**Results:** Results show that the psychological well-being increased for the sample of young people from 67.82 to 76.49, and decreased for the >64 sample from 59.84 to 57.23. An analysis of the correlation shows that social and cultural participation played a role in promoting the young's well-being and reduced the impact of the pandemic in those >64.

**Conclusion:** Some socio-demographic variables seem to be affected by the pandemic in both cohorts. The contribution of social and cultural activities appears relevant, thus providing elements for further investigation in the field of the relationship between these dimensions and individual subjective well-being.

**Keywords:** Young, Elderly, Pandemic, Psychological well-being, Social and Cultural activities

## Introduction

Interest in the relationship between culture, leisure activities and subjective well-being is quite recent and has quickly involved various disciplines, from economics to medicine, from psychology to sociology. Studies undertaken in Western countries have shown that these activities have an impact on several individual spheres. Starting with health, the role of social and cultural activities acts as a possible mediator in relation not only to individual perception but also as a possible form of pro-active therapy. The importance of these two elements is reported in all gender and age categories, starting with the young / adolescents.

In relation to individual biological functioning, several investigations have also shown a profounder correlation between health perception and longevity / mortality and biological trail. Hyypä<sup>1</sup> discovered that social and cultural participation provide a positive outcome in terms of longevity, and in the same vein Agahi<sup>2</sup> found that a low individual participation level in social and cultural activities leads to a doubling of mortality risk if compared with subjects with a high participatory level, even after checking the usual mortality benchmarking for age, health, education, income, education and other possible indicators. Two recent studies have discovered a closer association between cultural activities and our biological trail. Ventura<sup>3</sup> established that human cells respond to different possible sounds generated by music and live performance, and showed how these cultural events may also allow us to promote the possible programming of stems cells in relation to our biological functioning. In addition, Grossi<sup>4</sup> investigated the effect of visual aesthetical experiences in a heritage site in terms of biological (stress reduction) and psychological (well-being enhancement) responses, finding noticeable impact with a remarkable reduction in salivary cortisol levels.

In discussing the role of social and cultural activities, these do not impact only the physical / tangible individual dimension, but also the immaterial /

intangible, as far as the psychological related to the subjective well-being (SWB) is concerned.

A torrent of literature has tried to estimate the impact of the aforementioned dimensions on SWB. Starting with the studies conducted by Diener<sup>5</sup> and Michalos<sup>6</sup>, a number of authors (for a general review, Adams<sup>7</sup>; Brajša-Žganec et al<sup>8</sup>) have tried to measure how the SWB varies in accordance with the participation in different social and cultural activities. There is common agreement that these produce an important positive effect. In an ideal ranking of different elements affecting well-being e.g., from individual characteristics such as age, gender, education and income to environmental features such as residency (urban vs rural), commuting, as well as health and educational / welfare services provided, Grossi<sup>9</sup> found that social and cultural activities rank in third place after the absence of morbidity and income. The mechanism underpinning the positive cause-and-effect dynamics is rooted in the correlation between these and the social dimension. As noted by Erickson<sup>10</sup> and Christin<sup>11</sup>, social and cultural activities promote an increased psychological well-being level given their orientation in terms of sociability, meaning their capacity to enhance relationships and sense of belonging, as well as providing the full variety of elements which lead the individual to feel and be part of the place where they live and operate in terms of the community social dimension.

The advent of the Covid-19 Pandemic and the adoption of specific restriction measures worldwide led to a sudden profound change in the habits and behavior of individuals. This curtailment was particularly relevant in Italy, which experienced the longest lockdown lasting 71 days, from March to May 2020. However, the pandemic policy responses went beyond the mere lockdown. For the whole of 2020, social and cultural activities were forbidden, or at least severely restricted, in the number of participants, and there is a consensus that the COVID-19 pandemic and the associated lockdown measures have significantly reduced participation in social and cultural activities (e.g., Gough<sup>12</sup>).

The indication of experts about possibly pandemic, as for COVID-19, was that it will affect individual and collective health, both physically and psychologically. With respect to the psychological aspect, the pandemic had an important impact on the psychological dimensions of individuals in many countries (Wilke et al<sup>13</sup>), with an increase in depression and conditions of anxieties. Considering Italy, previous research has shown that the young recorded an increase of 32.7% for depression and 27.2% for anxiety (Villani et al<sup>14</sup>), while the elderly present no or fairly increase at 8% for depression (Maggi et al<sup>15</sup>).

The scenario outlined provides the opportunity to establish an experimental condition in relation to the comparison between normal times, before 2020 in the pre-pandemic phase, and extraordinary times, one year after the pandemic, and so in 2021. The present study aims to address the following objective: at a general level how the pandemic phase impacted individual well-being on two defined cohorts, those 18-34 and >64 years old; at a punctual level to study the potential consequences on subjective well-being of the lack of social and cultural activities, and so participation, due to policies adopted in order to contain the epidemic.

