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The role of affect, satisfaction and internal drive on personal moral norms during COVID-19

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Background and Objective Societies require prosocial activities during crises. The COVID-19 pandemic presents individuals with unique challenges that may affect their emotional state leading to reformed personal moral norms. Crucially, personal moral norms are important predictors of moral behaviour. Given the longevity of the pandemic, studying its impact on affect, satisfaction and internal drive of (non-)donors during COVID-19 and if personal moral norms are affected is paramount.

Material and Methods This study relies on longitudinal data, consisting of six waves carried out biweekly. Our panel is representative for the German population, capturing changes in affect, satisfaction, internal drive and personal moral norms. We compare the emotional state and personal moral norms of (non-)donors in the pandemic to pre-pandemic phase. Moreover, we analyse changes in emotional state and personal moral norms during the pandemic and investigate the role of emotional state on personal moral norms.

Results Firstly, our results show that personal moral norms of (non-)donors drop compared to pre-pandemic. Within pandemic, personal moral norms of active donors are not further altered. Secondly, we find significant changes of emotional state in the pandemic compared to pre-pandemic phase, for example individuals feel more optimistic, but less satisfied and less energetic. Thirdly, we find that feeling more grateful increases personal moral norms of non-donors.

Conclusion This study provides insights into how crises shape (non-)donors' emotional state and its impact on relevant donor motivations, that is, personal moral norms. Blood banks can use this knowledge to enhance recruiting and retention efforts during crises.

Key words: affect, blood donation, COVID-19, personal moral norms, prosocial behavior.

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Introduction

Societies require individuals who are willing to engage in prosocial activities including volunteering and donating money or blood, especially during crises [1,2]. The COVID-19 pandemic poses a significant societal challenge, including its impact on healthcare systems worldwide [3] and political decisions (i.e. COVID-19 measures) aimed to ensure health safety [4]. Apart from the perceived risk of the disease itself, imposed COVID-19 measures pose a tremendous and unforeseen challenge to

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individuals' emotional state, as they restrict public and private life. In March 2020, the German government imposed non-medical measures aimed to reduce infections, including social distancing and contact restrictions, hygiene concepts, national and international mobility restrictions, ban on public gatherings, closure of schools and non-essential businesses, and other [4]. As COVID-19 is still ongoing [5], it is paramount to understand its impact on (non-)donors' (e.g. volunteers, money and whole blood donors) emotional state including affect, satisfaction with various factors in life, and internal drive. Recent studies indicate a drop in blood donations worldwide [3,6], similar effects were observed during SARS in 2003 [7]. However, the influence of a long-term crisis like COVID-19 on donation motivations is unknown. Specifically, personal moral norms play a crucial role in predicting moral behaviour [8–10]. While moral norms are defined as perceptions, attitudes and behaviour that are approved of and expected of members of a group [11,12], personal moral norms reflect the personal feeling that one is morally obliged to undertake prosocial actions, such as donating [9]. In other words, personal moral norms are tied to the self-concept and current self-expectations, while general social norms are anchored in social groups [13–15]. Drawing from past experiences and circumstances, individuals form and internalize personal moral norms [13]. Thus, personal moral norms do not have to be constant or firm cognitive structures but can be reformed due to new situational input. The ongoing COVID-19 pandemic represents such unforeseen circumstances – that may both influence the internal emotional state, as well as lead to reformed personal moral norms [16].

Prior research states that individuals show higher willingness to help when there is a disaster, for example after the 2004 tsunami [2] or 11 September 2001 [17]. However, a pandemic like COVID-19 requires long-term crisis management, including continuous monetary support, volunteer assistance and blood donations. Moreover, contrary to short-term crises, which do not involve infectious diseases, COVID-19 poses unique challenges: (1) it is highly transmissible and a threat to one's own and others' health, (2) it may affect one's emotional state and (3) it is likely to be a long-term issue [18]. Blood banks, as well, have to operate under unprecedented and increasingly challenging conditions. They must manage a drop in mobile blood collection events, while at the same time responding to the easing and tightening of restrictions imposed by governments [19]. Retaining donors during these times is crucial, as the more time that has passed since a donation, the less likely a donor will be to redonate [20,21]. Overcoming a long-lasting pandemic

requires a high level of willingness to help beyond the first external shock, or weeks of crisis.

Thus, the aim of this study is (1) to understand how individuals respond to the ongoing COVID-19 pandemic and the changes in their emotional state and (2) to investigate if and how personal moral norms are altered during the pandemic. To this end, we conducted a panel study in Germany, covering a span of three months (April to June 2020), measuring (non-)donors affect, satisfaction and internal drive, as well as their personal moral norms with regard to engaging in prosocial activities. We further distinguish between donors (active and inactive blood donors) and non-donors. In doing so, we account for the systematic differences between individuals, in particular the differences to blood donors, who have been shown to be more willing to engage in various prosocial activities [22].

