

# The Role of Personality in COVID-19-Related Perceptions, Evaluations, and Behaviors: Findings Across Five Samples, Nine Traits, and 17 Criteria

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## Abstract

Individuals and institutions around the world have been affected by the coronavirus disease 2019 (COVID-19). Herein, we investigate the role of basic (Big Five and HEXACO) and specific (Dark Factor of Personality, Narcissistic Rivalry, and Narcissistic Admiration) personality traits for 17 criteria related to COVID-19, grouped into (i) personal perceptions in terms of risks and worries about the disease, (ii) behavioral adjustments in terms of following health recommendations and hoarding, and (iii) societal evaluations in terms of the appropriateness of different measures and feelings of social cohesion. (Internal) Meta-analytic results across five samples from two countries (overall  $N = 19,718$ ) show—next to gender and age effects—the importance of several traits, including Emotionality/Neuroticism for personal perceptions and anti- or prosocial traits for behavior in line with health recommendations. The investigation highlights the importance of individual differences in uncertain and changing situations in general and during the COVID-19 pandemic in particular.

## Keywords

COVID-19, personality, HEXACO, Big Five, narcissism, dark factor of personality

The outbreak and rapid spread of the coronavirus disease 2019 (COVID-19) has posed (life-)critical threats to individuals and societies worldwide. Health and political authorities have introduced rules and recommendations aimed at mitigating the spread of COVID-19—some of which strongly affecting citizens' lives. For instance, several governments, at least for some time, closed kindergartens, schools, and universities; enforced working from home; prohibited border crossing; and required people to minimize physical contacts at large and to stay at home (e.g., Cheng et al., 2020).

In the light of this impact, social scientists have started to investigate how individuals react to COVID-19. Next to studies dealing with situational predictors of individuals' perceptions, evaluations, and behaviors (e.g., Goldberg et al., 2020; Pennycook et al., 2020), studies have indicated that individual differences account for some of the variance in people's responses to COVID-19 (e.g., Brouard et al., 2020; Clark et al., 2020; Harper et al., 2020; Zacher & Rudolph, 2021).

There are several reasons to assume that individuals differ in their responses to COVID-19. First, there is robust empirical evidence for the importance of individual differences for a broad array of criteria in general (e.g., Ozer

& Benet-Martinez, 2006; Soto, 2019; Zettler et al., 2020), suggesting that individual differences play a role in COVID-19-related criteria, too. Second, theorizing suggests that “individual differences tend to be accentuated in settings characterized by novelty, ambiguity, and uncertainty” (Caspi & Moffit, 1993, p. 266), a description that perfectly matches the quickly arising situation of a global pandemic including quite drastic and continuously changing rules and recommendations to fight the disease. Third and more specifically, personality

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traits are known to be associated with health-related behaviors, which are obviously relevant in a global pandemic. In a large-scale metasynthesis across meta-analyses, for instance, Strickhouser et al. (2017) found especially Big Five Conscientiousness, Agreeableness, and (low) Neuroticism to be associated with better overall health as well as better mental health and health behaviors as more narrow criteria. Moreover, neuroticism is typically associated with the perception of negative, stressful, or unpleasant situations (Hisler et al., 2020), making it likely that it affects how people perceive and evaluate COVID-19. In a similar vein, various traits have been linked to cooperative and prosocial behavior (for a meta-analysis, see Thielmann et al., 2020), and respective traits might thus affect the degree to which people follow behavioral rules and recommendations to curb the spread of COVID-19, given that such compliance can be considered as cooperative behavior because it protects both oneself and society at large.

In line with these arguments and previous evidence, several studies point to a link between individual differences and COVID-19-related criteria. For instance, studies found that individuals high in neuroticism are more likely to be concerned about COVID-19 (Aschwanden et al., 2021) and perceive more stress during the pandemic (Liu et al., 2020), whereas individuals high in conscientiousness are more likely to show hoarding behavior (Garbe et al., 2020). Focusing on socially aversive (“dark”) personality traits such as Machiavellianism, Narcissism, or Psychopathy, all Blagov (2020), Nowak et al. (2020), and Zajenkowski et al. (2020) found higher levels to be associated with less compliant behavior toward rules and regulations aimed at mitigating the spread of COVID-19 (but see Modersitzki et al., 2020, for less consistent evidence).

Importantly, much of the research around COVID-19 has typically examined links between (a sometimes limited set of) personality traits and (a sometimes limited set of) COVID-19 criteria in one (sometimes very specific) sample only. In line with cautious notes on drawing conclusions based on timely social science COVID-19 research (e.g., IJzerman et al., 2020) as well as lessons learned from the “replicability crisis” in psychology and beyond (e.g., Shrout & Rodgers, 2018), however, it seems crucial to identify robust, replicable, and generalizable evidence in this regard.

Addressing this issue, we herein investigate the role of individual differences in the COVID-19 pandemic across nine personality traits and 17 criteria in five independent samples from two (Northern/Western European) countries. Specifically, we consider basic traits in terms of both the HEXACO (Ashton & Lee, 2007) and the Big Five (Soto & John, 2017) traits, which have been linked to a variety of outcomes in general (e.g., Soto, 2019; Zettler et al., 2020) and in the pandemic specifically (e.g., Aschwanden et al., 2021; Modersitzki et al., 2020). Given that following behavioral rules and recommendations to fight COVID-19 can be considered as cooperative behavior, we additionally consider three socially aversive traits: the Dark Factor of Personality (Moshagen et al., 2018), Narcissistic Rivalry, and Narcissistic Admiration (Back et al., 2013), which all have been found to predict criteria beyond

basic traits, especially in situations in which individuals place a high emphasis on their own aims or status.

The Dark Factor of Personality is defined as “the general tendency to maximize one’s individual utility—disregarding, accepting, or malevolently provoking disutility for others—accompanied by beliefs that serve as justifications” (Moshagen et al., 2018, p. 657). Both Narcissistic Rivalry and Admiration refer to the degree to which people aim at maintaining a self-view of being grandiose. Whereas Narcissistic Rivalry captures “the tendency to prevent social failure by means of self-defense,” Narcissistic Admiration captures “the tendency to approach social admiration by means of self-promotion” (both Back et al., 2013, p. 1015).

In line with their conceptualizations, the COVID-19 pandemic requiring cooperative behavior, and current evidence on the role of aversive traits for COVID-19-related criteria (e.g., Blagov et al., 2020; Nowak et al., 2020; Zajenkowski et al., 2020), it is reasonable to assume that aversive traits are negatively linked to corresponding criteria. Overall, although our investigation is largely exploratory in terms of not preregistered hypotheses, the selection of both the basic and the specific traits was thus based on theoretical grounds when setting up the studies.

We consider 17 COVID-19-related criteria, grouped into three categories (for definitions, see Table 1): (i) personal perceptions in terms of worries, risk for one’s own health, for one’s social life, for one’s work/study life, for one’s close others, and for society; (ii) behavioral adjustments in terms of following recommendations and rules in general, as well as showing hygienic behavior, physical distancing, and hoarding; and (iii) societal evaluations in terms of political reactions, cancellation of events, travel restrictions, closing of educational institutions, closing of public life spaces, journalistic reactions, and social cohesion. As such, our investigation provides timely insights about robust, replicable, and generalizable relations between a broad set of personality traits and a broad set of COVID-19 criteria.