## Methods

A computer-assisted personal interview (CAPI) survey was conducted in the community of Baranzate, a town located 7 km from Milan, which presents a population of 11,700 inhabitants (ISTAT 2021). The questionnaire was administered by Doxa, the Italian pollster company, on individuals aged between 18 and 34 years old (universe of 2297 persons as for the 2021 Baranzate municipality census bureau) and >64 years old (universe of 2155 persons as for the 2021 Baranzate municipality census bureau) at two different times: in January 2020 and then February 2021.

The survey undertaken in Baranzate is part of a pluri-annual research activity conducted by Bracco foundation, aiming to assess the physical and psychological level of inhabitants of different Milan

metropolitan area. For the 2020 has been selected Baranzate municipality, and given the advent of the pandemic has been settled a second survey in order to analyse the impact on the local population.

The age brackets concerning the young and elderly samples have been chosen following the evidence provided from the literature review, which shows that the two classes have been greatly impacted by the Covid-19, rather than the middle age one. Data were collected to cover three main areas: a. the socio-demographic information for age, gender, civil status, schooling and job position; b. health-related information for the degree of presence / absence of diseases from a check list. All these elements are shown in Table 1. In addition, in order to address the possible influence of the social and cultural dimensions, fourteen possible activities using the methodology described by Tavano Blessi et al<sup>16</sup> were scrutinized in order to provide an estimation of the role of such elements in relation to subjective well-being. Each subject surveyed in the study had to go through a structured questionnaire asking about the frequency of access to all the activities listed in Table 1 in recent years (how many times in a year did you perform a given activity?). The intensity of access has been measured on a quantitative scale through a composite sum of frequencies, expressing in this way the number of days in a year of at least one activity, making up a specific index called Cultural Index.

### 2.1 THE INSTRUMENT.

Individual well-being status has been assumed as the dependent variable, and was registered thanks to the PGWBI. This instrument allows us to measure the state of possible subjective well-being or distress, in other words to measure elements related to what we could call the potential perception of individual well-being. The PGWBI has been adopted since the 1990s (Dupuy<sup>17</sup>) and psychometric / sociometric properties have been evidenced and validated for clinical and research aims. The PGWB it is based on 22 self-administered queries distributed in six HRQoL domains: vitality, state of depression, anxiety, self-control, positive well-being, and general health. Each

item is rated on a 6-point scale (from 0 to 5) and the subject is asked to report his emotional, physical and health conditions in relation to their life over the previous eight weeks. The final result is the global summary of all domains, which may range from 0, the maximum distress level, to 110, where the total score <60, displays severe distress; from 60 to 70, moderate distress; between 71-90, no distress; >90 to 110, well-being (Tavano Blessi et al, <sup>18</sup>). For this study we have adopted a short version of the PGWBI in all 6 questions, which explains more than 90% of the variability of the full version, already validated in previous clinical and research projects (Grossi et al<sup>19</sup>), showing a Cronbach's Alpha from 0.85 to 0.88 as recorded in previous studies.

Independent variables assumed in this study are: socio-demographic information (gender, age, educational level, employment status), individual health condition (diseases and co-morbidity), and individual cultural participation.

## 2.2 STATISTICAL ANALYSIS

The statistical analysis was carried out thanks to different approaches. Firstly, the reliability of the scale employing Cronbach's alpha coefficient has been measured. Successively, the sample has been weighted following the gender and age distribution in percentage terms on the basis of the 2021 Baranzate municipality census. The algorithm adopted for the weighting calculation has been implemented with SAS 9.4. SAS 9.4 is a statistical tool released for the first time in 2013 from SAS company, and provides the possibility for data analyses in linear and multi-regression approaches.

Descriptive and correlation analyses have been carried out for all variables and the same software has also been employed for the evaluation of the efficiency of the weighting procedures.

## Results

The total weighted individuals part of the 18-34 sample are 89, and 95 for the >64 sample. The reliability rate of the PGWBI with Cronbach's Alpha is for the 18-34 sample is at 0.89 in 2020 and 0.74

in 2021, and the >64 sample is at 0.81 and 0.76 respectively in 2020 and 2021. Concerning the weighting efficiency, this method provides the estimation of how the survey sample characteristics are similar to the universe, and may range from 0 (no efficiency) to 100 (maximum efficiency). Usually, the range level is between 70 and 80 and shows good sample reliability. In this research the value is 83,22 for the 2020 samples and 80,82 for the 2021 samples.

The sample characteristics are shown in Table 1. In relation to gender, given the weighting procedures, the two samples can be compared to the structure as reported by the municipal census bureau.

