



# Belief in a just world, perceived control, perceived risk, and hopelessness during the COVID-19 pandemic: Findings from a globally diverse sample

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Accepted: 28 April 2022 / Published online: 19 May 2022

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## Abstract

The purpose of this study was to understand the complex relationships between belief in a just world (BJW), perceived control, perceived risk to self and others, and hopelessness among a globally diverse sample during the early stages of the COVID-19 pandemic. The just-world hypothesis suggests that people need to believe in a just world in which they get what they deserve and deserve what they get. Studies have shown that believing in a just world has an adaptive function for individuals. Samples from six countries completed an online questionnaire. A total of 1,250 people participated (934 female) and ages ranged from 16 to 84 years old ( $M = 36.3$ ,  $SD = 15.5$ ). The results showed that, when controlling for gender, age, country of residence, and being in a risk group for COVID-19 (e.g., smoker, old age, chronic disease etc.), a stronger personal and general BJW and higher perceived control over the COVID-19 pandemic predicted lower levels of hopelessness. How at-risk participants perceived themselves to be for COVID-19 positively predicted hopelessness, but how risky participants perceived the disease to be for others negatively predicted hopelessness. This study highlights how the distinction between self and others influences hopelessness and how BJW, especially personal BJW, can serve as a psychological resource during times of historic uncertainty.

**Keywords** Belief in a just world · Perceived risk · Perceived control · Hopelessness · COVID-19

Since the first case of the novel coronavirus disease (COVID-19) was reported in December 2019, the number of cases rapidly increased (World Health Organization, 2020). From its earliest days, researchers have been trying to understand how this global pandemic impacts the psychological state of mind. This study aimed to understand the meaning of believing in a just world as a psychological resource for individuals' coping processes even in a pandemic.

## Belief in a Just World

The Just-World Hypothesis (Lerner, 1980) suggests that individuals tend to believe that people get what they deserve and deserve what they get. Believing in a just world provides individuals with some benefits, first and foremost they can believe that they live in an orderly, controllable, and predictable world (Lerner, 1980). Thus, researchers proposed that this belief serves important psychological functions (see Dalbert, 2001).

First, belief in a just world (BJW) helps individuals interpret their life events in a meaningful way. Through the so-called *assimilation function*, strong just-world believers, when confronted with an injustice, restore justice psychologically through mechanisms such as victim-blaming, thus maintaining their belief in a just world (Dalbert, 2001). In line with this reasoning, individuals who strongly endorsed BJW felt more justly treated by others. For example, students with a strong BJW rated their classmates and teachers as fair (e.g., Correia & Dalbert, 2007; Münscher et al., 2020) and BJW was especially important for disadvantaged students in

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evaluating their teachers as more just over time (Kiral Ucar & Dalbert, 2020).

Second, the *trust function* reflects people's conviction that they will be treated justly by others (Dalbert, 2001) and that they will be rewarded for their efforts. Therefore, they can feel confident that they will get what they deserve in the future (Dalbert, 2001; Lerner, 1980). This confidence also enables optimism, maintains well-being and mental health, and provides motivation to invest in long-term goals (e.g., Hafer, 2000). For example, studies showed that BJW was associated with interpersonal (e.g., Bègue, 2002) and institutional trust (e.g., Thomas & Mucherah, 2018).

Researchers (e.g., Dalbert, 1999; Lipkus et al., 1996) argue that it is necessary to differentiate the personal BJW from the general BJW. Personal BJW refers to the belief that one's own life is just, whereas general BJW reflects the belief that the world is a just place broadly (Dalbert, 1999). Personal BJW has been more strongly associated with adaptive outcomes than general BJW (for recent reviews see Bartholomaeus & Strelan, 2019; Dalbert & Donat, 2015). The personal BJW's protector characteristic for well-being has been documented in many different samples and circumstances, for example, victims of disasters (Otto et al., 2006) or other injustices (e.g., Dzuka & Dalbert, 2007), employed (Nudelman et al., 2016) or unemployed samples (Otto et al., 2009), school students (e.g., Correia & Dalbert, 2007), university students (e.g., Münscher et al., 2020), and elderly samples (e.g., Dzuka & Dalbert, 2006). Moreover, personal BJW shows similar associations across countries. For instance, personal BJW is associated with perceived control to a similar extent across samples from the USA (Fischer & Bolten Holz, 2010), Turkey (Kiral Ucar et al., 2019), and Germany (Donat et al., 2016). It is also associated similarly with indices of mental health across these same samples. Importantly, personal BJW has been associated with positive future orientation in samples from Turkey (Şeker, 2016), Germany (Christandl, 2013), and Brazil (Thomas et al., 2019). General BJW, on the other hand, has been more associated with maladaptive social outcomes such as harsher attitudes towards refugees (Khera et al., 2014).

Despite these differences in personal and general BJW, researchers (e.g., Hafer et al., 2020) increasingly emphasize the necessity to consider both dimensions simultaneously in studies because they may have their own valuable contribution to individuals' adaptive functioning, particularly in mental health. That is why, in the present study, we examined the meaning of both personal and general BJW for individuals in how they process and cope with the pandemic.

### BJW and Hopelessness

The future is uncertain; however, there is a psychological benefit to approaching the future with confidence and not

constantly expecting injustice (Lerner, 1980). Accordingly, studies (e.g., Hafer, 2000) indicate that individuals need to believe in a just world to invest in their future; therefore, any potential threat to this belief could instigate the need to defend it. BJW is positively associated with positive future expectations (e.g., Sutton & Winnard, 2007) and hope (e.g., Xie et al., 2011) and negatively correlated with hopelessness (e.g., Kiral Ucar et al., 2019).

During one of the most serious global crises of recent history, the future became even more uncertain. It is not surprising that individuals felt vulnerable and confronted despair (Walsh, 2020). However, being hopeful about the future plays a key role in maintaining well-being in a pandemic (e.g., Yıldırım & Arslan, 2020). In the present study, we aimed to examine if strong just-world believers have a psychological advantage since BJW would serve as a personal resource to cope with hopelessness.