## Method

We report findings from five studies, three were conducted in Denmark and two in Germany (Table 2). Although some of the personality as well as the COVID-19 variables varied across the studies, results are comparable on the construct level.

## Open Science Statement

The data sets underlying Studies 3–5, one exemplary synthetic data set (see Nowak et al., 2016) for each Study 1 and Study 2 (because these were not anonymous data sets), the analyses scripts/outputs including further analyses, and the overview of the administered items (including a translated English version) used for this investigation can be found at the Open Science Framework.

**Table 1.** Overview of COVID-19 Criteria.

COVID-19 Criteria	Degree to Which People . . .
Personal perceptions	
Worries	Feel worried with regard to COVID-19
Risk-own health	Perceive COVID-19 as a risk for their health
Risk-social life	Perceive COVID-19 as a risk for their social life
Risk-work/study life	Perceive COVID-19 as a risk for their work/study life
Risk-close others	Perceive COVID-19 as a risk for their close others
Risk-society	Perceive COVID-19 as a risk for society at large
Behavioral adjustment	
Recommendations	Accept constraints and follow recommendations and rules to fight COVID-19
Hygiene	Show hygienic behavior
Physical distancing	Show physical distancing
Hoarding	Show hoarding behavior
	(Hoarding is not included in the category aggregate.)
Societal evaluations	
Political reactions	Consider political reactions to COVID-19 as reasonable
	(Political reactions is not included in the category aggregate in Studies 4 and 5.)
Cancellation events	Consider cancellation of events to fight COVID-19 as reasonable
Travel restrictions	Consider travel restrictions to fight COVID-19 as reasonable
Closing education	Consider closing of educational institutions to fight COVID-19 as reasonable
Closing public life	Consider closing of public venues to fight COVID-19 as reasonable
Journalistic reactions	Consider journalistic reactions to COVID-19 as reasonable
	(Journalistic reactions is not included in the category aggregate.)
Social cohesion	Consider themselves as part of a society fighting COVID-19
	(Social cohesion is not included in the category aggregate.)

### Procedure and Participants

**Studies 1–3.** Samples for Studies 1–3 were invited from two sets of contact information that the first author received via Statistics Denmark in 2018 and 2020, respectively. Each of these sets included contact information from a random sample of approx. 100,000 Danish adult citizens who—when retrieving the data—were representative for the Danish adult population with regard to the distribution of gender and age. From this, in 2020, several random nonoverlapping samples were invited to participate in online studies set up via formr (Arslan et al., 2020). For Study 1, 10,000 people were invited to a study on personality traits on March 16 (participation was closed on April 16). For Study 2, 15,000 people were invited to fill out a survey on COVID-19 each week between calendar weeks 13 and 20. For Study 3, in several weeks between calendar weeks 13 and 43, random samples were invited to participate in a repeated cross-sectional study on COVID-19 (for more information, see Supplemental Material). The invitations for Studies 1–3 were sent to people's official digital mail (e-boks; <https://www.e-boks.com/danmark/en/>) and participation was always voluntary. Participation was partially incentivized in Study 1.

The final sample in Study 1 is  $N = 1,470$  participants (54% female,  $M_{\text{age}} = 49.07$  years), who completed all measures at one measurement occasion. The final sample in Study 2 is  $N = 940$  participants (58% female,  $M_{\text{age}} = 54.44$  years), who completed the HEXACO traits in calendar week 14, the measure of the Dark Factor of Personality in week 15, and the COVID-19 criteria in week 16 (some criteria were assessed repeatedly, but to separate the traits and criteria assessments,

we use the data from the first criteria assessment following the last trait assessment). The final sample in Study 3 is  $N = 14,045$  participants (55% female,  $M_{\text{age}} = 56.36$  years), who completed all measures at one measurement occasion. Given that Studies 1–3 ran over several weeks, we controlled for the time of participation in the corresponding regression analyses.

**Studies 4 and 5.** Studies 4 and 5 were also realized via online questionnaires set up via formr. For these studies, German adult citizens were invited via social media announcements, online advertisements, and press releases to take part in a study on emotions during the pandemic, incentivized by individual feedback on emotions during the study phase. The invitations were published on March 18 (Study 4) and May 13 (Study 5), respectively. Next to the initial online questionnaires which provide the basis of the present analyses, the studies included a subsequent 14-day experience-sampling phase (not considered herein, but in Kroencke et al., 2020) and final online questionnaires. Note that in Study 4, Honesty-Humility was assessed in the final and not in the initial survey wave only. In Study 4, 2,114 participants (78% female,  $M_{\text{age}} = 33.66$  years) provided necessary data for the present analyses at the first measurement occasion, and  $n = 914$  at the second measurement occasion. In Study 5, 1,149 participants (82% female,  $M_{\text{age}} = 41.34$  years) provided necessary data for the present analyses.