Over 50% of those parts of the samples are females and in relation to the educational level, between 62% and 65% of the 18-34 group hold a higher degree (high school or university) in comparison to the >64 samples where about one third of them have a degree or a high school or university education. Approximately 50% of those >64 are married and between 68% (2020) and 71% (2021) of the young are single. Concerning employment, 84% of the samples >64 are retired, and in relation to the young almost 40% are employed in some way (from entrepreneurs to employees), from 24% to 28% are students, and from 17% (2020) to 26 % (2021) are unemployed. In this respect the percentage increase of unemployed among the young reflect the restriction pandemic policies adopted and the closure of economic and productive activities. This has been recorded in all European countries that affected most young individuals. Blue-collar refers to the so called 'working-class', and usually individuals are employed in manual works such as electrician, plumber, construction worker, diver, farmer, police officer and so on. White-collar typically indicates those working in an office environment and may involve sitting at a computer or desk e.g., administrative services, sales manager, teacher / professor, architect, accountant, attorney, computer programmer, consultant and so on.

The survey also investigated a number of diseases, and this aspect has been analyzed using 5 different classes: 0; 1; 2; 3; >3.

Table 1. General characteristics of the samples

Variable	AGE 18-34					AGE >64				
	2020		2021		P value	2020		2021		P value
	%	N	%	N		%	N	%	N	
Gender										
MALE	52%	46	52%	46	NS	52%	49	52%	49	NS
FEMALE	48%	43	48%	43	NS	48%	46	48%	46	NS
Education										
PRIMARY	11%	10	1%	1	NS	24%	23	25%	24	NS
SECONDARY	19%	17	35%	32	NS	43%	40	50%	48	NS
HIGH_SCHOOL	56%	50	55%	49	NS	29%	28	25%	24	NS
UNIVERSITY	14%	12	9%	8	NS	4%	4	0	0	NS
Civil status										
SINGLE	68%	61	71%	63	NS	1%	1	3%	3	NS
MARRIED	32%	28	29%	26	NS	49%	47	55%	52	NS
WIDOWED/DIVORCED	0	0	0	0	NS	50%	47	42%	40	NS
Employment										
WHITE_COLLAR	35%	31	30%	27	NS	6%	6	3%	3	NS
BLUE_COLLAR	19%	17	14%	13	NS	4%	3	1%	1	NS
HOUSEWIFE	5%	4	1%	1	NS	6%	5	4%	4	NS
RETIRED	0	0	0	0	NS	84%	80	91%	86	NS
UNEMPLOYED	17%	15	26%	23	NS	1%	1	1%	1	NS
STUDENT	24%	22	28%	25	NS	0	0	0	0	NS
Diseases										
0	85%	76	96%	86	NS	23%	22	19%	18	NS
1	13%	12	4%	4	NS	42%	40	34%	33	NS
2	2%	2	0	0	NS	20%	19	26%	25	NS
3	0	0	0	0	NS	8%	7	13%	12	NS
>3	0	0	0	0	NS	7%	7	7%	7	NS

## Predictors of psychological well-being (PGWBI)

Table 2 and 3 provide a comparison between the PGWBI and selected variables in the pre- and post-pandemic samples under investigation.

TAB 2: Comparison between PGWB values pre- and post-pandemic in the 18-34 sample  
(P value and Hedges g effect size CI 95% confidence interval)

<i>age 18-34</i>	2020 (Pre-pandemic)			2021 (Post-pandemic)						
	N	Mean	S.D.	N	Mean	S.D.	P value	g	CI low	CI up
GENDER										
Male	46	67.13	17.68	46	78.52	20.04	0.0049	-0.598	-1.015	-0.180
Female	43	68.56	13.45	43	74.33	15.39	0.0669	-0.396	-0.822	0.030
EDUCATION										
Primary	10	58.27	4.40	1	59.43	11.91	0.9599	-0.227	-2.134	1.681
Secondary	17	63.69	13.58	32	74.70	18.33	0.0225	-0.642	-1.247	-0.038
High school	50	71.92	15.92	49	75.95	16.72	0.2229	-0.245	-0.640	0.151
University	12	64.41	17.46	8	90.05	17.73	0.0071	-1.398	-2.404	-0.392
CIVIL STATUS										
Single	61	68.90	16.50	63	76.76	16.77	0.0095	-0.470	-0.827	-0.113
Married	28	65.53	13.07	26	75.83	19.87	0.0311	-0.610	-1.155	-0.064
EMPLOYMENT										
White collar	31	70.18	14.91	27	80.53	18.51	0.0241	-0.612	-1.140	-0.085
Blue Collar	17	67.66	12.32	13	65.33	18.94	0.7063	0.147	-0.582	0.876
Housewife	4	59,14	9.45	1	86.69	15.88	0.6447	-2.106	-4.506	0.293
Unemployed	15	61.21	14.39	23	77.60	17.77	0.0034	-0.971	-1.652	-0.289
Student	22	70.86	18.97	25	76.25	15.43	0.2979	-0.309	-0.887	0.270
DISEASES										
0 disease	76	67.85	15.50	86	76.64	17.64	0.0009	-0.525	-0.840	-0.211
1 disease	12	68.22	16.69	4	72.89	17.89	0.6844	-0.260	-1.451	0.932
2 diseases	2	64.34	2.48	0	0	0	0	0	0	0
PGWBI	89	67.82	15.43	89	76.49	17.59	0.0006	-0.5238	-0.822	-0.225