This research complements previous studies on other crises finding short-term effects on prosocial behaviour [23,24] by investigating an ongoing crisis over a period of 12 weeks. Additionally, while most previous research thus far neglected affect [25], we highlight the role of affect in general and especially during a pandemic, and further investigate the role of satisfaction with various factors in life, as well as internal drive. While some prior studies investigate anticipated and experienced affect (i.e. fear and anxiety) related to prosocial engagement, we focus on changes in affect in general and independently of a donation context. Moreover, to our knowledge, we are the first to investigate changes in personal moral norms in a setting like the ongoing COVID-19 pandemic. Given the longevity of COVID-19, it is important to understand its impact in order to provide guidance and to be prepared for future pandemics and public health crises [19,26]. Lastly, our results offer evidence-based grounds to enhance recruitment and retention of blood donors.

Materials and methods

We use a longitudinal approach (COVID-19 panel) to investigate changes in affect, satisfaction with various factors in life and internal drive during the pandemic, as well as personal moral norms with regard to engaging in prosocial activities. A demographically representative sample for the German population was surveyed biweekly over a course of 12 weeks. The first wave ($N = 1499$) started on 3rd April 2020 and the last wave ($N = 818$) ended on 19th June 2020. To answer questions regarding affect, satisfaction with various factors in life and internal drive, participants were asked to refer to the prior week. This ensures that measures are not limited to the respondent's emotional state on a specific day, and that all participants rate their emotional state based on the same

time frame (i.e. prior week). Our observation period covers the beginning of the imposed restrictions on private and public life in Germany (end of March), the enforcement of wearing face masks in shops and public transportation (end of April), and the first relaxations of measures, that is re-opening of non-essential businesses and schools (end of April and May) [4]. Thus, the last two waves of our panel study cover a time frame with most measures relaxed, that is businesses and schools re-opened, travel warnings to EU countries and Schengen states were lifted, but social distancing and face mask requirements were active [4]. A German market research institute (respondi AG) invited participants, including blood donors and non-donors. To yield a demographically representative sample, invitations to the panel were based on age (i.e. 18–75 years old) and gender (i.e. 49.8% females). We excluded candidates based on their response time (processing time less than half of the average), as this eliminates participants who rushed through the questionnaire, and based on simple attention checks (e.g. ‘Please select “I strongly disagree”’) resulting in our final sample for analysis.

In addition to our COVID-19 panel that captures the emotional state and personal moral norms during the *pandemic phase*, we use data from (1) the German socio-economic panel (SOEP, $N = 27\,937$) and (2) a (non-)donor survey study that we conducted in 2019 ($N = 1141$) as baselines and define them as the *pre-pandemic phase*. Detailed descriptive statistics can be found in the appendix (Tables S1–S3).

Measurements

Participants provided demographics and information on blood donation history (i.e. non-donor/ donor), recency (i.e. inactive/ active donors) and frequency (i.e. one/ up to four/ more than four donations). We classify donors as active if they have donated blood at least once in the last 24 months, applying Red Cross classification [27]. We also control for recent prosocial engagement, that is, volunteering in the past two weeks. As our dependent variable, we measured personal moral norms with four items (‘I feel a personal responsibility.../ I feel a moral obligation.../ I feel a social obligation... to engage in prosocial activities’, ‘Sometimes I feel guilty that I do not engage in prosocial activities’, [10]) on a 7-point scale (1 = strongly disagree and 7 = strongly agree). To investigate the role of emotional state in personal moral norms, we based our measurements primarily on the psychographic factors used in the SOEP (Table S4) but extended them with other relevant factors based on the PANAS scale [28]. Previous research has shown the high

relevance of the SOEP scales when analysing prosocial behaviour in Germany [22].

Specifically, we measured *affect* (upset, afraid, happy, sad, optimistic, concerned, excited, annoyed, euphoric, grateful and bored), *satisfaction* (with health, sleep, work, income, living situation, leisure, family life and standard of living) and *internal drive* (feeling rushed, depressed, balanced and energetic). Furthermore, we consider factors specific to COVID-19 measures, including the acceptance of political decisions, perceived current social cohesion and perceived changes in the number of face-to-face contacts (i.e. compared with an average pre-pandemic week). We also controlled whether there is a SARS-Cov-2 positive-tested person among one’s friends. All scales are provided in the appendix (Tables S5–S8).

Methods

First, to understand the status-quo of (non-)donors’ emotional state in Germany, we compare reported values in the COVID-19 panel to pre-pandemic (i.e. SOEP wave of 2018). We use the SOEP wave of 2018 as a baseline because it represents a non-pandemic year and there were no other social or economic shocks at that time. Additionally, we rely on a self-conducted study in 2019 as a baseline for pre-pandemic personal moral norms. Both pre-pandemic data sets are representative for the German population. To account for systematic differences in our samples, we weighted the data in the pandemic phase by age, gender and donation history based on the respective pre-pandemic distributions (Tables S1–S3), when comparing it to the pre-pandemic phase. Second, we focus on within-pandemic analyses. We investigate changes in emotional state and personal moral norms during the pandemic and their relationship (Tables S9–S10).

