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RESEARCH

Different Types of Religiosity and Lay Intuitions About Free Will/Determinism in Turkey

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ABSTRACT

Religiosity has been found to be positively associated with belief in free will (FW) in the Western world. In the Muslim world, however, religiosity exhibits several characteristics that set it apart from the Western world, including an overemphasis on fate or divine predestination. We, therefore, investigated FW/determinism beliefs and different types of religiosity and conservatism in two samples in Turkey, a predominantly Muslim country (N = 1,690). In Study 1, a confirmatory factor analysis showed that FAD-Plus provided good fit to the data. Study 2 revealed that FW belief is not related to any of the religiosity measures (intrinsic, extrinsic, quest), whereas fatalistic determinism is consistently related to religiosity. The unique predictor of free will turned out to be belief in a just world. Overall, these findings indicate that FW belief is not inherently related to religiosity in Turkey, whereas fatalistic determinism is central to Turkish people's belief systems.

The idea of free will implies that we are responsible for our choices. The idea of determinism, on the other hand, implies that human choices are entirely predetermined by physical (environmental and neural) events or fate and is prima facie inconsistent with the idea of free will and moral responsibility. Although these concepts are discussed in a wide variety of ways in philosophy, there are two basic claims about the relation of free will and determinism. Incompatibilism argues that determinism renders free will impossible and that accepting one leads to the rejection of the other, whereas compatibilism argues that there is no such necessity and that both free will and determinism may exist at the same time. Although the philosophical literature is concerned with attempts to justify these claims at the analytical level (see Kane, 2005), these concepts are studied empirically in the psychological literature: Free will and determinism beliefs of the nonphilosopher layperson are measured, and individual differences in these beliefs are examined and, in this way, whether they are compatibilist or incompatibilist is examined. For instance, some of the earlier studies showed that laypeople believe that one can be both free and morally responsible in a (hypothetical) deterministic universe (Nahmias, Morris, Nadelhoffer, & Turner, 2005, 2006; see also Cokely & Feltz, 2009; Feltz & Cokely, 2009; Feltz & Perez, 2012; Nichols, 2006; Nichols & Knobe, 2007; Weigel, 2011). In this context, a positive relationship between people's free will and determinism beliefs may be based on lay compatibilism. Several previous psychological studies indicate that the majority of Christian university students and Amazon Mechanical Turk participants are close to compatibilism (Carey & Paulhus, 2013).

In the present study, we examine this relationship in a country that has a majority of Muslims (see also Alper & Sümer, 2017). The Muslim world has witnessed similar debates between the proponents of human freedom and the proponents of determinism or predestination. In Medieval Islam, the theological school called the Mu'tazilites defended free will (*ikhtiyar*) to preserve the

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possibility of human responsibility, whereas the Ash'arites emphasized God's absolute power and divine predestination (*qada* and *qadar*; De Cillis, 2013). In time, however, the Ash'arite view came to dominate the scene, and today in the Muslim world, fate and predestination views are more commonly embraced than in the Western world (Pew Research Center, 2012; Pipes, 2015). For this reason, it might be expected that religiosity and the sense of free will and personal responsibility will be somewhat differently related in a predominantly Muslim culture.

Investigating these associations not only is theoretically important but also has practical significance as the lay notion of free will/determinism seems to influence the daily behaviors of laypeople. Persuading people of the existence or nonexistence of free will has been shown to influence their behavior and attitudes. For example, reading a text claiming that free will is an illusion leads to increased cheating (Vohs & Schooler, 2008), more aggression and less helping behavior (Baumeister, Masicampo, & DeWall, 2009), a decrease in perceived meaningfulness of life (Crescioni, Baumeister, Ainsworth, Ent, & Lambert, 2016), and an increase in conformity (Alquist, Ainsworth, & Baumeister, 2013; see also Alquist, Ainsworth, Baumeister, Daly, & Stillman, 2015; Boudesseul, Lantian, Cova, & Bègue, 2016; Feldman, Chandrashekar, & Wong, 2016; Li, Wang, Zhao, Kong, & Li, 2016; Moynihan, Igou, & Van Tilburg, 2017; Shariff et al., 2014; Seto & Hicks, 2016; Stillman, Baumeister, & Mele, 2011). These findings suggest that belief in free will enables a social life by suppressing selfish and antisocial motives and point to the importance of understanding these lay beliefs for the society's benefit.