### Measures

**HEXACO/Big Five traits.** All studies assessed Honesty-Humility from the HEXACO Model of Personality (Ashton & Lee,

**Table 2.** Overview of the Studies and Measurements.

Country	Study 1			Study 2			Study 3			Study 4			Study 5		
	Denmark			Denmark			Denmark			Germany			Germany		
Time period (all 2020)	16.03–16.04			30.03–17.05			30.03–25.10			18.03–11.04			13.05–08.06		
Cross-sectional/panel	Cross-sectional			Panel			Cross-sectional			Cross-sectional			Cross-sectional		
N	1,470	Items	$\alpha$	940	Items	$\alpha$	2,805–14,045	Items	$\alpha$	914 or 2,114	Items	$\alpha$	1,149	Items	$\alpha$
	Measure			Measure			Measure			Measure			Measure		
Personality traits	HEX-60	10	.73	BHI	4	.41	BHI	4	.37	HEX-60	10	.65	HEX-60	10	.63
Honesty-Humility	HEX-60	10	.77	BHI	4	.34	BHI	4	.33	BFI-2-S	6	.81	BFI-2-S	6	.82
Emotionality/Neuroticism	HEX-60	10	.81	BHI	4	.63	BHI	4	.61	BFI-2-S	6	.74	BFI-2-S	6	.74
Extraversion	HEX-60	10	.75	BHI	4	.48	BHI	4	.45	BFI-2-S	6	.67	BFI-2-S	6	.68
Agreeableness (vs. Anger)	HEX-60	10	.72	BHI	4	.47	BHI	4	.49	BFI-2-S	6	.76	BFI-2-S	6	.76
Conscientiousness	HEX-60	10	.77	BHI	4	.50	BHI	4	.53	BFI-2-S	6	.72	BFI-2-S	6	.76
Openness to experience	HEX-60	10	.94	D16	16	.80	—	—	—	—	—	—	—	—	—
Dark factor of personality	D70	70	—	—	—	—	—	—	—	NARQ-S	3	.60	NARQ-S	3	.59
Narcissistic rivalry	—	—	—	—	—	—	—	—	—	NARQ-S	3	.78	NARQ-S	3	.77
Narcissistic admiration	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
COVID-19 criteria	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Personal perceptions	—	—	—	Aggregate	10	.76	Aggregate	10	.74	Aggregate	12	.78	Aggregate	12	.81
Worries	—	—	—	Ad hoc	2	.79	Study 2	2	.75	Ad hoc	3	.82	Study 4	3	.81
Risk-own health	—	—	—	—	—	—	—	—	—	Ad hoc	1	—	Study 4	1	—
Risk-social life	—	—	—	—	—	—	—	—	—	Ad hoc	1	—	Study 4	1	—
Risk-work/study life	—	—	—	Ad hoc	1	—	Study 2	1	—	Ad hoc	1	—	Study 4	1	—
Risk-close others	—	—	—	Ad hoc	1	—	Study 2	1	—	Ad hoc	2	.53	Study 4	2	.72
Risk-society	—	—	—	Ad hoc	6	.69	Study 2	6	.66	Ad hoc	4	.59	Study 4	4	.67
Behavioral adjustment	—	—	—	—	—	—	Aggregate	6	.80	Aggregate	19	.85	Aggregate	19	.88
Recommendations	Ad hoc	4	.88	Ad hoc	1	—	Study 2	1	.92	Ad hoc	5	.79	Study 4	5	.77
Hygiene	—	—	—	—	—	—	Ad hoc	3	.68	Ad hoc	2	.58	Study 4	2	.63
Physical distancing	—	—	—	—	—	—	Ad hoc	2	.64	Ad hoc	12	.80	Study 4	12	.85
Hoarding	Ad hoc	1	—	—	—	—	Ad hoc	3	.68	Ad hoc	2	.50	Study 4	2	.35
Societal evaluations	—	—	—	—	—	—	Aggregate	21	.92	Aggregate	17	.91	Aggregate	17	.95
Political reactions	—	—	—	—	—	—	Ad hoc	12	.87	Ad hoc	1	—	Study 4	1	—
Cancellation events	—	—	—	—	—	—	Ad hoc	1	—	Ad hoc	3	.83	Study 4	3	.90
Travel restrictions	—	—	—	—	—	—	Ad hoc	4	.74	Ad hoc	7	.86	Study 4	7	.89
Closing education	—	—	—	—	—	—	Ad hoc	3	.77	Ad hoc	3	.91	Study 4	3	.94
Closing public life	—	—	—	—	—	—	Ad hoc	3	.77	Ad hoc	4	.80	Study 4	4	.88
Journalistic reactions	—	—	—	Ad hoc	1	—	Study 2	1	—	Ad hoc	1	—	Study 4	1	—
Social cohesion	—	—	—	Ad hoc	5	.95	Study 2	5	.93	Ad hoc	1	—	Study 4	1	—

Note. In Study 2, the sample size involving risk-work/study life and the personal perception aggregate is  $n = 928$  (comprising all participants that indicated to have a job). In Study 3, the sample size involving the societal evaluations aggregate and closing education is  $n = 2,805$  (comprising the first four measurement occasions), involving closing public life is  $n = 4,249$  (comprising the first six measurement occasions), involving hoarding is  $n = 3,765$  (comprising the first six measurement occasions and excluding participants who indicated that this question was not relevant to them), involving political reactions, cancellation events, and travel restrictions is  $n = 5,029$  (comprising the first seven measurement occasions), involving risk-work/study life and the personal perception aggregate is  $n = 8,809$  (comprising all participants that indicated to have a job), and involving all other variables is  $n = 14,045$  (comprising all 18 measurement occasions). In Study 4, the sample size at the first measurement occasion (used for all correlations except Honesty-Humility, see below) is  $n = 2,114$ , and at the second measurement occasion (used for all correlations as well as regression analyses involving Honesty-Humility, see below) is  $n = 914$ . Items = number of items; HEX-60 = 60-item HEXACO Personality Inventory-Revised (Ashton & Lee, 2009); D70 = item set introduced by Moshagen et al. (2020); BHI = Brief HEXACO Inventory (De Vries, 2013); D16 = item set introduced by Moshagen et al. (2020); BFI-2-S = short form of the Big Five Inventory-2 (Soto & John, 2017); NARQ = Narcissistic Admiration and Rivalry Questionnaire Short Scale (Leckelt et al., 2018).

2007), either via the HEXACO-60 (Ashton & Lee, 2009; Studies 1, 4, and 5) or via the Brief HEXACO Inventory (BHI, De Vries, 2013; Studies 2 and 3). Whereas Studies 1–3 also assessed the remaining HEXACO traits, Studies 4 and 5 assessed the Big Five traits via the short form of the Big Five Inventory-2 (BFI-2, Soto & John, 2017). Although there are some differences between HEXACO Emotionality and Big Five Neuroticism, as well as between HEXACO Agreeableness versus Anger and Big Five Agreeableness, we present the results concerning these counterparts jointly (to ease readability). For relations between the HEXACO-60 and the Big Five Inventory-2 scales, see Ashton et al. (2019; though this study did not use the short form of the BFI-2).

**Dark Factor of Personality.** The Dark Factor of Personality was assessed via the D70 in Study 1 and via the D16 in Study 2 (both Moshagen et al., 2020).

**Narcissistic Rivalry and Admiration.** Narcissistic Rivalry and Admiration were assessed via the Narcissistic Admiration and Rivalry Questionnaire Short Scale (Leckelt et al., 2018) in both Studies 4 and 5.

**COVID-19 criteria.** We consider 17 COVID-19 criteria, grouped into personal perceptions, behavioral adjustment, and societal evaluations. Although Studies 2–5 assessed further variables in the realm of COVID-19, selection of criteria was guided by the necessity that each criterion was assessed in a minimum of one study in Denmark and one study in Germany. The only exceptions to this pertain to two risk-related criteria that were only assessed in Germany but kept in the analyses to provide a more comprehensive overview on links between personality traits and risk-related perceptions. Next to this general difference, not all criteria were assessed in Studies 1 and 2. All COVID-19 items/scales were created ad hoc.