Results

Pre-pandemic vs. pandemic

Emotional state

Comparing affect, satisfaction and internal drive measures in the COVID-19 panel to the SOEP reveals significant differences (Table S4). Individuals feel more afraid and less happy, but also less upset and more optimistic during pandemic compared with pre-pandemic. While in t_1 individuals feel sadder, the reported values of this affect measure return to the baseline level of pre-pandemic in t_6 . Regarding satisfaction measures, individuals report significantly lower levels of satisfaction with all aspects in life. However, many measures of satisfaction (i.e. health, income, living situation, leisure) are back at a pre-pandemic level in t_6 , except for satisfaction with sleep, work,

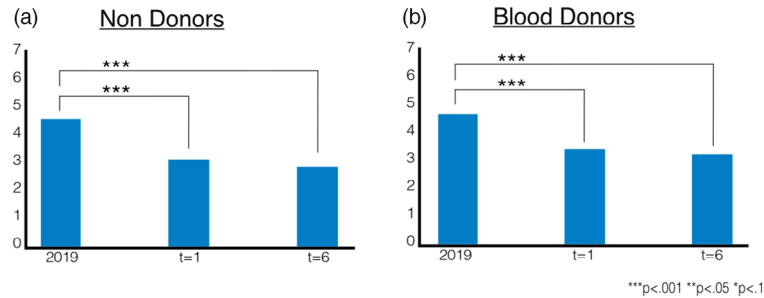


Fig. 1 Personal moral norms in pre-pandemic and pandemic phase. Reported mean values of personal moral norms in pre-pandemic and pandemic phase (t_1 and t_6). Significant changes between pre-pandemic and pandemic phase (t_1 respectively t_6) are marked.

family life and standard of living. Lastly, individuals report feeling less rushed in t_1 , but also more depressed, less balanced and less energetic. In t_6 , however, the reported values of feeling depressed and balanced are not significantly different to pre-pandemic anymore.

Personal moral norms

To investigate whether reported personal moral norms have changed, we compared reported values in the COVID-19 panel with the pre-pandemic phase (Table S4). Personal moral norms of *non-donors* have significantly decreased in t_1 compared to pre-pandemic ($M = 3.08$, $SD = 1.57$ vs. $M = 4.54$, $SD = 1.48$, $t(1332) = -17.300$, $P = 0.000$, Fig. 1a) and drop even further in t_6 compared to pre-pandemic ($M = 2.83$, $SD = 1.68$, $t(976) = -16.838$, $P = 0.000$, Fig. 1a). We observe a similar drop for *donors*: reported values decrease significantly in t_1 compared to pre-pandemic ($M = 3.40$, $SD = 1.66$ vs. $M = 4.66$, $SD = 1.40$, $t(1304) = -14.518$, $P = 0.000$, Fig. 1b) and drop even further in t_6 compared to pre-pandemic ($M = 3.25$, $SD = 1.88$, $t(963) = -13.464$, $P = 0.000$, Fig. 1b).¹

Within-pandemic analysis

Emotional state

Next, we analyse changes in emotional state within the pandemic and distinguish by donation history (i.e. non-donors/ donors) and recency (i.e. active/ inactive donors) (Table S10). Firstly, we find that both donors and non-donors stay optimistic over the six waves. Donors report higher values of feeling happy in t_6 compared to t_1 ($M = 4.46$, $SD = 1.28$ vs. $M = 4.33$, $SD = 1.21$, $t(1052) = -1.685$, $P = 0.092$), although values are not back at pre-pandemic level. There are no significant changes in feeling happy for non-donors. While donors stay at the same level of feeling grateful over the six

waves, non-donors report significantly lower values of feeling grateful in t_6 compared to t_1 ($M = 4.51$, $SD = 1.30$ vs. $M = 4.34$, $SD = 1.40$, $t(1258) = -2.182$, $P = 0.029$). Reported values of feeling afraid significantly decrease in t_6 compared to t_1 for both donors and non-donors, although values are not back at pre-pandemic level. Regarding satisfaction with leisure, reported values increase to pre-pandemic level for both groups. Satisfaction with work further decreases significantly within the pandemic, except for active donors. Satisfaction with income increases only for donors in t_6 compared to t_1 ($M = 4.54$, $SD = 1.74$ vs. $M = 4.78$, $SD = 1.65$, $t(1055) = 2.272$, $P = 0.023$) returning to a pre-pandemic level. Donors also report higher values of satisfaction with family ($M = 5.15$, $SD = 1.62$ vs. $M = 5.36$, $SD = 1.46$, $t(1055) = 2.021$, $P = 0.044$) and standard of living ($M = 5.03$, $SD = 1.44$ vs. $M = 5.28$, $SD = 1.39$, $t(1055) = 2.731$, $P = 0.006$) in t_6 compared to t_1 , yet these values are below the pre-pandemic level. However, there are no changes regarding satisfaction with family and standard of living for non-donors in t_6 compared to t_1 , that is values stay below pre-pandemic level. Regarding feeling depressed, we find that both donors and non-donors report significantly lower values in t_6 compared to t_1 .