### BJW and Perceived Control

A strong BJW supports individuals' belief that they live in a controllable world (Lerner, 1980). Those with high BJW default to the assumption that their world has consistent rules and the events in their life are outcomes of their own actions. As long as the outcomes are the results of their own actions, their experiences are predictable, not random, thus, maintaining a sense of control. In such a world, they hope that being a good person brings good things and a good future (see Dalbert, 2001; Lerner, 1980). Studies have also revealed that a sense of control is adaptive for individuals' coping during a pandemic (Zheng et al., 2020). The present study aimed to determine if BJW helps individuals strengthen their feelings of control.

### BJW and Perceived Risk

A strong BJW also enables individuals to trust that they will not fall victim to an unfortunate life event. Thus, they perceive lower levels of risk (Dalbert, 2001; Dalbert & Donat, 2015). Lambert et al. (1999) were the first to examine the hypothesis that individuals with a strong BJW perceive lower levels of risk than individuals with a lower BJW. They observed that strong BJW provided a buffering effect to those who perceived the world as dangerous and this buffer was evidenced in both perceived risk for the self and others. Dalbert (2001) extended these results and showed that BJW served as a buffer especially for external risks (e.g., robbery). The COVID-19 pandemic also represents such an external risk, and recent studies (e.g., Malesza & Kaczmarek, 2021) indicate that greater perceived risk of infection is associated with maladaptive consequences for individuals such as greater anxiety. The current study hypothesizes that

BJW will help individuals cope with the pandemic threat by reducing their risk perception.

### Perceived Control, Perceived Risk, and Hopelessness

When individuals trust that they have some control over the outcomes in their life and feel safe from future risks, they tend to expect a better future. There is substantial literature demonstrating that decreased control perception (for a meta-analysis see Gallagher et al., 2014) and increased risk perception (e.g., Malesza & Kaczmarek, 2021) are strongly associated with negative psychological outcomes. Moreover, recent studies show that, in a pandemic, losing a sense of control (e.g., Godinic et al., 2020) and having higher levels of perceived risk (e.g., Yıldırım & Güler, 2021) might be maladaptive and prevent people from expecting a positive future. Therefore, the hypothesis of the present study is that individuals' lower levels of perceived control and higher levels of perceived risk will be predictive of higher levels of hopelessness.

### Hypotheses

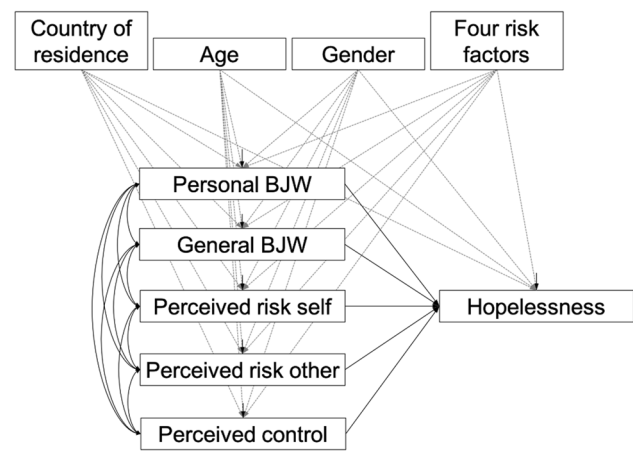
Based on the theoretical framework, we examined how at-risk participants perceived themselves to be for COVID-19 (perceived COVID-19 specific risk-self), how risky participants perceived the disease to be for others (perceived COVID-19 specific risk-others), participants' perception of control over the COVID-19 pandemic (perceived COVID-19 specific control), hopelessness, and how all of these related to BJW. The study was conducted with a globally diverse sample during the early stages of the COVID-19 pandemic.

We hypothesized that BJW and perceived COVID-19-specific control would negatively relate to hopelessness, and perceived COVID-19 specific risk-self and -others would positively relate to hopelessness. We expected that BJW would positively relate to perceived COVID-19 specific control, but negatively to perceived COVID-19 specific risk -self and -others. We hypothesized that these associations would be significant even after controlling for gender, age, country of residence, and concrete risk factors. Figure 1 depicts a conceptual diagram of these hypotheses.

## Method

### Participants

In our study,  $N = 1,264$  participants from six countries answered online surveys. Complete observations and reasonable group sizes were required to run the statistical model; therefore,  $n = 14$  observations ( $n = 2$  gender diverse;  $n = 11$  did not indicate gender;  $n = 1$  did not indicate age) were



**Fig. 1** A conceptual model of the associations being tested in this study

removed, leaving a sample of  $n = 1250$  for analysis. Participants were  $n = 934$  female,  $n = 316$  male and were between 16 and 84 years of age ( $M = 36.3$ ,  $SD = 15.5$ ). This sample consisted of people from Turkey ( $n = 252$ ;  $n = 185$  female,  $n = 67$  male;  $M_{age} = 32.4$ ,  $SD_{age} = 12.0$ ), Australia ( $n = 207$ ;  $n = 110$  female,  $n = 97$  male;  $M_{age} = 33.8$ ,  $SD_{age} = 12.8$ ), Germany ( $n = 143$ ;  $n = 102$  female,  $n = 41$  male;  $M_{age} = 36.9$ ,  $SD_{age} = 14.6$ ), Russia ( $n = 270$ ;  $n = 231$  female,  $n = 39$  male;  $M_{age} = 28.8$ ,  $SD_{age} = 15.1$ ), the USA ( $n = 204$ ;  $n = 162$  female,  $n = 42$  male;  $M_{age} = 50.3$ ,  $SD_{age} = 15.4$ ), and Brazil ( $n = 174$ ;  $n = 145$  female,  $n = 30$  male;  $M_{age} = 39.8$ ,  $SD_{age} = 12.7$ ).

### Measures

All items were answered on 6-point scales ranging from 1 = “strongly disagree” to 6 = “strongly agree” with a higher value indicating a stronger endorsement of the construct.