## Analyses

We estimated zero-order correlations between gender, age, and the personality traits to the COVID-19 criteria. Further, we conducted up to four multiple regression analyses for each criterion: Model 1 includes gender, age, time of participation (only applicable to Studies 1–3), and the assessed basic traits as predictors. Model 2a includes gender, age, time of participation, and the Dark Factor of Personality as predictors (only applicable to some criteria in Studies 1 and 2). Likewise, Model 2b includes gender, age, and Narcissistic Rivalry and Admiration as predictors (only applicable to Studies 4 and 5). Model 3 includes gender, age, time of participation, and all assessed basic and specific traits as predictors—note that these analyses thus differ across the studies, given that different specific traits were assessed across the studies.<sup>1</sup>

To focus on robust, replicable, and generalizable relations, we conducted internal meta-analyses on the correlation estimates as well as on Model 1 from the regression analyses using the “meta” (Schwarzer, 2021) and “metafor” (Viechtbauer,

2020) packages in the R environment. Note that the standardized  $\beta$ s from the regression analyses for each study can be immediately subjected to an internal meta-analysis, because the slopes are based on the same regression model involving the same predictors.<sup>2</sup>

To further facilitate most general insights, we also created three aggregate variables on the category level based on the means across the criteria within the categories. For behavioral adjustments, we excluded hoarding because this is quite different as compared to all recommendations, hygiene, and physical distancing, which all represent behavior helping to curb the spread of COVID-19. For societal evaluations, we excluded journalistic reactions as well as social cohesion, because these criteria are quite different as compared to political reactions, cancellation events, travel restrictions, closing education, and closing public life, which all deal with evaluations about governmental reactions. In addition, we excluded political reactions from the aggregates in Studies 4 and 5, because the therein used response scale differed conceptually from the response scale for Study 3, which was in line with all other variables used for the aggregate.

Given the number of conducted analyses, we provide the 95% confidence intervals (CIs) for the internal meta-analyses, but the 99% CIs for the regression estimates on the individual study level. Further, we considered  $p < .01$  as statistically significant. We focus on the size of correlations and standardized  $\beta$ s when drawing substantive conclusions.

## Missing Data in Studies 2 and 3

In Study 2 and in the first eight measurement occasions of Study 3, participants were free to choose which items they want to answer, resulting in some missing data. We assumed missing-at-random and consequently conducted (partly passive; Van Buuren, 2018) multiple imputation analyses with 20 imputations using predictive mean matching for continuous and logistic regression for categorical outcomes with the MICE package (Van Buuren & Groothuis-Oudshoorn, 2011), including all variables used in the regression models in the predictor matrix.

## Results

Table S1 in the Supplemental Material shows the means, standard deviations, and ranges of the variables; results of the correlation and regression analyses on the individual study level are also shown in the Supplemental Material (Tables S2–S22). Table 3 (as well as Figures S1–S3 in the Supplemental Material) show the pooled (internal meta-analytic) correlation estimates between the personality variables and the COVID-19 criteria; Table 4 shows the pooled (internal meta-analytic) regression estimates for the models including gender, age, and the basic traits as predictors. Given the large number of considered variables, we only point at and interpret the most important results.

**Table 3. Pooled (Internal Meta-Analytic) Correlation Estimates Between Personality and COVID-19 Criteria.**

Variable	Gender		Age		Honesty-Humility		EM/NE		Extraversion		AG	
	k (N)	ρ [95% CI]	ρ [95% CI]	ρ [95% CI]	k (N)	ρ [95% CI]	k (N)	ρ [95% CI]	ρ [95% CI]	ρ [95% CI]	ρ [95% CI]	
Personal perceptions	4 (13,000)	-.10 [-.14, -.07]	.14 [.08, .20]	.00 [-.02, .02]	4 (13,000)	.25 [.23, .28]	4 (13,000)	.01 [-.03, .04]	.00 [-.07, .07]			
Worries	4 (18,248)	-.15 [-.18, -.11]	.11 [.02, .21]	.06 [.00, .12]	4 (18,248)	.32 [.28, .36]	4 (18,248)	-.01 [-.06, .04]	.00 [-.04, .03]			
Risk-own health	2 (3,263)	-.05 [-.09, -.01]	.27 [.16, .37]	.01 [-.03, .05]	2 (3,263)	.12 [.07, .16]	2 (3,263)	-.06 [-.10, -.03]	-.01 [-.05, .02]			
Risk-social life	2 (3,263)	-.01 [-.05, .03]	-.04 [-.07, -.01]	-.07 [-.12, -.02]	2 (3,263)	.10 [-.02, .23]	2 (3,263)	.12 [.01, .23]	.06 [.02, .10]			
Risk-work/study life	4 (13,000)	-.02 [-.07, .03]	-.16 [-.22, -.09]	-.11 [-.14, -.07]	4 (13,000)	.07 [.02, .11]	4 (13,000)	.00 [-.07, .06]	-.03 [-.07, .01]			
Risk-close others	4 (18,248)	-.11 [-.17, -.05]	.16 [.09, .23]	.07 [.03, .12]	4 (18,248)	.17 [.10, .25]	4 (18,248)	.01 [-.03, .05]	.02 [-.01, .06]			
Risk-society	4 (18,248)	-.05 [-.09, -.01]	.17 [.11, .22]	.00 [-.05, .06]	4 (18,248)	.14 [.07, .20]	4 (18,248)	.02 [-.01, .05]	.01 [-.08, .09]			
Behavioral adjustment	3 (17,308)	-.14 [-.16, -.12]	.22 [.13, .30]	.21 [.20, .23]	3 (17,308)	.02 [-.06, .10]	3 (17,308)	.10 [.01, .19]	.16 [.09, .22]			
Recommendations	5 (18,517)	-.13 [-.15, -.10]	.21 [.18, .25]	.22 [.19, .25]	5 (18,517)	.05 [-.03, .13]	5 (19,718)	.09 [.02, .15]	.14 [.11, .18]			
Hygiene	3 (17,308)	-.11 [-.16, -.05]	.21 [.16, .26]	.10 [.01, .19]	3 (16,108)	.03 [-.03, .09]	3 (17,308)	.13 [.06, .19]	.11 [.06, .15]			
Physical distancing	3 (17,308)	-.12 [-.18, -.05]	.17 [.07, .26]	.18 [.15, .20]	3 (16,108)	.01 [-.05, .07]	3 (17,308)	.07 [.01, .13]	.13 [.06, .20]			
Hoarding	4 (7,297)	.00 [-.02, .03]	.01 [-.05, .06]	-.05 [-.07, -.02]	4 (6,768)	.03 [.00, .06]	4 (7,968)	-.01 [-.04, .02]	-.03 [-.05, -.01]			
Societal evaluations	3 (6,068)	-.12 [-.15, -.10]	.06 [.00, .11]	.13 [.10, .16]	3 (4,868)	.08 [.03, .12]	3 (6,068)	.00 [-.10, .09]	.09 [.06, .12]			
Political reactions	3 (8,292)	-.01 [-.08, .06]	.09 [.05, .13]	.01 [-.09, .10]	3 (7,092)	.01 [-.15, .12]	3 (8,292)	.06 [.04, .09]	.00 [-.06, .07]			
Cancellation events	3 (8,292)	-.07 [-.12, -.03]	.08 [.04, .11]	.12 [.09, .15]	3 (7,092)	.05 [-.04, .13]	3 (8,292)	.00 [-.05, .05]	.09 [.05, .13]			
Travel restrictions	3 (8,292)	-.15 [-.17, -.13]	.03 [-.01, .06]	.11 [.04, .17]	3 (7,092)	.10 [.07, .14]	3 (8,292)	-.01 [-.10, .08]	.06 [.04, .08]			
Closing education	3 (6,068)	-.08 [-.12, -.03]	.02 [-.05, .08]	.09 [.05, .14]	3 (4,868)	.02 [-.03, .09]	3 (6,068)	-.02 [-.07, .04]	.05 [.01, .10]			
Closing public life	3 (7,512)	-.10 [-.13, -.08]	.04 [.01, .08]	.12 [.09, .14]	3 (7,092)	.07 [.00, .14]	3 (7,512)	-.01 [-.07, .05]	.09 [.05, .13]			
Journalistic reactions	4 (18,248)	.09 [.05, .12]	-.03 [-.08, .03]	-.05 [-.06, -.03]	4 (17,048)	-.07 [-.13, -.02]	4 (18,248)	.03 [.01, .05]	-.04 [-.07, -.01]			
Social cohesion	4 (18,248)	-.09 [-.17, .00]	.14 [.01, .26]	.15 [.10, .19]	4 (17,048)	.03 [-.13, .19]	4 (18,248)	.16 [.11, .21]	.17 [.11, .23]			