TAB 3: Comparison between PGWB values pre- and post-pandemic in the >64 sample  
(P value and Hedges g effect size CI 95% confidence interval)

age >64	2020 (Pre-pandemic)			2021 (Post-pandemic)			P value	g	CI low	CI up
	N	Mean	S.D.	N	Mean	S.D.				
GENDER										
Male	49	62.18	11.71	49	59.53	11,82	0.2665	0.224	-0.173	0.621
Female	46	57.36	14.95	46	54.79	8.12	0.3092	0.212	-0.198	0.621
EDUCATION										
Primary	23	54.40	15.45	24	54.29	11.97	0.9777	0.008	-0.565	0.582
Secondary	40	58.75	11.95	48	57.98	8.79	0.7347	0.074	-0.345	0.493
High school	28	66.25	13.35	24	58.67	10.73	0.0283	0.611	0.050	1.171
University	4	57.29	6.09	0	0	0	0	0	0	0
CIVIL STATUS										
Single	1	58.56	0	3	54.73	11.09	0	0	0	0
Married	47	60.10	13.49	52	60.65	10.07	0.8187	-0.047	-0.441	0.348
Widowed / Divorced	47	59.61	14.01	40	52.97	9.02	0.0091	0.549	0.120	0.978
EMPLOYMENT										
White collar	6	59.00	5.51	3	60.84	5.47	0.6744	-0,293	-1.742	1.156
Blue Collar	3	64.40	6.59	1	60.39	2.17	0.3933	0.465	-1.516	2.446
Housewife	5	56.37	20.81	4	55.45	5.11	0.9249	0.049	-1.276	1.374
Retired	80	59.98	13.62	86	57.25	10.56	0.1520	0.225	-0.080	0.530
Unemployed	1	54.90	0	1	43.92	5.47	0	0	0	0
DISEASES										
0 disease	22	60.34	16.32	18	59.23	9.27	0.7876	0.080	-0.540	0.699
1 disease	40	59.09	10.51	33	56.70	11.08	0.3523	0.220	-0.244	0.683
2 diseases	19	62.31	15.79	25	58.79	10.02	0.4049	0.270	-0.333	0.872
3 diseases	7	51.23	18.11	12	56.15	9.98	0.5164	-0,351	-1.271	0.570
3+ diseases	7	65.20	7.65	7	50.89	8.37	0.0067	1.666	0.433	2.899
PGWBI	95	59.84	13.61	95	57.23	10.17	0.0006	0.217	-0.065	0.501

From the data it emerges that the pandemic has a different impact on the level of individual psychological well-being in the two groups. For the young sample, the PGWBI increases from 67.82 to 76.69 with a medium-strength relationship (Hedges  $g$ -0.523). On the other hand, the >64 group shows a decrease in well-being from 59.84 to 57.23, with small statistical significance ( $g$  0.217).

Starting with the 18-34 sample, data show that gender can be conceived as a protective. This element is important for females, where the PGWBI rose from 68.56 in 2020 to 74.33 in 2021 ( $g$  -0.396), and is particularly significant in the case of males, where the psychological values rise from 67.13 in 2020 to 78.52 in 2021, ( $g$ -0.598;  $p$ -value 0.0049). The educational sphere provides interesting indications. Both classes

investigated show how this element, education, is positively associated with psychological dimension, and that the higher the educational attainment, the better the individual PGWBI is. If for those holding a primary education attainment the mean remains almost stable (58.27 in 2020, 59.43 in 2021 with a low significance), at university level the psychological well-being grows from 64.41 in 2020 to 90.05 in 2021 with an almost large effect ( $g$  0-1.398;  $p$ -value 0.0071).

Civil status reflects what has been already described for the previous variable of education. Both classes, being married or single, display an increase in the PGWB level, with almost stability in the correlation with this element and a  $g$  before and after the pandemic, married ( $g$  -0.610), single ( $g$  -0.470;  $p$ -value 0.0095).