### Belief in a Just World

The *Personal Belief in a Just World Scale* captures the belief that people personally get what they deserve. The scale consists of seven items (original German and English version by Dalbert, 1999; sample item: “I believe that I usually get what I deserve”). For this study, Cronbach's alphas were  $\alpha_{TURKEY} = 0.87$ ;  $\alpha_{AUSTRALIA} = 0.83$ ;  $\alpha_{GERMANY} = 0.88$ ;  $\alpha_{RUSSIA} = 0.89$ ;  $\alpha_{USA} = 0.80$ ;  $\alpha_{BRAZIL} = 0.84$ . General BJW was measured with the 6-item *General Belief in a Just World Scale* (original German and English version by Dalbert et al., 1987; sample item: “I think basically the world is a just place”). The personal and general BJW scales used in this study have been previously validated in German (Dalbert, 1999; Dalbert et al., 1987), Russian (Nartova-Bochaver et al., 2018), Portuguese (Thomas & Napolitano, 2017), and Turkish (Göregenli, 2003). For this study, Cronbach's alphas

were  $\alpha_{TURKEY}=0.74$ ;  $\alpha_{AUSTRALIA}=0.77$ ;  $\alpha_{GERMANY}=0.73$ ;  $\alpha_{RUSSIA}=0.80$ ;  $\alpha_{USA}=0.78$ ;  $\alpha_{BRAZIL}=0.72$ .

### Perceived Risk

Perceived risk for COVID-19 was evaluated for the self and others separately. Both, *Perceived risk for self* (sample item: “How much risk do you feel from Covid 19/Coronavirus?”) and *Perceived risk for others* (sample item: “How much risk do you feel others have from Covid 19/Coronavirus?”) were measured with eight items each\*. Four items were taken from the scale of Han et al. (2014), developed to measure perceived risk for the H1N1 virus. Four items were included by the researchers of the present study. All Cronbach’s alphas were acceptable for both Perceived risk for self ( $\alpha_{TURKEY}=0.84$ ;  $\alpha_{AUSTRALIA}=0.87$ ;  $\alpha_{GERMANY}=0.82$ ;  $\alpha_{RUSSIA}=0.80$ ;  $\alpha_{USA}=0.87$ ;  $\alpha_{BRAZIL}=0.84$ ), and Perceived risk for others ( $\alpha_{TURKEY}=0.80$ ;  $\alpha_{AUSTRALIA}=0.87$ ;  $\alpha_{GERMANY}=0.90$ ;  $\alpha_{RUSSIA}=0.88$ ;  $\alpha_{USA}=0.88$ ;  $\alpha_{BRAZIL}=0.74$ ).

### Perceived Control

Perceived control for COVID-19 was measured with eight items<sup>1</sup> (sample item: “If I take care of my personal hygiene (e.g., by washing my hands etc.), Covid 19/Coronavirus will not be transmitted to me”). Items were adapted from Çırakoğlu’s scale (2011) for the H1N1 virus and applied to COVID-19 by the researchers of the present study. For this study, Cronbach’s alphas were  $\alpha_{TURKEY}=0.81$ ;  $\alpha_{AUSTRALIA}=0.75$ ;  $\alpha_{GERMANY}=0.78$ ;  $\alpha_{RUSSIA}=0.72$ ;  $\alpha_{USA}=0.76$ ;  $\alpha_{BRAZIL}=0.76$ .

### Hopelessness

Participants’ positive and negative beliefs about the future were assessed with the *Beck Hopelessness Scale* (English original by Beck et al., 1974) consisting of 20 items (sample item: “The future seems vague and uncertain to me”; Turkish version: Seber et al., 1993; German version: Krampen, 1979; Russian version: Gorbatkov, 2007; Brazilian version: Cunha, 2001). For this study, Cronbach’s alphas were  $\alpha_{TURKEY}=0.91$ ;  $\alpha_{AUSTRALIA}=0.95$ ;  $\alpha_{GERMANY}=0.85$ ;  $\alpha_{RUSSIA}=0.90$ ;  $\alpha_{USA}=0.90$ ;  $\alpha_{BRAZIL}=0.84$ .

### Demographics and Risk Factors

Demographic data on gender and age were collected. In addition, participants were asked to self-identify if they (Risk item 1: “Are you in a risk group [e.g., smoker, old, chronic disease, and so on] for Covid 19/Corona virus?”)

and/or some of their friends/family members (Risk item 2: “Are some of your friends/family members in a risk group [e.g., smoker, old, chronic disease, and so on] for Covid 19/Corona virus?”) are in an at risk group and if they (Risk item 3: “To your knowledge, have you been infected with Covid 19/Corona Virus?”) and/or some of their friends/family members (Risk item 4: “To your knowledge, have some of your friends/family members been infected with Covid 19/Corona Virus?”) have been infected with Covid-19. Participants responded to these questions with “yes” or “no”.

### Procedure

The Board of Ethics at the first author’s university approved the study. The data collection process was conducted online. The sample was obtained by using a snowball technique via personal and professional networks of the authors. The questionnaire was distributed on Facebook and Instagram. Only for Australia, beyond the combination of snowball sampling the data were also collected through the crowd sourcing website Prolific, and respondents were restricted to people who were currently Australian residents. Participants were provided an informed consent before they responded to the scales and they were ensured that their responses would be confidential. Data was collected simultaneously across countries for a specified time frame, between 18<sup>th</sup> of May 2020 and 16<sup>th</sup> of July 2020 (for the infection and death rates see Table S3).

### Statistical Analysis

In order to determine the associations between the variables, while accounting for their shared variance, we employed a correlational analysis and structural equation modelling. The lavaan package (Rosseel, 2012) in R version 4.0.2 was used for this analysis. We regressed hopelessness on BJW (personal and general), perceived COVID-19 specific control, and perceived COVID-19 specific risk (-self and -other). In this regression, we also controlled for the influence of country of residence, gender, age, and the four COVID risk-factors on both hopelessness and the five predictor variables. Controlling for these influences ensured that we accounted for substantive differences in participants’ circumstances across countries. All data, analysis, and survey materials are available here: [https://osf.io/sjqfd/?view\\_only=11ef2658de814ad3a856948ac5c655fd](https://osf.io/sjqfd/?view_only=11ef2658de814ad3a856948ac5c655fd)

### Results

Zero-order correlations between study variables (personal and general BJW, perceived COVID-19 specific control, perceived COVID-19 specific risk-self and -other, and

<sup>1</sup> Items can be found in the supplemental material.