Variable	CO		OP		Dark Factor of Personality		Narcissistic Rivalry		Narcissistic Admiration	
	k (N)	ρ [95% CI]	ρ [95% CI]	ρ [95% CI]	k (N)	ρ [95% CI]	k (N)	ρ [95% CI]	ρ [95% CI]	
Personal perceptions	4 (13,000)	.02 [-.02, .06]	.01 [-.03, .06]	-.12 [-.17, -.04]	1 (940)	-.12 [-.17, -.04]	2 (3,263)	.01 [-.05, .03]	-.03 [-.06, .00]	
Worries	4 (18,248)	.03 [.01, .05]	-.01 [-.02, .07]	-.21 [-.27, -.15]	1 (940)	-.21 [-.27, -.15]	2 (3,263)	.03 [.00, .06]	-.03 [-.07, .00]	
Risk-own health	2 (3,263)	.00 [-.05, .06]	-.02 [-.07, .02]	—	—	—	2 (3,263)	-.01 [-.04, .03]	-.02 [-.06, .01]	
Risk-social life	2 (3,263)	.00 [-.07, .08]	.00 [-.06, .05]	—	—	—	2 (3,263)	.00 [-.04, .04]	.03 [.00, .06]	
Risk-work/study life	4 (13,000)	-.02 [-.03, .00]	-.01 [-.05, .03]	.10 [.04, .17]	1 (940)	.10 [.04, .17]	2 (3,263)	.05 [.01, .09]	.04 [.01, .08]	
Risk-close others	4 (18,248)	.03 [.01, .05]	.00 [-.03, .02]	-.19 [-.25, -.13]	1 (940)	-.19 [-.25, -.13]	2 (3,263)	-.04 [-.08, .00]	-.03 [-.06, .01]	
Risk-society	4 (18,248)	.02 [-.03, .08]	-.01 [-.10, .07]	-.04 [-.10, .02]	1 (940)	-.04 [-.10, .02]	2 (3,263)	-.07 [-.12, -.01]	-.05 [-.08, -.02]	
Behavioral adjustment	3 (17,308)	.15 [.08, .23]	.09 [.06, .12]	-.35 [-.40, -.30]	2 (2,140)	-.35 [-.40, -.30]	2 (3,263)	-.20 [-.25, -.15]	-.10 [-.15, -.05]	
Recommendations	5 (18,517)	.16 [.13, .19]	.09 [.05, .13]	—	—	—	2 (3,263)	-.17 [-.22, -.11]	-.08 [-.12, -.03]	
Hygiene	3 (17,308)	.14 [.06, .21]	.05 [.03, .08]	—	—	—	2 (3,263)	-.10 [-.13, -.06]	-.04 [-.08, -.01]	
Physical distancing	3 (17,308)	.11 [.06, .16]	.06 [.04, .08]	—	—	—	2 (3,263)	-.18 [-.23, -.13]	-.09 [-.14, -.04]	
Hoarding	4 (7,297)	.00 [-.03, .03]	.02 [-.03, .06]	.08 [.03, .13]	1 (1,470)	.08 [.03, .13]	2 (3,263)	.06 [.01, .11]	.02 [-.01, .06]	
Societal evaluations	3 (6,068)	.07 [.00, .14]	-.04 [-.07, -.01]	—	—	—	2 (3,263)	-.10 [-.14, -.07]	-.08 [-.12, -.04]	
Political reactions	3 (8,292)	.05 [.02, .12]	.00 [-.03, .03]	—	—	—	2 (3,263)	.04 [-.02, .09]	.01 [-.04, .06]	
Cancellation events	3 (8,292)	.05 [.01, .09]	.03 [.01, .05]	—	—	—	2 (3,263)	-.10 [-.13, -.06]	-.03 [-.08, .03]	
Travel restrictions	3 (8,292)	.08 [.03, .14]	-.07 [-.11, -.03]	—	—	—	2 (3,263)	-.09 [-.12, -.05]	-.10 [-.14, -.05]	
Closing education	3 (6,068)	.02 [-.03, .07]	.00 [-.04, .04]	—	—	—	2 (3,263)	-.07 [-.11, -.04]	-.04 [-.08, -.01]	
Closing public life	3 (7,512)	.04 [.00, .09]	.02 [-.01, .04]	—	—	—	2 (3,263)	-.11 [-.15, -.07]	-.06 [-.10, -.02]	
Journalistic reactions	4 (18,248)	.02 [-.01, .05]	-.02 [-.04, .00]	.10 [.04, .17]	1 (940)	.10 [.04, .17]	2 (3,263)	.06 [.01, .11]	.04 [-.01, .08]	
Social cohesion	4 (18,248)	.08 [.06, .11]	.11 [.05, .17]	-.40 [-.45, -.34]	1 (940)	-.40 [-.45, -.34]	2 (3,263)	-.17 [-.20, -.13]	-.01 [-.04, .03]	

Note. Gender: female = 0, male = 1. k (N) always applies to all columns to the right until a new k (N) appears. Hoarding, journalistic reactions, and social cohesion are not included in their respective category aggregate, and closing education as well as closing public life are not included in the societal evaluations aggregate in Study 3 (to maintain the largest N). p values < .01 are presented in bold. EM/NE = Emotionality/Neuroticism; AG = Agreeableness (vs. Anger); CO = conscientiousness; OP = Openness to experience.