Concerning Covid, job position has an effect in relation to the pandemic impact on individual psychological well-being. For white-collar workers well-being increases from 70.18 to 80.53 with a good effect ( $g$  -0.612,  $p$ -value 0.0241), and this tendency is also similar in the student category. Unexpectedly, being unemployed seems to be a protection factor, where the PGWBI of 61.12 in 2020 rises to 77.60 in 2021 ( $g$  -0.971,  $p$ -value 0.0034). On the other hand, being blue collar seems to be a risk factor, with the psychological well-being falling from 67.66 to 65.33 with small statistical significance ( $g$  -0.147,  $p$ -value 0.7063).

With diseases, 85% of the 2020 sample and 96% of the 2021 sample are located in the same category (0 disease). The PGWBI scores for this category (0 disease) mirror this behavior at the general level, increasing from 67.85 in 2020 to 76.63 in 2021, with a medium effect and good significance ( $g$  -0.525,  $p$ -value 0.0009).

The >64 years old sample provides information about the impact of the pandemic on this social category. Starting with gender, both show a slight decrease of the PGWBI, from 62.18 to 59.53 ( $g$  0.224,  $p$ -value 0.2665) for males and from 57.36 to 54.79 ( $g$  0.212,  $p$ -value 0.3092) for females with in both

cases a low statistical effect. Educational attainment shows a different dynamic in relation to the 18-34 sample. Those well-educated to high school level seemed to suffer from the pandemic, with PGWBI in 2020 at 66.25 and in 2021 at 58.67 with a medium effect ( $g$  0.611,  $p$ -value 0.0283), while low educational attainment appears to being less affected by Covid, from 54.40 in 2020 to 54.29 in 2021 ( $g$  0.008,  $p$ -value 0.9777).

Civil status provides different elements of investigation. If for single people there are no sufficient data, the widowed / divorced category seems to suffer from the pandemic, with psychological scores dropping from 59.61 in 2020 to 52.97 in 2021 ( $g$  0.549,  $p$ -value 0.0091, while those married maintain substantially the same PGWBI level, from 60.10 in 2020 to 60.65 in 2021 ( $g$  -0.047,  $p$ -value 0.8187). Concerning employment, the majority of the sample is associated with retirees, showing a PGWBI behavior similar to the full sample. No significant association was found with the other classes.

In relation to disease, the probability of being affected by the pandemic in relation to individual psychological well-being increases with comorbidity. In this respect, if it is possible to observe a linear correlation between increasing co-morbidity and decreasing psychological perception up to two concomitant diseases, but with a small statistical effect. After this level of comorbidity, subjects scrutinized are too low in order to provide useful insight.

## The Psychological General Well-Being Index and Cultural participation

One of the research objectives was related to providing the possible influence of participation in cultural activities on individual psychological well-being. As already noted in the previous sections, this element supplies an important contribution to individual health, both in the physical but particularly in the psychological dimensions. In order to highlight the role of the social and cultural dimensions before and after the pandemic in the two samples, we



focused on the correlation between these, grouped in the Cultural Index and the PGWBI, and results are shown in table 4.

The analysis displays two interesting elements. If on the one hand the participation in cultural activities for the two samples drops significantly in the 2021 data, which reports the number of cultural events attended by all individuals who were part of the

survey in the previous 12 months, on the other hand the influence of this element remains positive. In the 18-34 sample the correlation is positive ( $r$  0.302 in 2020 and  $r$  0.12 in 2021), with a strong statistical significance and in the  $>64$  sample it became positive in 2021 after a negative influence in 2020, also with a good significance.

Table 4: Correlation between Cultural Index and PGWBI - Psychological General Well-Being Index

	Prepandemic - 2020			Postpandemic - 2021			P value	<i>d</i>	<i>Cl low</i>	<i>Cl up</i>
	Mean	S.D.	<i>r</i>	Mean	S.D.	<i>r</i>				
Cultural Index age 18-34	92.41	79.56	0.302	14.19	17.58	0.12	< 0.0001	1.3575	1.0368	1.6672
Cultural Index age > 64	47.00	84.29	-0.031	7.36	21.01	0.138	0.00002	0.6453	0.3510	0.9343

### Correlation of the index of variables and the Psychological General Well-Being Index

Finally, we present the linear correlation between the full spectrum of variables collected in the survey. Table 5 illustrates the outcome of this. With the

provided correlation we also took the opportunity to investigate more deeply the meaningful of the inference between the PGWBI and the variables under investigation before and after the pandemic