Personal moral norms

To investigate whether COVID-19 alters personal moral norms, we analyse their development within the pandemic (t_1 to t_6) distinguishing by donation history (i.e. non-donors/ donors) and recency (i.e. active/ inactive donors). Personal moral norms of *non-donors* decrease from t_4 on when compared to t_1 (e.g. $M = 2.86$, $SD = 1.60$ vs. $M = 3.05$, $SD = 1.57$, $t(1355) = -2.092$, $P = 0.037$, Fig. 2a). Overall, not distinguishing by donation recency, reported values of personal moral norms do not change within the first four waves. However, they drop significantly in t_5 compared to t_1 ($M = 3.36$, $SD = 1.66$ vs. $M = 3.16$, $SD = 1.78$, $t(1123) = -1.916$, $P = 0.056$). Distinguishing by donation recency, we find a significant drop in personal moral norms of *inactive*

¹Comparisons between t_1 and t_6 are presented in the following within-pandemic analysis (Fig. 2).

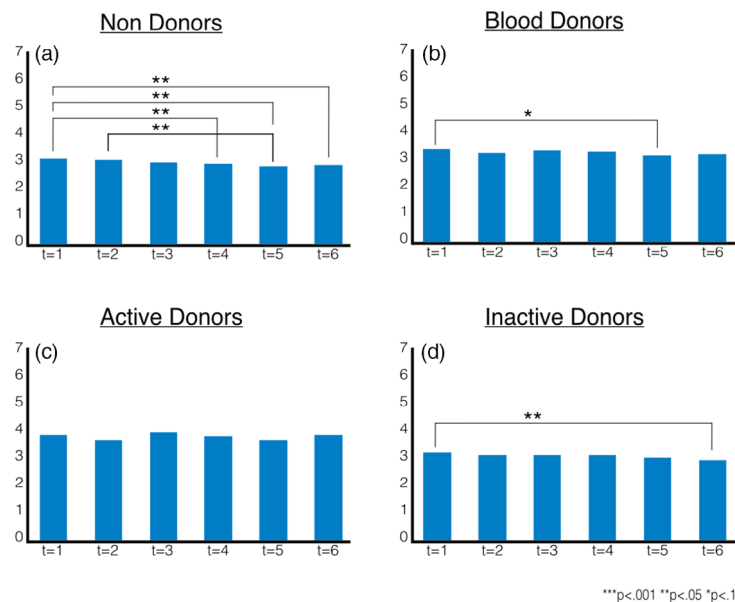


Fig. 2 Personal moral norms during COVID-19. Reported mean values of personal moral norms within the pandemic (t_1 to t_6). Significant changes between waves are marked.

donors in t_6 compared to t_1 ($M = 2.86$, $SD = 1.74$ vs. $M = 3.16$, $SD = 1.60$, $t(687) = -2.240$, $P = 0.025$, Fig. 2D). However, personal moral norms of *active donors* remain at a constant level within the pandemic.

Next, we use regression analysis to investigate whether personal moral norms are changing during the pandemic (t_1 and t_6). Besides emotional state measures, we include further variables that could potentially impact personal moral norms during the pandemic. While recent prosocial engagement (i.e. volunteering in the past two weeks) and having a SARS-Cov-2 positive-tested friend remain rather robust predictors of personal moral norms within the pandemic, the role of (non-)donors' emotional state changes (Table 1). Furthermore, we find that donation recency is a significant predictor of personal moral norms (Table S11). Therefore, we ran separate analyses for non-donors, active and inactive donors. For non-donors, feeling annoyed ($b = -0.103$), euphoric ($b = 0.104$) and rushed ($b = 0.102$) predict personal moral norms in t_1 , whereas feeling upset ($b = -0.138$), concerned ($b = 0.190$) and satisfied with health ($b = -0.121$) are significant predictors in t_6 . Moreover, we find that while feeling happy negatively correlates with personal moral norms in both t_1 ($b = -0.200$) and t_6 ($b = -0.258$), feeling more grateful boosts them in t_1 ($b = 0.151$) and t_6 ($b = 0.135$). For inactive donors, feeling concerned ($b = 0.103$), annoyed ($b = -0.135$), grateful ($b = 0.122$) and rushed ($b = 0.184$) predict personal moral norms in t_1 . In t_6 , feeling balanced ($b = -0.265$) and energetic ($b = 0.404$) have a significant influence on personal moral norms (Table 1). However,