**Table 4. Pooled (Internal Meta-Analytic Regression) Estimates for Model 1.**

	Personal Perceptions						
	Worries ( <i>k</i> = 4, <i>N</i> = 17,048)	Risk-Own Health ( <i>k</i> = 2, <i>N</i> = 2,063)	Risk-Social Life ( <i>k</i> = 2, <i>N</i> = 2,063)	Risk-Work/Study Life ( <i>k</i> = 4, <i>N</i> = 11,800)	Risk-Close Others ( <i>k</i> = 4, <i>N</i> = 17,048)	Risk-Society ( <i>k</i> = 4, <i>N</i> = 17,048)	Aggregate ( <i>k</i> = 4, <i>N</i> = 11,812)
Model 1	$\beta$ [95% CI]	$\beta$ [95% CI]	$\beta$ [95% CI]	$\beta$ [95% CI]	$\beta$ [95% CI]	$\beta$ [95% CI]	$\beta$ [95% CI]
Intercept	.03 [-.03, .09]	-.02 [-.07, .04]	-.03 [-.07, .02]	-.01 [-.06, .03]	.05 [.03, .07]	.01 [-.01, .03]	.03 [.00, .06]
Gender ( <i>female</i> = 0, <i>male</i> = 1)	-.15 [-.20, -.10]	-.11 [-.21, .00]	.13 [.02, .24]	-.02 [-.15, .11]	-.15 [-.23, -.08]	-.08 [-.15, .00]	-.09 [-.16, -.02]
Age	.14 [.08, .20]	.32 [.18, .46]	-.01 [-.05, .03]	-.15 [-.21, -.09]	.17 [.11, .24]	.17 [.11, .24]	.16 [.13, .20]
Honesty-Humility	.03 [.01, .04]	-.01 [-.05, .03]	-.06 [-.10, -.01]	-.08 [-.10, -.05]	.01 [-.02, .05]	-.04 [-.11, .04]	-.04 [-.08, .00]
Emotionality/Neuroticism	.34 [.25, .43]	.16 [.11, .21]	.21 [.10, .31]	.07 [.01, .13]	.19 [.16, .23]	.18 [.16, .20]	.29 [.24, .34]
Extraversion	.04 [.00, .07]	-.01 [-.06, .03]	.18 [.10, .27]	.02 [-.03, .06]	.02 [.00, .04]	.04 [-.01, .08]	.05 [.00, .10]
Agreeableness ( <i>vs.</i> Anger)	.03 [-.05, .10]	.02 [-.03, .07]	.11 [.07, .16]	.00 [-.05, .04]	.03 [-.02, .07]	.01 [-.06, .08]	.03 [-.06, .11]
Conscientiousness	.06 [.02, .10]	.01 [-.06, .07]	.00 [-.06, .06]	.02 [.00, .04]	.04 [.01, .06]	.03 [-.04, .09]	.05 [.00, .10]
Openness to experience	.01 [-.01, .03]	.03 [-.02, .07]	.01 [-.05, .07]	.02 [-.02, .07]	.01 [-.02, .04]	.06 [.00, .12]	.04 [.00, .09]
Societal Evaluations							
Political Reactions	( <i>k</i> = 3, <i>N</i> = 7,092)	Journalistic Reactions	( <i>k</i> = 4, <i>N</i> = 18,518)	Aggregate	( <i>k</i> = 3, <i>N</i> = 4,868)	Social Cohesion	( <i>k</i> = 4, <i>N</i> = 18,518)
Model 1	$\beta$ [95% CI]	$\beta$ [95% CI]	$\beta$ [95% CI]	$\beta$ [95% CI]	$\beta$ [95% CI]	$\beta$ [95% CI]	$\beta$ [95% CI]
Intercept	.07 [.05, .09]	.04 [-.03, .10]	.04 [.01, .07]	.08 [.06, .10]	-.01 [-.04, .02]	-.05 [-.10, .00]	.05 [.00, .09]
Gender ( <i>female</i> = 0, <i>male</i> = 1)	-.16 [-.19, -.14]	-.17 [-.25, -.09]	-.20 [-.36, -.04]	-.23 [-.32, -.13]	-.01 [-.06, .04]	.17 [.13, .22]	-.11 [-.23, .00]
Age	.19 [.15, .22]	.21 [.14, .28]	.16 [.08, .24]	.20 [.12, .28]	.02 [-.03, .08]	-.04 [-.10, .02]	.12 [.02, .23]
Honesty-Humility	.12 [.09, .15]	.04 [-.02, .09]	.13 [.08, .17]	.13 [.09, .17]	-.04 [-.07, -.02]	-.02 [-.05, .00]	.07 [.05, .08]
Emotionality/Neuroticism	.08 [.02, .13]	.08 [.04, .13]	.08 [.01, .14]	.09 [.01, .16]	.03 [-.01, .07]	.03 [.00, .06]	.07 [-.03, .16]
Extraversion	.03 [-.01, .06]	.10 [.08, .12]	.05 [-.02, .12]	.06 [.02, .11]	-.01 [-.04, .02]	-.04 [-.08, .00]	.13 [.05, .21]
Agreeableness ( <i>vs.</i> Anger)	.08 [.03, .12]	.07 [-.02, .17]	.08 [-.01, .16]	.09 [-.01, .19]	-.02 [-.05, .00]	.02 [-.01, .04]	.02 [-.02, .06]
Conscientiousness	.10 [.07, .14]	.08 [.00, .16]	.04 [-.03, .11]	.07 [-.01, .16]	.01 [-.02, .04]	-.03 [-.04, -.01]	.07 [.00, .13]
Openness to experience	.07 [.03, .10]	.04 [.02, .05]	.05 [.04, .07]	.07 [.04, .10]	.03 [-.02, .07]		

	Behavioral Adjustment				Societal Evaluations	
	Recommendations ( <i>k</i> = 5, <i>N</i> = 18,517)	Hygiene ( <i>k</i> = 3, <i>N</i> = 16,108)	Physical Distancing ( <i>k</i> = 3, <i>N</i> = 16,108)	Aggregate ( <i>k</i> = 3, <i>N</i> = 16,108)	Hoarding ( <i>k</i> = 4, <i>N</i> = 7,297)	Political Reactions ( <i>k</i> = 3, <i>N</i> = 7,092)
Model 1	$\beta$ [95% CI]	$\beta$ [95% CI]	$\beta$ [95% CI]	$\beta$ [95% CI]	$\beta$ [95% CI]	$\beta$ [95% CI]
Intercept	.07 [.05, .09]	.04 [-.03, .10]	.04 [.01, .06]	.08 [.06, .10]	-.01 [-.04, .02]	-.01 [-.04, .02]
Gender ( <i>female</i> = 0, <i>male</i> = 1)	-.16 [-.19, -.14]	-.17 [-.25, -.09]	-.20 [-.36, -.04]	-.23 [-.32, -.13]	-.01 [-.06, .04]	.01 [-.05, .06]
Age	.19 [.15, .22]	.21 [.14, .28]	.16 [.08, .24]	.20 [.12, .28]	.02 [-.03, .08]	.09 [.05, .12]
Honesty-Humility	.12 [.09, .15]	.04 [-.02, .09]	.13 [.08, .17]	.13 [.09, .17]	-.04 [-.07, -.02]	-.01 [-.07, .05]
Emotionality/Neuroticism	.08 [.02, .13]	.08 [.04, .13]	.08 [.01, .14]	.09 [.01, .16]	.03 [-.01, .07]	.00 [-.14, .14]
Extraversion	.03 [-.01, .06]	.10 [.08, .12]	.05 [-.02, .12]	.06 [.02, .11]	-.01 [-.04, .02]	.04 [.01, .06]
Agreeableness ( <i>vs.</i> Anger)	.08 [.03, .12]	.07 [-.02, .17]	.08 [-.01, .16]	.09 [-.01, .19]	-.02 [-.05, .00]	.00 [-.10, .10]
Conscientiousness	.10 [.07, .14]	.08 [.00, .16]	.04 [-.03, .11]	.07 [-.01, .16]	.01 [-.02, .04]	.03 [-.05, .11]
Openness to experience	.07 [.03, .10]	.04 [.02, .05]	.05 [.04, .07]	.07 [.04, .10]	.03 [-.02, .07]	-.02 [-.04, .00]

Note. Hoarding, journalistic reactions, and social cohesion are not included in their respective category aggregate. *p* values < .01 are presented in bold.