**Table 1** Correlations between all measured variables

	1	2	3	4	5	6	7
1. BJW-P		[0.492, 0.572]	[0.092, 0.201]	[-0.257, -0.150]	[-0.100, 0.011]	[-0.498, -0.410]	[0.033, 0.143]
2. BJW-G	0.535**		[0.148, 0.255]	[-0.140, -0.030]	[-0.184, -0.074]	[-0.362, -0.262]	[-0.005, 0.106]
3. PC	0.147**	0.202**		[-0.226, -0.118]	[-0.094, 0.017]	[-0.238, -0.131]	[-0.169, -0.059]
4. PR-self	-0.204**	-0.085*	-0.172**		[0.463, 0.546]	[0.117, 0.225]	[0.086, 0.194]
5. PR-other	-0.045	-0.129**	-0.039	0.505**		[-0.054, 0.057]	[-0.051, 0.060]
6. BHS	-0.455**	-0.312**	-0.185**	0.171**	0.001		[-0.252, -0.146]
7. Age	0.088*	0.051	-0.115**	0.140**	0.004	-0.200**	

Bottom triangle=zero-order correlation coefficients; top triangle=95% confidence intervals; \*\*= $p < 0.001$ , \*= $p < 0.01$ . BJW-P=personal belief in a just world, BJW-G=general belief in a just world, PC=perceived control scale, PR-self=perceived risk of COVID-19 for the self, PR-other=perceived risk of COVID-19 for others, BHS=Beck's hopelessness scale

hopelessness) were analyzed (see Table 1). The results showed that while both personal and general BJW were positively correlated with perceived COVID-19 specific control, personal BJW was negatively correlated with both perceived COVID-19 specific risk-self and -other. However, General BJW's negative association was significant only for perceived COVID-19 specific risk-other. In addition, both personal and general BJW and COVID-19 specific control were negatively correlated with hopelessness; COVID-19 specific risk-self was positively correlated with hopelessness.

The model (see Table 2) showed that personal and general BJW as well as perceived COVID-19 specific risk-other and perceived COVID-19 specific control negatively predicted hopelessness. Hopelessness further positively related to perceived COVID-19 specific risk-self: The more people perceived COVID-19 specific risk to themselves, the more hopelessness they reported. Comparing the relative size of the beta coefficients, personal BJW had the strongest negative association with hopelessness, followed by general BJW, perceived control, and finally perceived risk-other. This indicates that personal BJW played a leading role in lower hopelessness across countries.

The model also showed that personal BJW was significantly negatively associated with perceived COVID-19 specific risk-self and positively with perceived COVID-19 specific control but not with perceived COVID-19 specific risk-others. General BJW was negatively associated with perceived COVID-19 specific risk-other and positively with perceived COVID-19 specific control, but not with perceived COVID-19 specific risk-self.

Moreover, hopelessness was stronger among people who were younger, male, and indicated that a family member was infected with SARS-CoV-2 in contrast to their counterparts. Personal and general BJW positively related to each other as did both risk-perceptions. Moreover, perceived COVID-19 specific risk-self negatively related to perceived COVID-19

specific control. Specific estimates for the associations with control variables are reported in the supplemental material.

### Additional Analyses: Differences Across Countries

To add further clarity to the results presented here we also engaged in exploratory analysis with these data which are reported in full in the supplementary material. We began by looking at the difference across countries on all measured variables. While variables were similarly distributed across countries, there was a significant difference between countries on personal BJW, perceived risk-self, and perceived risk-other. But no statistically significant difference between countries on general BJW, perceived control, or hopelessness. Turkey reported lower scores on personal BJW than all other countries. Germany scored significantly lower on perceived risk-self than all other countries except Australia, and Brazil and Turkey scored significantly higher than all other countries. Finally, Brazil scored significantly higher on perceived risk-other than all other countries and Russia scored significantly lower than all other countries (see Table S1 and Figure S1).

Second, we estimated the impact the infection rate and death rate of each country might exert on hopelessness. Our analysis indicated that these country-level variables did not significantly influence the individual-level variables considered in this study (see Tables S3 and S4). Finally, we ran the model outlined in Table 2 individually with the samples from each country. This fine grain analysis indicated that the regression coefficients were generally similar across countries suggesting that the overall model provides a generalizable estimation of the associations between these variables to the samples of each country (see Tables S7 to S12). Taken together, these supplementary analyses indicate that the findings of our central model are broadly applicable across countries.

**Table 2** Model estimates for the associations between BJW, risk perceptions, perceived control, and hopelessness

	$\beta$	<i>b</i>	<i>SE</i>	<i>p</i> -value	CI <sub>95%</sub>	<i>R</i> <sup>2</sup>
Path estimates						
BHS regressed on						
BJW-P	-0.296	-0.238	0.033	0.000	-0.361, -0.232	
BJW-G	-0.136	-0.118	0.028	0.000	-0.191, -0.081	
PC	-0.128	-0.124	0.027	0.000	-0.180, -0.076	
PR-self	0.188	0.160	0.030	0.000	0.130, 0.247	
PR-other	-0.070	-0.065	0.028	0.012	-0.125, -0.015	
Correlations						
BJW-P with						
BJW-G	0.534	0.462	0.022	0.000	0.490, 0.578	
PC	0.171	0.136	0.030	0.000	0.112, 0.230	
PR-self	-0.109	-0.090	0.030	0.000	-0.167, -0.050	
PR-other	-0.028	-0.022	0.030	0.365	-0.087, 0.032	
BJW-G with						
PC	0.191	0.151	0.029	0.000	0.134, 0.247	
PR-self	-0.030	-0.025	0.030	0.321	-0.089, 0.029	
PR-other	-0.078	-0.062	0.030	0.010	-0.138, -0.019	
PC with						
PR-self	-0.155	-0.118	0.030	0.000	-0.213, -0.097	
PR-other	-0.010	-0.007	0.028	0.732	-0.065, 0.046	
PR-self with						
PR-other	0.495	0.376	0.022	0.000	0.453, 0.538	
Residual variances						
BJW-P	0.788	0.870	0.021	0.000	0.746, 0.830	0.212
BJW-G	0.913	0.861	0.015	0.000	0.883, 0.943	0.087
PC	0.966	0.724	0.010	0.000	0.946, 0.986	0.034
PR-self	0.804	0.795	0.020	0.000	0.764, 0.843	0.196
PR-other	0.874	0.726	0.017	0.000	0.841, 0.907	0.126
BHS	0.638	0.454	0.025	0.000	0.589, 0.687	0.362
Control variables						
BHS regressed on						
Russia*	-0.017	-0.036	0.034	0.609	-0.084, 0.049	
Australia	0.101	0.228	0.033	0.002	0.037, 0.165	
Brazil	-0.145	-0.354	0.028	0.000	-0.199, -0.091	
Turkey	-0.006	-0.013	0.037	0.871	-0.078, 0.066	
USA	-0.120	-0.274	0.030	0.000	-0.179, -0.061	
Gender†	0.130	0.252	0.024	0.000	0.084, 0.176	
Age	-0.153	-0.008	0.029	0.000	-0.214, -0.091	
Risk 1‡	-0.047	-0.086	0.026	0.068	-0.097, -0.004	
Risk 2‡	0.027	0.063	0.025	0.267	-0.021, 0.075	
Risk 3‡	-0.001	-0.005	0.026	0.974	-0.052, 0.051	
Risk 4‡	0.092	0.208	0.023	0.000	0.047, 0.138	