personal moral norms of inactive donors are not affected by satisfaction values. For active donors, feeling optimistic ($b = -0.202$) and satisfaction with sleep ($b = 0.158$) predict reported personal moral norms in t_1 , whereas satisfaction with income ($b = -0.359$), family ($b = -0.489$), living standard ($b = 0.530$) and health ($b = 0.284$) are significant predictors in t_6 . Additionally, results show no significant influence of internal drive on personal moral norms for active donors. Comparing inactive and active donors, we only find four affective responses that are significant predictors of personal moral norms for both donor groups. Feeling bored is positively correlated for inactive donors ($b = 0.105$) but negatively correlated for active donors ($b = -0.156$) in t_1 . In t_6 , we find different directions of effects for feeling excited and hopeful between inactive and active donors. Whereas feeling excited drives personal moral norms of inactive donors ($b = 0.322$), feeling hopeful boosts personal moral norms of active donors ($b = 0.461$). Regarding feeling afraid, results show that it increases personal moral norms of inactive donors in t_1 ($b = 0.131$) and of active donors in t_6 ($b = 0.513$). Additional to emotional state, COVID-19 related measures further predict personal moral norms. Perceived social cohesion drives personal moral norms of non-donors and inactive donors in both t_1 (non-donors: $b = 0.165$; inactive donors: $b = 0.177$) and t_6 (non-donors: $b = 0.159$; inactive donors: $b = 0.239$), but for active donors it is only a significant predictor in t_1 ($b = 0.197$). While higher acceptance of political decisions is a significant predictor in t_1 for active ($b = 0.298$)

Table 1 Results of regression analyses in t_1 and t_6

	Non-Donors			Inactive Donors			Active Donors												
	(Model 1)			(Model 2)			(Model 3)			(Model 4)			(Model 5)			(Model 6)			
	Pandemic t_1	Coef (SE)	P	Pandemic t_6	Coef (SE)	P	Pandemic t_1	Coef (SE)	P	Pandemic t_6	Coef (SE)	P	Pandemic t_1	Coef (SE)	P	Pandemic t_6	Coef (SE)	P	
Personal moral norms																			
Affect																			
Upset	0.018 (0.050)	0.720	0.061	-0.138 (0.073)	0.061	0.731	-0.023 (0.066)	0.731	0.983	-0.002 (0.115)	0.983	0.030 (0.097)	0.757	-0.140 (0.137)	0.309				
Afraid	0.037 (0.049)	0.445	0.863	0.012 (0.068)	0.863	0.027	0.131 (0.059)	0.027	0.996	0.001 (0.143)	0.996	0.149 (0.095)	0.118	0.513 (0.241)	0.037				
Happy	-0.200 (0.058)	0.001	0.001	-0.258 (0.075)	0.001	0.712	-0.029 (0.079)	0.712	0.239	0.156 (0.132)	0.239	0.022 (0.133)	0.870	0.154 (0.224)	0.495				
Sad	0.011 (0.052)	0.839	0.368	-0.067 (0.075)	0.368	0.599	0.034 (0.065)	0.599	0.848	-0.026 (0.134)	0.848	0.066 (0.097)	0.498	0.215 (0.221)	0.334				
Optimistic	-0.042 (0.062)	0.498	0.455	0.065 (0.087)	0.455	0.564	-0.048 (0.082)	0.564	0.492	0.102 (0.149)	0.492	-0.202 (0.120)	0.092	-0.332 (0.257)	0.201				
Concerned	0.051 (0.053)	0.332	0.010	0.190 (0.074)	0.010	0.098	0.103 (0.062)	0.098	0.191	0.152 (0.116)	0.191	0.127 (0.089)	0.156	-0.054 (0.159)	0.738				
Excited	0.051 (0.044)	0.246	0.942	0.005 (0.068)	0.942	0.166	0.085 (0.061)	0.166	0.005	0.322 (0.112)	0.005	-0.039 (0.084)	0.642	-0.286 (0.140)	0.045				
Hopeful	0.042 (0.056)	0.456	0.531	-0.052 (0.083)	0.531	0.625	0.035 (0.072)	0.625	0.056	-0.277 (0.144)	0.056	0.180 (0.111)	0.107	0.461 (0.168)	0.008				
Annoyed	-0.103 (0.048)	0.034	0.749	-0.022 (0.070)	0.749	0.034	-0.135 (0.064)	0.034	0.593	-0.061 (0.114)	0.593	-0.022 (0.094)	0.813	-0.119 (0.176)	0.500				
Euphoric	0.104 (0.047)	0.026	0.519	0.041 (0.064)	0.519	0.979	0.002 (0.063)	0.979	0.612	-0.058 (0.114)	0.612	0.049 (0.099)	0.621	-0.057 (0.132)	0.668				
Grateful	0.151 (0.048)	0.002	0.029	0.135 (0.062)	0.029	0.054	0.122 (0.063)	0.054	0.636	-0.042 (0.089)	0.636	0.103 (0.094)	0.279	0.055 (0.196)	0.778				
Bored	-0.018 (0.037)	0.627	0.860	0.010 (0.055)	0.860	0.032	0.105 (0.049)	0.032	0.672	-0.047 (0.110)	0.672	-0.156 (0.073)	0.034	-0.075 (0.175)	0.669				
Satisfaction with																			
Work	-0.013 (0.033)	0.688	0.488	0.024 (0.034)	0.488	0.232	-0.051 (0.043)	0.232	0.274	0.065 (0.059)	0.274	0.063 (0.074)	0.400	-0.001 (0.136)	0.995				
Income	0.051 (0.037)	0.170	0.735	0.022 (0.066)	0.735	0.216	-0.069 (0.056)	0.216	0.382	0.082 (0.094)	0.382	-0.013 (0.073)	0.858	-0.359 (0.142)	0.014				
Living situation	-0.016 (0.040)	0.682	0.735	-0.021 (0.063)	0.735	0.560	0.032 (0.055)	0.560	0.919	0.009 (0.090)	0.919	0.042 (0.088)	0.631	0.008 (0.162)	0.963				
Leisure	-0.037 (0.036)	0.305	0.888	-0.010 (0.070)	0.888	0.273	-0.053 (0.049)	0.273	0.825	-0.021 (0.094)	0.825	0.039 (0.067)	0.560	0.128 (0.218)	0.559				
Family	-0.001 (0.038)	0.988	0.576	0.034 (0.060)	0.576	0.240	-0.057 (0.048)	0.240	0.171	-0.116 (0.085)	0.171	0.017 (0.079)	0.832	-0.489 (0.254)	0.059				
Standard of living	0.062 (0.047)	0.187	0.349	0.082 (0.087)	0.349	0.789	-0.018 (0.068)	0.789	0.670	-0.058 (0.137)	0.670	-0.007 (0.120)	0.956	0.530 (0.228)	0.023				
Sleep	0.028 (0.035)	0.424	0.998	0.000 (0.049)	0.998	0.320	0.046 (0.047)	0.320	0.836	0.018 (0.087)	0.836	0.158 (0.077)	0.042	0.190 (0.140)	0.179				
Health	0.002 (0.040)	0.958	0.038	-0.121 (0.058)	0.038	0.386	0.043 (0.049)	0.386	0.119	-0.147 (0.094)	0.119	0.033 (0.093)	0.728	0.284 (0.165)	0.089				
Internal drive																			
Depressed	0.055 (0.055)	0.317	0.170	0.109 (0.079)	0.170	0.885	-0.010 (0.066)	0.885	0.630	-0.061 (0.127)	0.630	-0.101 (0.105)	0.338	0.020 (0.237)	0.934				
Balanced	0.021 (0.060)	0.729	0.971	-0.003 (0.081)	0.971	0.867	0.013 (0.078)	0.867	0.024	-0.265 (0.116)	0.024	-0.135 (0.118)	0.257	-0.077 (0.166)	0.644				
Energetic	0.041 (0.053)	0.445	0.570	0.044 (0.078)	0.570	0.287	0.077 (0.072)	0.287	0.003	0.404 (0.132)	0.003	-0.089 (0.122)	0.469	0.206 (0.198)	0.302				
Rushed	0.102 (0.040)	0.011	0.470	0.040 (0.056)	0.470	0.001	0.184 (0.055)	0.001	0.956	-0.006 (0.110)	0.956	0.040 (0.078)	0.611	0.196 (0.162)	0.231				

