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*Supporting Material*

# **Age-Related Associations of Altruism with Attitudes toward COVID-19 and Vaccination: A Representative Survey in the North of Italy**

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**Table S1.** Medians and 1<sup>st</sup> and 3<sup>rd</sup> quartiles of altruism sums scores for demographic characteristics of the sample by age groups

Variable	Altruism sum score									
	Overall			Age 18 – 69 years			Age 70 years or more			
	N (%)	Median [1Q;3Q]	<i>p</i> -value <sup>†</sup>	N (%)	Median [1Q;3Q]	<i>p</i> - value <sup>†</sup>	N (%)	Median [1Q;3Q]	<i>p</i> - value <sup>†</sup>	<i>p</i> - value*
Total	1,426 (100)	24 [20;26]	---	1,169 (100)	23 [20;26]	---	257 (100)	24 [20;27]	---	< 0.05
Gender			< 0.001			< 0.001			<0.05	
Male	692 (48.5)	22 [19;25]		581 (49.7)	22 [19;25]		110 (42.8)	23 [19.1;26]		n.s.
Female	734 (51.5)	25 [21;27]		588 (50.3)	25 [21;27]		147 (57.2)	25 [21;28]		n.s.
Education			n.s.			n.s.			n.s.	
Middle school or lower	316 (22.2)	24 [20;27]		182 (15.6)	24 [20;27]		134 (52.3)	24 [19;27]		n.s.
Vocational school	411 (28.8)	23 [20;26]		348 (29.8)	23 [19;26]		63 (24.6)	25 [20;28.5]		< 0.05
High school	411 (28.8)	23.5 [20;26]		371 (31.8)	23 [20;26]		39 (15.2)	25.5 [22;28.5]		< 0.01
University	288 (20.1)	24 [21;26.5]		267 (22.9)	24 [21;26]		20 (7.8)	23 [21;26.3]		n.s.
Citizenship			<0.01			<0.01			n.s.	
Italian	1308 (91.7)	24 [20;26]		1058 (91.6)	23 [20;26]		249 (97)	24 [20;27]		< 0.01
Other	118 (8.3)	25 [20;27.5]		110 (9.4)	25 [20;27]		8 (3.0)	27.2 [21;30]		n.s.
Native Language <sup>‡</sup>			n.s.			<0.05			n.s.	
German	879 (61.7)	24 [20;27]		722 (61.8)	2 [20;26]		156 (61.0)	24 [20;27.2]]		< 0.01
Italian	384 (26.9)	23 [20;26]		294 (25.2)	24 [20;27]		90 (34.9)	24 [20;27]		n.s.
Ladin	57 (4.0)	23 [20;28.4]		48 (4.1)	23 [20.6;27.1]		9 (3.5)	27 [20;30]		n.s.

Other/more than one	106 (7.4)	24.3 [20;27]		104 (8.9)	25 [20;27]		1 (0.6)	22 [22;22]		n.s.
Household / Family structure (more than one answer possible)										
Single	236 (16.6)	24 [20;27.5]	0.012	151 (12.9)	23.3 [20;28]	n.s.	85 (33.1)	24.4 [20;27.2]	n.s.	n.s.
Children 0-17 years of age	405 (28.4)	24 [20;27]	n.s.	400 (34.2)	24 [26;26]	n.s.	5 (1.8)	27 [12;29]	n.s.	n.s.
COVID-19 patient at risk <sup>2</sup>	302 (21.2)	24 [21;27]	0.047	186 (15.9)	24 [21;27]	n.s.	115 (44.9)	25 [21;27]	n.s.	n.s.
None of the above	522 (36.7)	2 [20;26]	0.030	469 (40.1)	23 [20;26]	n.s.	53 (20.8)	22 [19;26]	< 0.05	n.s.
Working in the health sector			< 0.001			< 0.001			n.s.	
Yes	85 (5.9)	25 [22;27]		83 (7.1)	25 [22;27]		2 (0.6)	27 [n.a.]		n.s.
No	1,341 (94.1)	23 [20;26]		1086 (92.9)	23 [20;26]		255 (99.4)	24 [20;27]		<0.01
Chronic disease(s)			< 0.001			0.010			< 0.05	
Yes	246 (17.3)	25 [21;28]		141 (12.0)	24 [21;28]		106 (41.2)	25 [20;28]		n.s.
No	1,179 (82.7)	23 [20;26]		1028 (88.0)	23 [20;26]		151 (58.8)	24 [20;27]		n.s.
COVID-19 infected			n.s.			n.s.			n.s.	
Yes	252 (17.7)	23 [26;26]		218 (18.7)	23 [20;26]		33 (13.0)	20 [15.9;25.1]		< 0.05
No	1,174 (82.3)	24 [20;27]		950 (81.3)	24 [20;26]		223 (87.0)	25 [21;27]		< 0.01
Economic situation (last 3 months)			n.s.			n.s.			n.a.	