\*=German sample acts as the comparison sample for all country comparisons. †=The reference group is *female*. ‡=The reference group is *Yes*. BJW-P=personal belief in a just world, BJW-G=general belief in a just world, PC=perceived COVID-19 specific control, PR-self=perceived risk of COVID-19 for the self, PR-other=perceived risk of COVID-19 for others, BHS=Beck’s hopelessness scale. Risk 1=Are you in a risk group for COVID-19?, Risk 2=Are some of your friends/family members in a risk group for COVID-19?, Risk 3=Have you been infected with COVID-19?, Risk 4=Have friends/family members been infected with COVID-19?. Participants provided binary (yes/no) responses to the risk questions

## Discussion

The present study aimed to investigate if BJW is associated with adaptive outcomes for individuals during the early days of the COVID-19 pandemic. The results revealed that the more the participants endorsed personal BJW, and the more likely they perceived control over COVID-19, the less likely they perceived personal risk from COVID-19 and the less hopeless they felt. On the other hand, general BJW might prevent participants from perceiving risk for others, but it was unrelated to risk perception for the self. However, the more the participants endorsed general BJW, the more likely they perceived control over COVID-19 and the less likely they were to report hopelessness.

Overall, the results confirm that BJW can help people cope with uncertainties and experiences (Dalbert, 2001), such as the COVID-19 pandemic (Nudelman et al., 2021). BJW provides individuals with a sense of control over their life and enables them to feel confident that they will be safe from external risks (e.g., Nudelman, et al., 2016). Further, BJW contributes to having a positive outlook on the future (e.g., Kiral Ucar et al., 2019; Sutton & Winnard, 2007). In the present study, both general and personal BJW were associated with decreased hopelessness and increased control perception, but only personal BJW served a function for the risk perception for the self. Even though the coefficients were not tested to see if they significantly differed from each other, the magnitude of personal BJW was stronger than all others. That is, it seems that personal BJW was the most important predictor measured in this study, emphasizing that it might function as an especially crucial psychological resource helping individuals cope with the pandemic.

Hopelessness is approached as one implication of negative expectations about the future (Beck et al., 1974) and has been associated with future derogation of positive mental state (e.g., Alford et al., 1995). Recent studies (e.g., Yıldırım & Arslan, 2020) support this perspective by showing that being hopeful for the future is crucial to maintaining well-being in the time of the COVID-19 pandemic. Moreover, studies indicate that perceived COVID-19 specific risk (e.g., Malesza & Kaczmarek, 2021) and perceived control (e.g., Zheng et al., 2020) are among the factors affecting individuals' coping. Risk perception is being observed as negatively associated with a positive outlook on the future (e.g., Yıldırım & Güler, 2021), similarly, losing control also might be detrimental for future expectations (e.g., Godinic et al., 2020). Our results support the idea that strongly believing in a just world, in which one is treated justly in particular, can serve as a personal resource in the pandemic, that is strong BJW was observed being associated with higher levels of a sense of control and lower levels of the perception of external threats. Moreover, it seems to have a similar pattern

across multiple countries. Further, in our study how at-risk participants perceived themselves to be for COVID-19 positively predicted hopelessness, but how risky participants perceived the disease to be for others negatively predicted hopelessness. These results could be interpreted as a similar pattern to the differences we see in the BJW self/other paradox. In BJW research, a lower BJW-self is sometimes a predictor of lower well-being, while a lower BJW-others is typically not associated with worse personal outcomes (Bartholomaeus & Strelan, 2019; Dalbert, 1999). Seeing the risk for others potentially allows for more hope because it provides the necessary social distancing from the threat. However, to evaluate this interpretation thoroughly, more studies are needed.

Participants from Australia reported the highest level of hopelessness, followed by participants from Germany, Turkey, Russia, USA, and Brazil. These differences in hopelessness across various countries partly reflect findings of other studies in which people from the USA had the lowest levels of hopelessness compared to people from, for instance, Japan, Australia, and other Asian or European countries (Hirsch et al., 2012; Lamis et al., 2014; Lester, 2013), whereas people from Ghana had an even lower level of hopelessness (Eshun, 1999). Furthermore, some of these studies indicate that hopelessness might also impact people's mental health differentially as its relations to depression and suicidal behavior varied (Hirsch et al., 2012; Lamis et al., 2014). However, from the perspective of this study, these differences do not reflect a systematic pattern regarding economic (e.g., Gross Domestic Product, GDP) or cultural differences (e.g., cultural mindset: individualism vs. collectivism), neither in this study nor in past studies.

The relations of hopelessness with demographics during the pandemic seem mixed. While there are studies observing hopelessness was significantly higher than males among females (e.g., Hacimusalar et al., 2020) there are also studies that it was significantly higher than females among males (e.g., Kaplan Serin & Doğan, 2021). Considering the age, in some studies, hopelessness was observed to be stronger among younger participants (Zuo et al., 2021), however, studies can be found observing also that hopelessness significantly increased as the age increased (e.g. Gamsızkan et al., 2021). In the present study, hopelessness was found to be stronger among the participants who were younger and male. Considering the risk factors, effect sizes were small and risk factors appeared to be relatively unimportant predictors of hopelessness when accounting for all our other variables.