Table 1 (Continued)

Personal moral norms	Non-Donors			Inactive Donors			Active Donors											
	(Model 1)			(Model 2)			(Model 3)			(Model 4)			(Model 5)			(Model 6)		
	Coef (SE)	P	Pandemic t ₆	Coef (SE)	P	Pandemic t ₆	Coef (SE)	P	Pandemic t ₁	Coef (SE)	P	Pandemic t ₆	Coef (SE)	P	Pandemic t ₁	Coef (SE)	P	Pandemic t ₆
Prosocial history	0.512 (0.048)	0.000	0.721 (0.061)	0.000	0.000	0.516 (0.053)	0.000	0.597 (0.122)	0.000	0.512 (0.074)	0.000	0.475 (0.142)	0.000	0.512 (0.074)	0.000	0.475 (0.142)	0.000	0.475 (0.142)
Political consent	-0.043 (0.040)	0.278	0.148 (0.048)	0.002	0.023	0.111 (0.049)	0.023	0.064 (0.076)	0.406	0.298 (0.078)	0.000	0.205 (0.136)	0.138	0.298 (0.078)	0.000	0.205 (0.136)	0.138	0.205 (0.136)
Social cohesion	0.165 (0.045)	0.000	0.159 (0.064)	0.013	0.003	0.177 (0.059)	0.003	0.239 (0.096)	0.014	0.197 (0.083)	0.019	0.169 (0.126)	0.186	0.197 (0.083)	0.019	0.169 (0.126)	0.186	0.169 (0.126)
Face-to-face contacts	-0.103 (0.039)	0.008	-0.019 (0.058)	0.740	0.683	-0.019 (0.047)	0.683	0.019 (0.093)	0.839	-0.091 (0.072)	0.207	-0.052 (0.125)	0.682	-0.091 (0.072)	0.207	-0.052 (0.125)	0.682	-0.052 (0.125)
SARS-CoV-2 positive among friends ^a	0.218 (0.211)	0.302	0.310 (0.274)	0.258	0.020	0.673 (0.288)	0.020	1.558 (0.527)	0.003	0.097 (0.374)	0.797	1.056 (0.444)	0.020	0.097 (0.374)	0.797	1.056 (0.444)	0.020	1.056 (0.444)
Age	-0.006 (0.004)	0.084	-0.010 (0.005)	0.042	0.078	-0.009 (0.005)	0.078	0.008 (0.008)	0.329	-0.002 (0.009)	0.843	-0.024 (0.014)	0.098	-0.002 (0.009)	0.843	-0.024 (0.014)	0.098	-0.024 (0.014)
Gender	0.122 (0.104)	0.243	-0.014 (0.138)	0.922	0.682	0.057 (0.140)	0.682	0.230 (0.235)	0.329	0.263 (0.201)	0.191	-0.276 (0.372)	0.460	0.263 (0.201)	0.191	-0.276 (0.372)	0.460	-0.276 (0.372)
Donation history	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Donation frequency	-	-	-	-	0.611	0.045 (0.089)	0.611	-0.216 (0.137)	0.117	-0.085 (0.167)	0.612	0.023 (0.274)	0.935	-0.085 (0.167)	0.612	0.023 (0.274)	0.935	0.023 (0.274)
Constant	0.677 (0.675)	0.316	0.602 (0.759)	0.428	0.649	-0.387 (0.849)	0.649	0.506 (1.448)	0.727	-1.256 (1.386)	0.366	-1.042 (1.880)	0.581	-1.256 (1.386)	0.366	-1.042 (1.880)	0.581	-1.042 (1.880)
R ²	0.2718		0.3696		0.3585		0.4109		0.4109	0.3582		0.3847		0.3582		0.3847		0.3847
df	815		491		684		327		327	451		226		451		226		226
Prob > F	0.0000		0.0000		0.0000		0.0000		0.0000	0.0000		0.0000		0.0000		0.0000		0.0000
Root MSE	1.3689		1.3919		1.3631		1.5048		1.5048	1.3291		1.4759		1.3291		1.4759		1.4759