Better	43 (3.0)	24 [20;26]	42 (3.6)	24 [19.5;26]	1 (0.6)	27 [n.a.]	n.s.
The same	973 (68.2)	24 [20;27]	751 (64.3)	24 [20;26]	222 (86.4)	25 [20;27]	< 0.05
Worse	375 (26.3)	23 [20;26]	346 (29.6)	23 [20;26.8]	29 (11.3)	23 [22;25]	n.s.
Don't know	35 (2.4)	21.6 [17.4;25.2]	30 (2.6)	22 [17.7;24.8]	5 (1.8)	18 [13;30]	n.s.
Urban/rural residency	0.046		0.047		n.s.		
Urban	602 (42.2)	24 [20;27]	487 (41.7)	24 [20;27]	114 (44.5)	25 [20;27]	n.s.
Rural	824 (57.8)	23 [20;26]	681 (58.3)	23 [20;26]	142 (55.5)	24 [20;27]	< 0.05
Vaccine hesitancy	n.s.		n.s.		n.s.		
Hesitant	222 (15.6)	23 [20;27]	208 (17.8)	24 [20;26]	14 (5.3)	23 [20.6;27]	n.s.
Non-hesitant	1,204 (84.4)	24 [20;26]	961 (82.2)	23 [19;27]	243 (94.7)	24 [20;27]	< 0.05

<sup>†</sup> *p*-values refer to Man Whitney-test and Kruskal-Wallis-Test, respectively to baseline characteristic groups for altruism.

<sup>\*</sup> *p*-values refer to Chi-Square-Test and compare baseline characteristics for differences between age groups.

<sup>‡</sup> Participants living together with a COVID-19 patient at risk in one household.

n.a., not available.

**Table S2.** Spearman correlation coefficients between altruism and attributes of the sample towards opinions about SARS-CoV-2 and SARS-CoV-2 vaccination