This study is not without limitations. Data are cross-sectional, meaning that no causal conclusion can be drawn. To define the causal direction, longitudinal or experimental studies are needed. It should be noted that our sample was

largely female (female = 75%), that is, the adaptive implications of a strong BJW and higher perceived control and the detrimental implications of higher perceived risk for hopelessness during the pandemic would be applicable for females. Studies with even samples are needed to generalize our results.

Although the correlations have been found in the expected direction, as seen in Table 1 the correlational associations are not very large. Subsequently, this study did not test mediation effects of perceived COVID-19 specific control and risk on the relation between BJW and hopelessness although such mediation might be plausible from a theoretical or even empirical perspective (e.g., Kiral Ucar et al., 2019). This study did not test for mediation because “cross-sectional data implicitly undermines [sic] an assumption of the statistical mediation model” (Fairchild & McDaniel, 2017, p. 1265) and “cross-sectional examination of mediation will typically generate biased estimates” (Maxwell & Cole, 2007, p. 39). Future studies should consider investigating mediation effects in a longitudinal design.

Furthermore, this study controlled for the concrete risk factor of age, which makes individuals more vulnerable to COVID-19. In addition to reporting their age as a continuous variable, participants also could check themselves as being in a higher risk group (being of old age). The latter variable served as a risk-group self-categorization of participants which contained several indicators such as smoking, chronic diseases, or “being of old age.” This categorization represents a more subjective measurement of risk than the question about age itself. It is likely that these variables (age and risk item 1) are partly confounded.

Additionally, this study aimed to examine if BJW has adaptive outcomes for individuals in general in these extreme times. Future studies should also examine how BJW functions for high-risk groups in particular and for those who have a weak uncertainty tolerance (e.g., Nudelman et al., 2016). Unfortunately, BJW is not always adaptive, a reduction of risk perception may lead to risky health behaviors (e.g., Hafer et al., 2001) which may be of vital importance in terms of being infected. Future studies should also examine its relation to COVID-19 specific health behaviors.

In conclusion, as shown in our study, BJW seems to provide people with benefits such as higher hope. This is in line with the trust function of BJW (e.g., Dalbert, 2001) in which people trust in the justice of their own fate. This trust is adaptive because it strengthens people’s confidence that they will not become victims of unexpected, adverse circumstances; it also enables them to treat stressful situations as challenging instead of threatening (e.g., Tomaka & Blascovich, 1994) and maintain their mental health and well-being (e.g., Otto et al., 2006). Without a doubt, the greatest strength of the present study is the cross-validation of the hypothesis that BJW functions adaptively not only

for everyday life, but also during a pandemic and beyond national boundaries. Furthermore, this study contributes to the BJW literature by considering both BJW dimensions which is not typical in most studies.

**Supplementary Information** The online version contains supplementary material available at <https://doi.org/10.1007/s12144-022-03172-1>.

**Acknowledgements** We would like to thank Gamze Özdemir Planalı for helping us to collect the data.

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Gözde KIRAL UCAR: Conceptualization, Project administration, Resources, Methodology, Investigation (The Turkish sample), Writing—Original draft preparation, Reviewing and Editing

Matthias DONAT: Conceptualization, Resources, Methodology, Investigation (The German sample), Writing—Reviewing and Editing

Jonathan BARTHOLOMAEUS: Investigation (The Australian sample), Methodology, Formal analysis, Reviewing and Editing

Kendra THOMAS: Investigation (The Brazilian and USA samples), Reviewing and Editing.

Sofya NARTOVA-BOCHAVER: Investigation (The Russian sample), Reviewing and Editing

**Data Availability** The data that support the findings of this study are available from the corresponding author upon reasonable request.

**Code Availability (Software Application or Custom Code)** Not applicable.

## Declarations

**Ethical Approval** All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

**Consent to Participate (Include Appropriate Statements)** Informed consent was obtained from all individual participants included in the study.

**Consent for Publication (Include Appropriate Statements)** Informed consent was obtained from all individual participants included in the study.

**Conflict of Interest** Author Gözde Kiral Ucar declares that she has no conflict of interest. Author Matthias Donat declares that he has no conflict of interest. Author Jonathan Bartholomaeus declares that he has no conflict of interest. Author Kendra Thomas declares that she has no conflict of interest. Author Sofya Nartova-Bochaver declares that she has no conflict of interest.

## References

- Alford, B. A., Lester, J. M., Patel, R. J., Buchanan, J. P., & Giunta, L. C. (1995). Hopelessness predicts future depressive symptoms: A prospective analysis of cognitive vulnerability and cognitive content specificity. *Journal of Clinical Psychology, 51*, 331–339.