^aAffect, satisfaction and internal drive influence non-donors', inactive donors' and active donors' personal moral norms in t₁ and t₆. Significant results are marked in bold. (1: yes / 0: no).

and inactive donors ($b = 0.111$), it predicts personal moral norms for non-donors only in t_6 ($b = 0.148$).

Discussion

Prior research has scarcely investigated the impact of a pandemic on (non-)donors emotional state and, especially, the effects on personal moral norms are unknown. However, previous research generally highlights the importance of affect in donation research, as both cognitive and emotional motivations drive donation behaviour [25,29,30]. Specifically, studies have shown that anticipated positive affect significantly influences money donations [31] as well as blood donation intentions [32]. Other studies analyse the effects of experienced affect (e.g. feeling nervous, happy or scared while donating) on blood donation behaviour [33]. While these studies investigate anticipated and experienced affect related to prosocial engagement, we focus on changes in affect in general and independently of a donation context. Specifically, we analyse changes in affect during a pandemic and distinguish between non-donors and blood donors. Additionally, negative affect like fear and anxiety reduces individuals' willingness to donate blood in general [34] and during crises [18,19,26]. Previous findings focusing on psychographic factors conclude that blood donors are more satisfied in general [22,35] and feel happier [36]. Results regarding satisfaction with income, however, are not conclusive [37,38]. To our knowledge, there is no research on the role of internal drive in the context of prosocial behaviour, or specifically on donor motivations.

The COVID-19 pandemic poses not only a severe threat to health, but restrictions on public and private life additionally challenge individuals' emotional state. Hence, it is of utmost importance to understand how the pandemic shapes (non-)donors affect, satisfaction, and internal drive, and also to investigate their role on personal moral norms. Given the exceptional situation that the COVID-19 pandemic poses to every individual, personal moral norms could be altered. It is unknown if individuals reform their personal moral norms during a long-term pandemic, and if so, whether the pandemic boosts or decreases them. Personal moral norms are crucial, as they are shown to be important drivers of prosocial engagement. Our results indicate that the pandemic, indeed, has a significant effect on (non-)donors emotional state. Moreover, our findings demonstrate, that personal moral norms can be shaped by a pandemic and thus are not constant. We find a significant drop in personal moral norms for both non-donors and donors compared to pre-pandemic. This finding is crucial, as it can have serious implications for donation and volunteering behaviour, especially given the expected longevity of the still

ongoing pandemic. Individuals feel less morally obliged and less personally responsible to undertake prosocial activities. This applies to both non-donors and donors, that is, independently of prior blood donation experience. This is particularly surprising, since blood donors have been shown to be more willing to engage in various prosocial activities compared with other individuals [22]. However, within the pandemic we are able to further distinguish donors by donation recency and observe notable differences. Within the pandemic, personal moral norms only drop for *inactive donors* in t_6 compared to t_1 , but they stay constant for *active donors*. Personal moral norms of non-donors significantly decrease even within the pandemic (t_4 , t_5 , t_6 compared to t_1). Thus our results indicate that, contrary to inactive or non-donors, personal moral norms of active donors, i.e. individuals who have donated blood in the past 24 months, are not further altered within the COVID-19 pandemic. Moreover, our results show that personal moral norms of both donors and non-donors do not increase or return to a pre-pandemic level with the relaxation of measures (i.e. starting in t_4). This finding might indicate that personal moral norms during the COVID-19 pandemic are further affected by the severity and longevity of the crisis itself.