Table 5: Correlation index with the PGWBI

variable	Age 18-34		variable	Age >64	
	r2020	r2021		r2020	r2021
MALE	-0.042	0.099	MALE	0.174	0.217
FEMALE	0.042	-0.099	FEMALE	-0.174	-0.217
PRIMARY	-0.204	-0.094	PRIMARY	-0.222	-0.155
SECONDARY	-0.120	-0.063	SECONDARY	-0.067	0.069
HIGH_SCHOOL	0.280	-0.028	HIGH_SCHOOL	0.298	0.075
UNIVERSITY	-0.081	0.197	UNIVERSITY	-0.036	
SINGLE	0.094	0.020	SINGLE	-0.007	-0.042
MARRIED	-0.094	-0.020	MARRIED	0.018	0.345
WIDOWED/DIVORCED			WIDOWED/DIVORCED	-0.016	-0.332
WHITE_COLLAR	0.103	0.127	WHITE_COLLAR	-0.015	0.057
BLUE_COLLAR	-0.004	-0.216	BLUE_COLLAR	0.064	0.035
HOUSEWIFE	-0.115	0.056	HOUSEWIFE	-0.062	-0.132
RETIRED			RETIRED	0.023	0.004
UNEMPLOYED	-0.180	0.031	UNEMPLOYED	-0.029	-0.105

STUDENT	0.103	-0.007	STUDENT		
0 disease	0.003	0.035	0 disease	0.019	0.089
1 disease	0.009	-0.035	1 disease	-0.046	-0.035
2 diseases	-0.030		2 diseases	0.088	0.084
			3 diseases	-0.179	-0.038
			3+ diseases	0.106	-0.163
Cultural Index	0.302	0.12	Cultural Index	-0.031	0.138

Starting with the 18-34 sample, as noted above, one of the main contributors to individual psychological well-being is the cultural dimension, which although decreasing in influence over the two survey waves, remaining always a protective factor (0.29 in 2020; 0.21 in 2021). Surprisingly, the unemployed seem to have benefitted from the pandemic (-0.180 in 2020; 0.031 in 2021) just like those holding a university degree (-0.081 in 2020; 0.197 in 2021). Risk factors seem to be a low job position such as being blue collar (-0.004 in 2020; -0.216 in 2021), being female (0.042 in 2020; -0.099 in 2021) and also negatively correlated seem to be those holding a high school degree (0.280 in 2020; -0.028 in 2021). On the other hand, in relation to the >64 sample, it is possible to observe that being married (0.018 in 2020; 0.345 in 2021) and male (0.174 in 2020; 0.217 in 2021) seem to foster psychological well-being, while risk factors appear as being female (-0.174 in 2020; -0.217 in 2021), widowed / divorced (-0.16 in 2020; -0.332 in 2021) but also having an increasing number of diseases and thus comorbidity.

## Discussion

The ongoing study tried to evaluate the impact of Covid-19, and the restriction policy adopted in order to reduce the contagion, through two different samples, the first related to those between 18 and 34 years old, the second individuals of >64 or more years old.

The results of our study provide two different lines of interpretation. Starting with the sample >64, data confirm what has already been highlighted in previous studies, meaning that these cohorts have been affected by the pandemic, albeit in our case it would seem only marginally. The data it is in line with previous studies, and demonstrates that individuals

of >64 years old have suffered from Covid-19, not only in terms of physical health, particularly in Italy and in the Lombardia Region, where Baranzate is located (Bruzzi et al<sup>20</sup>), but also at the psychological level. Starting our analysis with gender, data shows that females suffered more than males from the pandemic. If the male category increases the PGWBI, on the other hand the female sees a decrease. Several studies conducted before the advent of Covid-19 underlined that women usually record higher psychological distress than men (Matud et al<sup>21</sup>), and the present research confirms this result. The causes for this are numerous and just to name a few, can be traced to the biological differences between male and female (see Parker & Brotchie<sup>22</sup>), and the tendency of women to access health services at a higher rate rather men, a behavior which in female promote psychological distress (Rieker<sup>23</sup>). The outcomes of our study in relation to the effect of pandemic according to the >64 gender can also refer back to the social roles of women. The pandemic restriction and lock-down policies have meant the confinement of all individuals in their homes. In Italian society, where females are still in charge with respect to a number of duties e.g., work, taking care of family and houseworks, along with the permanent presence of other individuals such as sons/children, a husband or parents, may have led to an increased level of activity and effort compared to pre-pandemic times, and to an impact on psychological well-being. An element which can potentially confirm this is the fact that housewives recorded a decreasing level of PGWBI, along with a negative correlation with this indicator (-0.062 in 2021; - 0.132 in 2021). Another factor which may lead to the recorded increase of psychological distress in this category may also be connected to the fact that women have the tendency

to enhance their well-being and identity thank to a relational mode, in other words through a network of friends and relational activities, in contrast to males (Umbersons et al,<sup>24</sup>). The almost complete cancellation of such kinds of activities, along with the decreasing opportunities of interaction with others given the pandemic restrictions, may have also promoted the decrease in PGWBI recorded in 2021. Conversely, males seem to have benefitted from the pandemic. Men's identity and well-being are usually connected to their social status, such as being employed and living in a family. The possibility for men to maintain their social role given the adoption of remote working strategies and spending more time in the bosom of the family seem to have fostered male well-being.