- Bartholomaeus, J., & Strelan, P. (2019). The adaptive, approach-oriented correlates of belief in a just world for the self: A review of the research. *Personality and Individual Differences, 151*, 109485. <https://doi.org/10.1016/j.paid.2019.06.028>
- Beck, A. T., Weissman, A., Lester, D., & Trexler, L. (1974). The measurement of pessimism: The hopelessness scale. *Journal of Consulting and Clinical Psychology, 42*, 861–865.
- Bègue, L. (2002). Beliefs in justice and faith in people: Just world, religiosity and interpersonal trust. *Personality and Individual Differences, 32*(3), 375–382.
- Christandl, F. (2013). The belief in a just world as a personal resource in the context of inflation and financial crises. *Applied Psychology, 62*(3), 486–518.
- Çırakoğlu, O. C. (2011). Domuz gribi (H1N1) salgınıyla ilişkili algıların, kaygı ve kaçınma düzeyi değişkenleri bağlamında incelenmesi (The investigation of swine influenza (H1N1) pandemic related perceptions in terms of anxiety and avoidance Variables). *Türk Psikoloji Dergisi, 26*(67), 49–64.
- Correia, I., & Dalbert, C. (2007). Belief in a just world, justice concerns, and well-being at Portuguese schools. *European Journal of Psychology of Education, 22*, 421.
- Cunha, J. A. (2001). *Manual da versão em português das Escalas Beck (Manual of the Portuguese version of the Beck Scales)*. Casa do Psicólogo.
- Dalbert, C. (1999). The world is more just for me than generally: About the personal belief in a just world scale's validity. *Social Justice Research, 12*(2), 79–98.
- Dalbert, C. (2001). *The justice motive as a personal resource: Dealing with challenges and critical life events*. Kluwer Academic/Plenum Publishers.
- Dalbert, C., & Donat, M. (2015). Belief in a just world. In J. D. Wright (Ed.), *International encyclopedia of the social & behavioral sciences* (2nd ed., pp. 487–492). Elsevier.
- Dalbert, C., Montada, L., & Schmitt, M. (1987). Glaube an eine gerechte Welt als Motiv: Validierungskorrelate zweier Skalen [Belief in a just world: Validation correlates of two scales]. *Psychologische Beiträge, 29*(4), 596–615.
- Donat, M., Peter, F., Dalbert, C., & Kamble, S. V. (2016). The meaning of students' personal belief in a just world for positive and negative aspects of school-specific well-being. *Social Justice Research, 29*(1), 73–102.
- Dzuka, J., & Dalbert, C. (2006). The belief in a just world and subjective well-being in old age. *Aging and Mental Health, 10*(5), 439–444.
- Dzuka, J., & Dalbert, C. (2007). Student violence against teachers: Teachers' well-being and the belief in a just world. *European Psychologist, 12*, 253–260.
- Eshun, S. (1999). Cultural variations in hopelessness, optimism, and suicidal ideation: A study of Ghana and US college samples. *Cross-Cultural Research, 33*(3), 227–238.
- Fairchild, A. J., & McDaniel, H. L. (2017). Best (but oft-forgotten) practices: Mediation analysis. *American Journal of Clinical Nutrition, 105*(6), 1259–1271.
- Fischer, A. R., & Bolten Holz, K. B. (2010). Testing a model of women's personal sense of justice, control, well-being, and distress in the context of sexist discrimination. *Psychology of Women Quarterly, 34*(3), 297–310.
- Gallagher, M. W., Bentley, K. H., & Barlow, D. H. (2014). Perceived control and vulnerability to anxiety disorders: A meta-analytic review. *Cognitive Therapy and Research, 38*(6), 571–584.
- Gamsızkan, Z., Sungur, M. A., & Erdemir, G. (2021). How do older age, gender and risk groups affect protective behaviours and mental health in the COVID-19 pandemic? *International Journal of Clinical Practice, 75*(6), e14150. <https://doi.org/10.1111/ijcp.14150>
- Godinic, D., Obrenovic, B., & Khudaykulov, A. (2020). Effects of economic uncertainty on mental health in the COVID-19 pandemic context: Social identity disturbance, job uncertainty and psychological well-being model. *International Journal of Innovation and Economic Development, 6*, 61–74.
- Gorbatkov, A. A. (2007). SHkala nadezhdy-beznadezhnosti: Dimensional'naya struktura i ee determinanty [The hope-hopelessness scale: A dimensional structure and its determinants]. *Rossijskij psihologicheskij zhurnal, 4*(2), 26–34.
- Göregenli, M. (2003). Şiddet, kötü muamele ve işkenceye ilişkin değerlendirmeler, tutumlar ve deneyimler (Assessments, attitudes, and experiences related to violence, maltreatment, and torture). *İşkencenin önlenmesinde hukukçuların rolü projesi raporu*. İzmir, Turkey: İzmir Barosu Avrupa Komisyonu.
- Hacimusalar, Y., Kahve, A. C., Yasar, A. B., & Aydin, M. S. (2020). Anxiety and hopelessness levels in COVID-19 pandemic: A comparative study of healthcare professionals and other community sample in Turkey. *Journal of Psychiatric Research, 129*, 181–188.
- Hafer, C. L. (2000). Investment in long-term goals and commitment to just means drive the need to believe in a just world. *Personality and Social Psychology Bulletin, 26*, 1059–1073.
- Hafer, C. L., Bogaert, A. F., & McMullen, S. L. (2001). Belief in a just world and condom use in a sample of gay and bisexual Men. *Journal of Applied Social Psychology, 31*(9), 1892–1910.
- Hafer, C. L., Busseri, M. A., Rubel, A. N., Drolet, C. E., & Cherrington, J. N. (2020). A latent factor approach to belief in a just world and its association with well-being. *Social Justice Research, 33*(1), 1–17.
- Han, G., Zhang, J., Chu, K., & Shen, G. (2014). Self–other differences in H1N1 flu risk perception in a global context: A comparative study between the United States and China. *Health Communication, 29*(2), 109–123.
- Hirsch, J. K., Visser, P. L., Chang, E. C., & Jeglic, E. L. (2012). Race and ethnic differences in hope and hopelessness as moderators of the association between depressive symptoms and suicidal behavior. *Journal of American College Health, 60*(2), 115–125.
- Kaplan Serin, E., & Doğan, R. (2021). The relationship between anxiety and hopelessness levels among nursing students during the COVID-19 pandemic and related factors. *OMEGA - Journal of Death and Dying*. <https://doi.org/10.1177/00302228211029144>
- Khera, M. L., Harvey, A. J., & Callan, M. J. (2014). Beliefs in a just world, subjective well-being and attitudes towards refugees among refugee workers. *Social Justice Research, 27*(4), 432–443.
- Kiral Ucar, G., & Dalbert, C. (2020). The longitudinal associations between personal belief in a just world and teacher justice among advantaged and disadvantaged school students. *International Journal of Psychology, 55*(2), 192–200.
- Kiral Ucar, G., Hasta, D., & Malatyali, M. K. (2019). The mediating role of perceived control and hopelessness in the relation between personal belief in a just world and life satisfaction. *Personality and Individual Differences, 143*, 68–73.
- Krampen, G. (1979). Hoffnungslosigkeit bei stationären Patienten— Ihre Messung durch einen Kurzfragebogen (H-Skala) [Hopelessness among in-patients—measurement through a short scale (H-Scale)]. *Medizinische Psychologie, 5*, 39–49.
- Lambert, A. J., Burroughs, T., & Nguyen, T. (1999). Perceptions of risk and the buffering hypothesis: The role of just world beliefs and right-wing authoritarianism. *Personality and Social Psychology Bulletin, 25*(6), 643–656.
- Lamis, D. A., Saito, M., Osman, A., Klibert, J., Malone, P. S., & Langhinrichsen-Rohling, J. (2014). Hopelessness and suicide proneness in US and Japanese college students: Depressive symptoms as a potential mediator. *Journal of Cross-Cultural Psychology, 45*(5), 805–820.