## Personal Perceptions

The category personal perceptions contains how strongly people worry about COVID-19 and perceive it as a risk for various aspects of their life and society in general. From the basic traits, Emotionality/Neuroticism stood out as the only consistent predictor, correlating with the aggregate of personal perceptions  $\hat{\rho} = .25$  (ranging from .07 to .32 across the criteria within the category). Relatedly, Emotionality/Neuroticism showed an average of  $\beta = .29$  in the regression analyses predicting the aggregate by all basic traits (plus gender and age), ranging  $.07 \leq \beta \leq .34$  in the corresponding analyses across the criteria within the category. Thus, across studies/countries, individuals higher in Emotionality/Neuroticism were generally more likely to worry about COVID-19 and to perceive it as a risk for various aspects.

The other basic traits as well as Narcissistic Rivalry and Admiration showed no link to the aggregate of personal perceptions ( $.00 \leq |\hat{\rho}| \leq .03$ ) and hardly any substantive links to the specific criteria (all  $\hat{\rho}s \leq .12$ ). By contrast, individuals higher in the Dark Factor of Personality were less likely to worry about COVID-19 ( $r = -.21$ ) and to perceive it as a risk for their close others ( $r = -.19$ ). Next to Emotionality/Neuroticism and (partly) the Dark Factor of Personality, gender and age showed some substantive links. Women showed a (mostly weak) general trend to perceive COVID-19 more as a risk than men across the aggregate/criteria ( $-.15 \leq \hat{\rho}s \leq -.01$ ). Older people were more likely to worry about COVID-19 and to perceive it as a risk for their own health, close others, and society in general ( $.11 \leq \hat{\rho}s \leq .27$ ), whereas younger people were more likely to perceive the pandemic as a risk for their work/study life ( $\hat{\rho} = -.16$ ). Summarizing across the results from the multiple regression analyses including gender, age, and all basic and specific traits (Models 3 in Tables S3–S8 and S20 in the Supplemental Material) suggests that especially age and Emotionality/Neuroticism remain significantly associated with personal perceptions when controlling for the overlap between the individual difference constructs.

## Behavioral Adjustment

The category behavioral adjustment describes how strongly people accept restrictions and follow recommendations to fight COVID-19 in general as well as show hygienic measures and physical distancing in particular. Further, it includes whether people show hoarding behavior—which is not recommended as a measure to mitigate the spread of COVID-19 and thus not included in the category aggregate.

Focusing on behavior aiming to mitigate the spread of COVID-19, particularly traits comprising anti- or prosocial tendencies were consistent predictors. Across recommendations, hygiene, physical distancing, and their aggregate, Honesty-Humility ( $.10 \leq \hat{\rho} \leq .22$ ), Agreeableness (vs. Anger;  $.11 \leq \hat{\rho} \leq .16$ ), and Narcissistic Rivalry ( $-.20 \leq \hat{\rho} \leq -.10$ ) showed consistent links. Relatedly, the Dark Factor of Personality was linked substantially to recommendations across the

two studies in which it was included ( $\hat{\rho} = -.35$ ). These results indicate that people high in Honesty-Humility and Agreeableness (vs. Anger) as well as low in the Dark Factor of Personality and Narcissistic Rivalry were more likely to follow the recommendations.

Additionally, individuals high in Conscientiousness were generally more likely to show behavior in line with the recommendations ( $.11 \leq \hat{\rho} \leq .16$ ). There were also weak positive trends for both Extraversion ( $.07 \leq \hat{\rho} \leq .13$ ) and Openness to experience ( $.05 \leq \hat{\rho} \leq .09$ ), and a weak negative trend for Narcissistic Admiration ( $-.10 \leq \hat{\rho} \leq -.04$ ). Further, both demographic variables showed quite substantive links in both the correlations as well as across the regression analyses. Women were more likely to show behavior in line with the recommendations ( $-.14 \leq \hat{\rho} \leq -.11$ ;  $-.23 \leq \beta \leq -.16$ ), and so did older people ( $.17 \leq \hat{\rho} \leq .22$ ;  $.16 \leq \beta \leq .21$ ). Notably, the effects of gender and especially age maintained across most regression analyses, whereas the importance of some of the traits differed depending on the considered criterion as well as on which other traits were included in the regression analyses or not (Models 1 and 3, Table 4; Tables S9–S11 and S21 in the Supplemental Material). With regard to hoarding, we did not find any substantive link at all ( $.00 \leq |\hat{\rho}| \leq .08$ ), suggesting that this behavior is not (or very weakly, at best) affected by (the considered) underlying individual differences.

## Societal Evaluations

The category societal evaluations reflects how people perceive different governmental measures to fight COVID-19. Further, we assessed people's evaluations of the way journalists dealt with the pandemic as well as whether people experienced a feeling of social cohesion in the pandemic. Concerning the aggregate, there were patterns of a weak effect of Honesty-Humility ( $\hat{\rho} = .13$ ) as well as Narcissistic Rivalry ( $\hat{\rho} = -.10$ ), which also held for Honesty-Humility across most regression analyses (Table 3; Tables S13–S17 and S22 in the Supplemental Material). Effects of the other traits (as well as age) were, in general, smaller and less consistent across the analyses. Again, though, there was an effect of gender such that women were more likely to consider the reactions as reasonable (for the aggregate:  $\hat{\rho} = -.12$ ). Links between the individual difference constructs and journalistic reactions were small, at best ( $\hat{\rho} \leq .09$ ).

With regard to social cohesion, there were stronger links overall. In particular, age ( $\hat{\rho} = .14$ ), Honesty-Humility ( $\hat{\rho} = .15$ ), Extraversion ( $\hat{\rho} = .16$ ), Agreeableness (vs. Anger;  $\hat{\rho} = .17$ ), Openness to experience ( $\hat{\rho} = .11$ ), the Dark Factor of Personality ( $r = -.40$  in Study 2), and Narcissistic Rivalry ( $\hat{\rho} = -.17$ ) were linked to social cohesion. Across the regression analyses (Table 4; Table S19 in the Supplemental Material), especially Extraversion, Agreeableness (vs. Anger), the Dark Factor of Personality, and Narcissistic Rivalry stood out as predictors, with people being high in Extraversion and Agreeableness (vs. Anger) as well as low in the Dark Factor of Personality and Narcissistic Rivalry being more likely to



report feelings of social cohesion. Notably, though, results concerning which traits are most important differed between the studies and based on which predictors were included.