Education emerges as a variable with a weak incidence in relation to the pandemic, where only those with a high school diploma seem to react better in 2021. As noted in the literature (Khorani et al<sup>25</sup>), the higher the educational level, the better is the opportunity to work out adaptation strategies and thus take action in relation to sudden and advent conditions, as for the case of the pandemic. Furthermore, the literature highlight how individual education level is usually correlated to the work and economic condition, and for those enjoying a higher job position and income, the impact of Covid-19 has been less compared to those with a low work position.

Civil status follows what has been already explained and is linked to the previous aspect. In this respect, data shows a slight decrease of the PGWBI level in those who are single and a drop in those widowed or divorced. The literature provides some evidence surrounding the decreasing level of those living alone rather than with someone else or in a family, caused by several elements but mostly driven by the low level of social interaction and the impact of this on the bio-physical dimension (Macintyre et al<sup>26</sup>). In our study this tendency is recognized, and can be the result of several factors, one of which, and probably the most influential, is related to the social restrictions and lock-down policies adopted, which have enabled the social and interactional opportunities of individuals.

In respect of employment status, the effect of the pandemic seems modest also because the majority of individuals are part of the retired category, which shows almost zero in terms of decreasing PGWBI and statistical significance.

It is noted that individual health variable greatly affects psychological well-being (Tamosiunas<sup>27</sup>), and given the fact that the pandemic impacted mostly individuals' physical sphere, we may expect on the one hand an increasing level of co-morbidity in 2021 in comparison to 2020, while at the same time an important effect on the psychological dimension. The research does not provide a clear perspective on this potential linear correlation, with the higher the concomitant disease the lower the PGWBI level. There emerges a clear statistical tendency in this direction with a statistical significance of the results only in those most affected by co-morbidity, where in the other categories the results do not follow the theoretical indication. While it is true that the Lombardy Region population, where Baranzate is located, was severely affected by the pandemic both emotionally, where the fear of Covid-19 was common (Biaassoni et al<sup>28</sup>), and physically, the study outcomes indicate little effect on psychological well-being, apart from those with important co-morbidity. There may be several reasons behind what has been outlined, for example, the quality of welfare services and the health support system provided by the different government bodies (from local to regional areas), which are particularly efficient in the Lombardy Region, lying almost at the top of the rankings for regional performance of the Italian National Health System (Bruzzi et al<sup>29</sup>), or the fact that the municipality area is quite isolated in terms of public transport and infrastructure from the rest of the metropolitan area of Milan, an element which may have led to low circulation of the pandemic and thus low impact in the area. We do not have any further information to clarify this mechanism.

In relation to the role of cultural and social activities on individual psychological well-being, this research confirms information we already knew such as the importance of this element not only for individuals'

physical health, but also for the psychological well-being of those >64 years / older adults. Studies reveal the positive impact of participating in social and cultural activities as a promotional element in reducing the risk factors associated with mental health and physiological well-being, given the possibility to enjoy common experiences with others and thus the establishment of social contact and interactions, which may lead to the production of positive effects in terms of emotions and feelings (Kuykendall et al<sup>30</sup>). Our data follow the stream of evidence provided by the literature, and while in 2020 the correlation between Cultural Index is fairly negative, it turned positive and came in at third place for importance after being male and married, which is true also even if the participation in 2021 decreased by 80% in comparison to 2020. This data may confirm once more how cultural and leisure activities are connected to the well-being of those >64 years old, where the lack of these opportunities greatly improves the value perceived of the few events participated in, given the social and interactive benefit provided by these.

The 18-34-year-old sample follows in some elements the indication already described for the >64 cohort, and differs for some others. Starting from the general PGWBI, the information collected displays a counter-intuitive element, such as the increased perceived level in 2021 (76.49) with an important statistical reliability in relation to 2020 (67.82). We do not have any further information to clarify the reason behind this, if not the possible influence of elements not recorded in this study, e.g., the physical environment, such as the natural and built dimensions of Baranzate, and also the role of local welfare services and more.

In relation to gender, the evidence paints a picture in which both categories increase the PGWBI level, with the male one benefitting more than the female, as revealed for the >64 cohort. In this case we cannot assume, if marginally, that this evidence can be related to the social position of female rather than male, given the fact most of the interviewees are single or live with their families and parents.

Educational attainment suggests the potential role of this element on individual psychological well-being. As noted in the case of the >64, the increase of educational attainment corresponds a mirror increase of the PGWBI, and the mechanism behind can be traced back to what has already described for the previous category.

Concerning civil status, both categories under investigation reacted positively to the advent of Covid-19. For those married, a possible explanation of the mechanism behind these results can be related to the fact that also during the confinement of individuals in their abode, living with a partner or being married provided the opportunity to establish physical and social interactions, which are noted as elements supplying important benefit for individual psychological well-being. Those singles may have suffered from the lack of the aforementioned relational opportunities, affecting thus the well-being level.