Regarding the role of emotional state on personal moral norms during the pandemic, we find significant insights that differ between target groups. Moreover, (non-)donors emotional state differs between t_1 and t_6 highlighting the adjustments and different phases of the pandemic itself. While t_1 marks the stage of the pandemic where all restrictive measures imposed by the government in Germany were active, easing of measures started from t_4 on (i.e. re-opening of schools and non-essential businesses). Additionally, in t_5 and t_6 , many measures were relaxed, but requirements of social distancing and wearing face masks were still active. Non-donors' and inactive donors' personal moral norms are strongly associated with affective responses in both t_1 and t_6 , especially feeling grateful is a strong predictor. Crucially, feeling concerned is positively associated with personal moral norms of inactive donors in t_1 and non-donors in t_6 . Blood banks can use these findings in appeals and design marketing materials that trigger these affects particularly. Specifically, reactivation and recruiting strategies should highlight that crises signify an exceptional and concerning situation calling for their increased support. Interestingly, results show that feeling happier is negatively associated with personal moral norms of non-donors. However, for active donors, who report rather constant personal moral norms during the pandemic, emotional state does mostly not predict personal moral norms in t_1 , but it shapes them in t_6 . For example, feeling afraid and feeling hopeful boosts personal moral norms of active donors. Furthermore, results show that active donors' personal moral norms are

significantly shaped by satisfaction factors, especially in t_6 (e.g. satisfaction with health, standard of living, family and income), while internal drive plays no significant role. Contrary, we find that feeling rushed is positively associated with higher personal moral norms of non-donors and inactive donors in t_1 , but it plays no predictive role in t_6 . Additionally, inactive donors who report higher levels of feeling energetic are associated with higher personal moral norms in t_6 .

It should be noted that our COVID-19 panel study captures a time frame of 12 weeks (April to June 2020). However, as the end of COVID-19 is still unknown, it is uncertain, how emotional state and personal moral norms might further alter within the current second wave and upcoming measures (i.e. vaccinations) or possible future pandemics. Additionally, our data is limited to the German context.

In conclusion, this study highlights that personal moral norms might be affected by the emotional state, especially during a pandemic and therefore presents an important research avenue. Given the crucial role of personal moral norms in donation motivation, understanding the impact of a long-term crisis on emotional state and their role on reforming personal moral norms is imperative. This is particularly the case because blood banks have to accommodate to the ongoing COVID-19 crisis and increased willingness to help will be required to secure blood supply.

Conflict of interests

The authors declare no conflict of interest.

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Supporting Information

Additional supporting information may be found online in the Supporting Information section at the end of the article.

Table S1. Sample descriptive for the pre-pandemic (SOEP 2018 data) and pandemic phases (t_1 and t_6), whereby the

pandemic phase consists of the unweighted as well as the weighted values. We weighted the data by age, gender, and donation history (based on pre-pandemic phase).

Table S2. Sample descriptive for the pre-pandemic (self-collected survey data from 2019) and pandemic phases (t_1 and t_6), whereby the pandemic phase consists of the unweighted as well as the weighted values. We weighted the data by age, gender, and donation history (based on pre-pandemic phase).

Table S3. Sample descriptive for the pandemic phase (t_1 to t_6). We weighted the cases for age, gender, and donation history (based on t_1).

Table S4. Comparison of mean values of reported affect, satisfaction, and internal drive between pandemic (t_1 and t_6) and pre-pandemic phase. We weighted the data for age, gender, and donation history (based on pre-pandemic phase).

Table S5. Mean values and standard deviations of non-donors' reported personal moral norms, affect, satisfaction, internal drive, prosocial history, political consent, social cohesion, and face-to-face contacts during the corona crisis (t_1 to t_6).

Table S6. Mean values and standard deviations of *blood donors'* reported personal moral norms, affect, satisfaction, internal drive, prosocial history, political consent, social cohesion, and face-to-face contacts during the corona crisis (t_1 to t_6).

Table S7. Mean values and standard deviations of *active donors'* reported personal moral norms, affect, satisfaction, internal drive, prosocial history, political consent, social cohesion, and face-to-face contacts during the corona crisis (t_1 to t_6).

Table S8. Mean values and standard deviations of *inactive donors'* reported personal moral norms, affect, satisfaction, internal drive, prosocial history, political consent, social cohesion, and face-to-face contacts during the corona crisis (t_1 to t_6).

Table S9. *T*-test (equal variances) results of personal moral norms within the pandemic phase (t_1 to t_6).

Table S10. Comparison of mean values of reported affect, satisfaction, and internal drive between pandemic t_1 and pandemic t_6 .

Table S11. Affect, satisfaction, and internal drive influence blood donors' personal moral norms in t_1 and t_6 .