## Discussion

The emergence of COVID-19 has led to strong reactions by citizens, organizations, and political authorities around the world. In the light of its impact, social scientists have quite immediately aimed to provide insights into factors explaining people's reactions to and/or the efficiency of measures against COVID-19. Extending such research and aiming to provide robust, replicable, and generalizable insights, we herein focused on the role of (inter-)individual differences—in terms of gender and age as well as basic and specific personality traits—for various criteria related to COVID-19 within the categories of (i) personal perceptions in terms of worries and risks, (ii) behavioral adjustments, and (c) societal evaluations.

The results concerning personal perceptions are well in line with existing research. For instance, the finding that people with higher levels in Emotionality/Neuroticism reported more worries and risks fits meta-analytic results linking Emotionality to various domains of insecurity (Zettler et al., 2020) or Neuroticism to anxiety (Kotov et al., 2010). Our findings further correspond to early COVID-19 research, as, for instance, both Aschwanden et al. (2021; among U.S. participants) and Caci et al. (2020; among Italian participants) also found links between Neuroticism and concerns about COVID-19. With regard to age, there were different patterns across criteria. In line with the fact that older people are actually more likely to suffer from COVID-19 health-wise, older people reported more risks concerning their own health, close others, and society. With regard to their work/study life, however, younger people reported a higher tendency of perceiving COVID-19 as a risk, arguably due to their greater susceptibility to a potential economic recession due to the pandemic.

Several of the considered individual difference constructs were related to behavioral adjustment. Importantly, though, results differed quite a bit across the analyses with regard to which constructs remained important predictors when controlling for the overlap between the constructs. Concerning traits, individuals who place a higher emphasis on self-interests (especially lower levels in Honesty-Humility as well as higher levels in the Dark Factor of Personality and Narcissistic Rivalry) were less willing to accept restrictions in their behavior and tended to report less behavior recommended to fight COVID-19. This finding fits conceptualizations that consider following the COVID-19 recommendations as prosocial behavior and was—concerning aversive (“dark”) traits—conceptually similarly found in studies by Blagov (2020; U.S. participants), Nowak et al. (2020; Polish participants), and Zajenkowski et al. (2020; Polish participants), and partly (only) by Modersitzki et al. (2020; German participants). Research not including traits tapping into anti- and prosocial tendencies in particular might thus likely underestimate the role of

individual differences in understanding which citizens rather (not) follow guidelines.

Other consistent predictors of behavioral adjustment were Conscientiousness in line with its conceptualization as a trait comprising normative and rule-following tendencies (Soto & John, 2017; Zettler et al., 2020), as well as age—again, in line with the fact that older people are generally at higher risk to suffer from COVID-19. We found, at best, weak links between any assessed individual difference construct and hoarding. In a similar vein, basically no substantial link was found across the analyses with regard to societal evaluations (including journalistic reactions). In contrast, especially the (low) Dark Factor of Personality, (high) Honesty-Humility, (high) Agreeableness (vs. Anger), and (low) Narcissistic Rivalry predicted who experienced fighting COVID-19 as a collective action—that is, social cohesion. This might be interpreted in combination with the finding that these traits were also linked to compliant behavior, again highlighting the relevance of prosocial concerns in the pandemic.

The overall findings highlight two important aspects in particular. First, basic as well as specific traits play a role in understanding people's reactions to COVID-19 in line with previous notions on the role of personality for a broad array of criteria in general (e.g., Soto, 2019; Zettler et al., 2020), including in ambiguous, changing, and uncertain situations (Caspi & Moffitt, 1993). In line with previous research on personality and life outcomes (Soto, 2021), some links remained substantial even when controlling for gender and age and were found quite similarly across the different measures, studies, and countries. In general, the observed effect sizes (of the consistent patterns) are much in line with effect sizes typically found in personality and social psychology research (Funder & Ozer, 2019; Gignac & Szodorai, 2016), further supporting the interpretation that personality traits do not only generally matter for a broad array of criteria but also when all people face similar circumstances on a larger scale.

Second, our investigation illustrates the importance to replicate studies before drawing conclusions or making recommendations, especially in a timely crisis such as the pandemic. That is, across almost all analyses, there were—next to the theoretically well explainable patterns—effects of personality traits that could not be replicated with regard to the same criterion (sometimes even within the same country) or related criteria (within a category), even though any single of our studies relied on a substantial sample size ( $914 \leq N \leq 14,045$ ). Relatedly, and also in line with existing evidence (Soto, 2021), the strengths of relations between a trait and a criterion sometimes dropped quite substantially once taking the overlap between the individual difference constructs into account. In combination, this should increase awareness of being cautious when drawing more general conclusions based on one or two study findings only to better understand which personality traits are particularly relevant for which criterion.

Turning to future research, our investigation also highlights the usefulness of cross-nationally validated sets of personality and (if foreseeable) outcome measures that are ready to be used

in situations with few time for setting up studies. While being comparable, we relied on partly different constructs/measures across the studies, partly limiting the analyses that we could conduct across samples/countries. Relatedly, the internal consistency estimates for some of the BHI scales were quite low in our data (though in line with its design; De Vries, 2013), probably having affected the validity of this measure and, thus, comparisons across the studies.

As a general limitation, we administered self-reports only; however, there is evidence that self-reported and observations of actual behavior during the COVID-19 pandemic overlap (Gollwitzer et al., 2020). Further, our findings are limited to two Northern/Western European countries where we had access to potential study populations when setting up the studies; on the other hand, we collected five (relatively large) data sets with quite heterogeneous samples concerning age, gender, and arguably background (especially as compared to samples recruited via crowdworking platforms or relying purely on university students). Although it will take a while until more comprehensive summaries of the COVID-19 research can be conducted, skimming through the existing evidence seems to suggest that similar links between individual difference constructs and COVID-19-related criteria can be found across countries. This notwithstanding, most samples stem from North America and Europe, so far (for exceptions, see, e.g., Carvalho et al., 2020; Zirenko et al., 2021).

Overall, our investigation clearly shows the role of individual differences for various COVID-19 criteria including the behaviorally important tendency to follow rules and recommendations to fight the disease. In turn, our investigation provides insights for both research and practice, namely, concerning which basic and specific traits are relevant for which kind of behavior in times of a societal crisis in general and the COVID-19 pandemic in particular.

### Authors' Note

Additional materials including data, (complementary) analyses, and materials are available online at the Open Science Framework (OSF) and can be accessed via the following link: <https://osf.io/c96dx/>


### Declaration of Conflicting Interests


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### Supplemental Material

The supplemental material is available in the online version of the article.

### Notes

1. For Study 4, we also repeated Models 1 and 3 not including Honesty-Humility and thus based on a larger sample ( $N = 2,114$ ; see Table S23 in the Supplemental Material).
2. With the only exception of the covariate time of participation, which was included in Studies 1–3, but not in Studies 4 and 5. Excluding this covariate from Studies 1 to 3 and then repeating the meta-analyses results in very similar findings.

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