An analysis of employment status reveals that the advent of Covid-19 impacted those with a low job position as in the case of blue-collar workers, a category which shows a decrease, if only slight, of the PGWBI level. On the other hand, white collar workers witness an increase of this element. As noted in the literature, the employment variable has a relevant influence on psychological well-being, which goes beyond the monetary aspect and returns generated from work but rather has to do with the immaterial benefit gained in the social and psychological dimensions, given the opportunity to accumulate intangible assets in terms of social approval, position and individual identity (Van der Meer<sup>31</sup>). A possible explanation of the difference between white- and blue-collar workers may be ascribed to the fact that while the first category benefitted from the advent of remote working and thus maintained both the social status provided by the job position and social approval, for blue-collar workers this was not possible, particularly in Italy where most of the services and industrial activities, apart from those fundamental to maintaining basic living standards as in the case of the health and welfare dimensions, energy and

security, had been closed for long time. We do not have a possible explanation concerning the increasing level of PGWBI recorded for those unemployed and as students, which again seems to be bucking the trend as described in other researches.

The young suffer less from disease and co-morbidity in comparison to the elderly and this is due to biological reasons, and also because they have been less exposed during their lives to possible risk factors such as pollution, accidents and others. Information collected in our study reflects the scenario depicted, and the majority of the individuals forming part of the 18-34-year-old sample record zero diseases. Once more, data show that the psychological well-being of those with no disease recorded increased, and we do not have further details in order to explain the reason for it.

Finally, as for the >64 cohort, we report the role of cultural and social activities, and participation in the young sample pre- and post-covid times. As noted in several studies, attending cultural and social activities foster individual psychological well-being, given the opportunity provided by these to establish social connection and interaction, as well as providing cognitive experience leading to an increase in biological functioning (Grossi et al<sup>32</sup>). In our study we observe that if on the one hand the number of cultural and social events attended by those forming part of the survey decreases dramatically as a result of the pandemic restrictions (92,21 in 2020, 14,19 in 2021), on the other we may expect that the correlation of this variable on the PGWBI will also decrease. Our findings show that correlation always remained positive, although also decreasing ( $r$  0.302 in 2020, 0.12 in 2021) with a robust statistical significance. The results may be discussed starting from a consideration of the role of these activities in relation to this specific social group. Those between 18 and 34 years old are part of a specific demographic group which usually have an active life style, in which the participation in cultural and social activities represents the opportunity to create their identity and social positioning, with important outcomes in terms of

psychological well-being. It has been already proven that the lack of these activities may lead to a decrease of young people's well-being, and so providing important elements for understanding the mechanism behind it (Hampshire<sup>33</sup>). Data provided from the analysis re-affirm the importance of this element for the psychological well-being of the young, and if the pandemic greatly affected possible participation, the few opportunities provided, given the restriction policies, produced a positive impact on the PGWBI level of young people.

## Conclusion

The Covid-19 pandemic has had an important impact on both the physical and psychological health of individuals, and although the confinement strategies adopted to curb the spread of the virus had a positive effect, these entailed a series of adverse psychological consequences. This study has focused on the impact of Covid-19 and the restriction policies applied in order to prevent the contagion on the psychological well-being of two specific social groups, those between 18 and 34 years old and >64. At a general level, the results of our study provide two different lines of interpretation. On the one hand the pandemic seems to have affected, if only slightly, the elderly sample with particular regards to those single, female, unemployed and with co-morbidity, on the other for those who are less than 34 years old, Covid-19 positively influenced their condition of well-being. If in the first case the research outcomes are in line with the main literature, in the second case we are faced with a counter-intuitive result.

In relation to the role of cultural and social activities on individual psychological well-being, this research confirms what was already known, and highlights once more the importance of this element of individual psychological health. Both cohorts show a positive correlation, and thus impact, on the PGWBI in 2021, when the restrictions adopted during the lock-down considerably reduced social and cultural events and participation. Despite this limitation and low attendance rates, in both categories under investigation the cultural variable is positively



associated to psychological well-being, with a higher incidence in the >64 years old class.

The research provides indication of the impact of the Covid-19 on two specific social targets, highlighting the role of the social and cultural activities in relation to the improvement of the individual psychological well-being of young and elderly. In this respect, the study not only confirm what already noted in the literature, but remarks also now that the pandemic is over, how the aforementioned elements may act as pro-active tool and thus should be considered as fundamental factors in relation to health promotional strategies.

Future study in the field of the influence of cultural and social activities on subjective individual well-being should provide more evidence and suggest how this element could be associated to different possible individual approaches, for both the physical dimension and the promotion of psychological and mental health.

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The authors have no conflicts of interest to declare.

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