Survey item	Correlations with altruism <sup>†</sup>		
	Total	18–69 years	70 years or more
<b>Do you agree with the decisions taken by the authorities?</b>			
Do you agree with the decisions taken by the authorities to increase the coverage of COVID-19 vaccinations?	0.160 ***	0.119 ***	0.269 *
Do you agree with the decisions taken by the authorities to increase the coverage of compulsory vaccinations?	0.161 ***	0.103 **	0.258 ***
Do you agree with the decisions taken by the authorities regarding COVID-19?	0.148 ***	0.125 ***	0.261 **
<b>Do you support the following actual restrictions regarding COVID-19 ?</b>			
Mandatory face masks in closed public rooms	0.188 ***	0.212 ***	n.s.
Mandatory face masks in the open air	0.134 ***	0.138 ***	n.s.
Distance learning in parts for scholars from 14 to 19	n.s.	n.s.	n.s.
Distance learning in parts for scholars from 6 to 14	n.s.	n.s.	n.s.
Restricted opening hours for bars and restaurants	0.112 ***	0.105 **	0.125 *
Distance rules in closed public rooms	0.183 ***	0.197 ***	n.s.
Distance rules in the open air	0.149 ***	0.164 ***	n.s.
Restrictions on not individual physical and sports activities	0.057 *	n.s.	n.s.
Closure of national borders	0.071 *	n.s.	0.124 *
Closure of regional borders	0.119 ***	0.113 ***	n.s.
Compulsory self-isolation after contact with infected persons	0.218 ***	0.228 ***	0.126 *
As much smart working as possible	0.090 **	0.086 **	n.s.
Lockdown	0.069 *	n.s.	0.127 *
Total distance learning	n.s.	n.s.	n.s.
Prohibition of visiting friends and parents not living in the same household	0.089 **	0.079 *	n.s.
Closure of communal borders	n.s.	n.s.	n.s.
Closure of hotels	0.091 **	0.073 *	n.s.
Limitation of individual physical or sportive activities	-0.092 **	-0.112 ***	n.s.
<b>Did you take the following measure within the last 7 day to avoid a COVID-19 infection?</b>			
Washing my hands often with water and soap for 20 seconds	0.255 ***	0.259 ***	0.224 ***
Avoiding touching your eyes, nose, and mouth with unwashed hands	0.211 ***	0.187 ***	0.291 ***
Use of disinfectants to clean hands when soap and water is not available for washing hands	0.205 ***	0.178 ***	0.316 ***
To renounce social events	0.165 ***	0.151 ***	0.201 **
Using antibiotics to prevent or treat the Corona virus	n.s.	n.s.	n.s.
Wearing a face mask in public	0.235 ***	0.229 ***	0.210 **

Social distancing in the public	0.204 ***	0.168 ***	0.319 ***
Disinfect superficies	0.169 ***	0.150 ***	0.241 ***
Avoid direct contact with other people	0.112 **	0.089 *	0.158 *
Open the window	0.183 ***	0.185 ***	0.158 *
<b>What is your position on the anti-COVID-19 vaccine?</b>			
I believe the vaccine can help contain the spread of COVID-19	0.063*	n.s.	0.165**
If I knew I was already infected with COVID-19, I would not get the vaccine	-0.088 **	-0.082 **	n.s.
If everyone else is vaccinated against COVID-19, then I should not get vaccinated	-0.146 ***	-0.141 ***	-0.143 *
If the vaccine was recommended for me, I would do it	0.105 ***	0.089 **	0.142 *
If your doctor recommended a COVID-19 vaccination, how likely would you be to get vaccinated?	0.090 **	0.065 *	0.182 **
<b>Which of the following statements on COVID19 vaccination do you agree with?</b>			
<b>...the COVID-19 vaccination is not necessary, because...</b>			
...it is not effective	-0.072 **	n.s.	-0.183 **
...natural herd immunity is achieved with the spread of the virus and that's enough	-0.100 ***	-0.069 *	-0.202 **
...this disease does not exist/ is a normal flu	-0.108 ***	-0.125 ***	n.s.
...the whole is just a profit for the pharmaceutical industry	-0.108 ***	-0.087 **	-0.173**
<b>...the covid-19 vaccination is harmful, because,...</b>			
...long-term risks are unknown	-0.062 *	-0.073 *	n.s.
...new vaccines carry additional risks in the RNA	-0.111 ***	-0.099 **	-0.113 *
...there are doctors who advise against it	-0.077 **	n.s.	-0.114 *
...an obligation to vaccinate certain groups with priority will lead to great socio-political discussions	n.s.	n.s.	n.s.

\*Spearman's rank correlation coefficient: altruism sum score against sample attribute defined on a 6-point Likert-scale responses.  $p$ -values < 0.001 are indicated with \*\*\*, < 0.01 with \*\*, < 0.05, \*, and  $p$ -values  $\geq 0.05$ , are regarded as not significant (n.s.)-