- Lerner, M. J. (1980). *The belief in a just world: A fundamental delusion*. Plenum Press.
- Lester, D. (2013). Hopelessness in undergraduate students around the world: A review. *Journal of Affective Disorders, 150*(3), 1204–1208.
- Lipkus, I. M., Dalbert, C., & Siegler, I. C. (1996). The importance of distinguishing the belief in a just world for self versus for others: Implications for psychological wellbeing. *Personality and Social Psychology Bulletin, 22*, 666–677.
- Malesza, M., & Kaczmarek, M. C. (2021). Predictors of anxiety during the COVID-19 pandemic in Poland. *Personality and Individual Differences, 170*, 110419. <https://doi.org/10.1016/j.paid.2020.110419>
- Maxwell, S. E., & Cole, D. A. (2007). Bias in cross-sectional analyses of longitudinal mediation. *Psychological Methods, 12*(1), 23–44.
- Münscher, S., Donat, M., & Kiral Ucar, G. (2020). Students' personal belief in a just world, well-being, and academic cheating: A cross-national study. *Social Justice Research, 33*(4), 428–453.
- Nartova-Bochaver, S., Donat, M., Astanina, N., & Rüprich, C. (2018). Russian adaptations of general and personal belief in a just world scales: Validation and psychometric properties. *Social Justice Research, 31*(1), 61–84.
- Nudelman, G., Otto, K., & Dalbert, C. (2016). Can belief in a just world buffer mood and career prospects of people in need of risk protection? First experimental evidence. *Risk Analysis, 36*(12), 2247–2257.
- Nudelman, G., Kamble, S. V., & Otto, K. (2021). Can personality traits predict depression during the COVID-19 Pandemic? *Social Justice Research, 34*, 218–234.
- Otto, K., Boos, A., Dalbert, C., Schöps, D., & Hoyer, J. (2006). Post-traumatic symptoms, depression, and anxiety of flood victims: The impact of the belief in a just world. *Personality and Individual Differences, 40*, 1075–1084.
- Otto, K., Glaser, D., & Dalbert, C. (2009). Mental health, occupational trust, and quality of working life: Does belief in a just world matter? *Journal of Applied Social Psychology, 39*(6), 1288–1315.
- Rosseel, Y. (2012). lavaan: An R package for structural equation modeling. *Journal of Statistical Software, 48*(2), 1–36. <https://www.jstatsoft.org/v48/i02/>. Accessed 14 July 2021
- Seber, G., Dilbaz, N., Kaptanoğlu, C., & Tekin, D. (1993). Umutsuzluk ölçeği: Geçerlilik ve güvenilirliği (The hopelessness scale: Its validity and reliability). *Kriz Dergisi, 1*, 139–142.
- Şeker, B. D. (2016). Evaluation of life satisfaction after the 2011 Van (Turkey) earthquake. *Social Behavior and Personality, 44*(9), 1409–1417.
- Sutton, R. M., & Winnard, E. J. (2007). Looking ahead through lenses of justice: The relevance of just-world beliefs to intentions and confidence in the future. *British Journal of Social Psychology, 46*(3), 649–666.
- Thomas, K. J., & Mucherah, W. M. (2018). Constructing lenses of justice: Relationships between Brazilian adolescents' just world beliefs, perceived school fairness, legal authorities and student conduct. *Social Justice Research, 31*(1), 41–60.
- Thomas, K. J., & Napolitano, P. (2017). Educational privilege: The role of school context in the development of just world beliefs. *International Journal of Psychology, 52*(S1), 106–113.
- Thomas, K. J., Cunha, J., Américo de Souza, D., & Santo, J. (2019). Fairness, trust, and school climate as foundational to growth mindset: A study among Brazilian children and adolescents. *Educational Psychology, 39*(4), 510–529.
- Tomaka, J., & Blascovich, J. (1994). Effects of justice beliefs on cognitive appraisal of and subjective physiological, and behavioral responses to potential stress. *Journal of Personality and Social Psychology, 67*(4), 732.
- Walsh, F. (2020). Loss and resilience in the time of COVID-19: Meaning making, hope, and transcendence. *Family Process, 59*(3), 898–911.
- World Health Organization. (2020). *COVID-19 weekly epidemiological update, 22 December 2020* (pp. 1–2). <https://apps.who.int/iris/bitstream/handle/10665/334168/nCoV-weekly-sitrep23Aug20-eng.pdf>
- Xie, X., Liu, H., & Gan, Y. (2011). Belief in a just world when encountering the 5/12 Wenchuan earthquake. *Environment and Behavior, 43*(4), 566–586.
- Yıldırım, M., & Arslan, G. (2020). Exploring the associations between resilience, dispositional hope, preventive behaviours, subjective well-being, and psychological health among adults during early stage of COVID-19. *Current Psychology*. <https://doi.org/10.1007/s12144-020-01177-2>
- Yıldırım, M., & Güler, A. (2021). Positivity explains how COVID-19 perceived risk increases death distress and reduces happiness. *Personality and Individual Differences, 168*, 110347. <https://doi.org/10.1016/j.paid.2020.110347>
- Zheng, L., Miao, M., & Gan, Y. (2020). Perceived control buffers the effects of the COVID-19 pandemic on general health and life satisfaction: The mediating role of psychological distance. *Applied Psychology: Health and Well-Being, 12*(4), 1095–1114.
- Zuo, B., Yang, K., Yao, Y., Han, S., Nie, S., & Wen, F. (2021). The relationship of perceived social support to feelings of hopelessness under COVID-19 pandemic: The effects of epidemic risk and meaning in life. *Personality and Individual Differences, 183*, 111110. <https://doi.org/10.1016/j.paid.2021.111110>

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