One frequently used instrument to measure free will beliefs is the FAD-Plus developed by Paulhus and Carey (2011). It is composed of four factors: free will, scientific determinism, fatalistic determinism, and unpredictability. It was shown that free will beliefs are positively correlated with Extraversion and Agreeableness from the Big Five personality traits and with internal locus of control (Paulhus & Carey, 2011). Carey and Paulhus (2013) further investigated the relation between free will–determinism beliefs and conservative attitudes and religiosity. Some earlier findings indicate that conservatives are more prone to the internal attribution error (e.g., Crandall, 1994; Zucker & Weiner, 1993). Because having free will is traditionally supposed to be a precondition for holding people morally responsible for their actions (McKenna & Peerboom, 2016), the adherence of American conservatives to the ethics of personal accountability (Feather, 1985) has led to the prediction that they will believe in free will as well. However, this might differ for Turkish conservatives, who are probably more enmeshed with collectivistic values compared to their American counterparts (Kagitcibasi & Ataca, 2005).

Another variable highly related to American conservatism is religiosity (Brint & Abrutyn, 2010; Malka, Lelkes, Srivastava, Cohen, & Miller, 2012). As both free will and fatalistic determinism are commonly found in Christianity (Myers, 2008; Myers & Jeeves, 2002), it is predicted that these two will be related to religiosity. Consistent with their predictions, Carey and Paulhus (2013) demonstrated that belief in free will was positively associated with politically conservative attitudes and religiosity. To the best of our knowledge, this association has not been further examined and has not been replicated in a non-Western sample. Although traditional Islam has also emphasized the existence of both free will and determinism (Watt, 1948), conservatism in Islam might not emphasize personal responsibility as in Protestant ethics (see Huff & Schluchter, 1999), and belief in fatalistic determinism might be more prevalent in Islamic cultures than personal freedom (Watt, 1948; see also Pew Research Center, 2012; Pipes, 2015). In addition, Martin, Rigoni, and Vohs (2017) recently demonstrated that the association between free will and some morally relevant behaviors was moderated by some country-level features such as the level of corruption. Because there is variation in such country-level features, it is plausible to expect a different pattern in Turkey from that of Western countries.

Thus, the contribution of the present research is twofold. In the first study, we applied a confirmatory factor analysis to FAD-Plus in a predominantly Muslim country in order to validate the scale in Turkish. We also investigated the relation between these beliefs and a one-item religiosity measure. In the second study, we examined the relation of the scale with intrinsic, extrinsic, and quest religiosity and with belief in a just world.

Study 1

Method

Participants

One thousand sixty subjects participated in this study. Most of the data came from Dogus University (Istanbul) undergraduate students who participated in this study for extra course credit. Nonstudent adult participants were reached via research assistants who randomly contacted them in the streets of Istanbul. The participants completed the surveys at their own pace and returned them in a maximum of 30 min. The participants' ages ranged from 18 to 63 (M = 22.58, SD = 5.35), and 53.7% of the participants were female. The majority identified themselves as Muslim (Sunni, n = 706; Alawite, n = 30). Of the remaining participants, 87 were atheists, 164 believed in god but were not affiliated with a religion, 59 reported affiliation with a religion other than Islam, and 14 did not respond.

Materials and procedure

The Free Will and Determinism Scale (FAD-Plus; see the appendix for the Turkish version), developed by Paulhus and Carey (2011), is composed of four subscales: Free Will ("People have complete control over the decisions they make"; original Cronbach's α = .70; this study = .75), Scientific Determinism ("People's biological makeup determines their talents and personality"; original Cronbach's α = .69; this study = .63), Fatalistic Determinism ("I believe that the future has already been determined by fate"; original Cronbach's α = .82; this study = .83), and Unpredictability ("Chance events seem to be the major cause of human history"; original Cronbach's α = .72; this study = .74). FAD-Plus is composed of 27 items on a 5-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*). The original fit indexes are satisfactory although not perfect, $\chi^2(317) = 506.17$, $p < .001$, root mean square error of approximation (RMSEA) = .06, 90% confidence interval (CI) [.05, .07], comparative fit index (CFI) = .82.

In addition to the FAD-Plus scale, the participants were given a standard demographic form including gender, age, and one-item religiosity question from 1 (*not at all religious*) to 7 (*highly religious*). All materials were given in paper-and-pencil forms in stable order.

Results and discussion

As the first step in our analyses, we constructed and tested a confirmatory factor analysis model of four latent factors with 27 measured indicator variables. Results revealed poor fit to the data, $\chi^2(318, N = 1{,}053) = 1922.72$, $p < .001$, RMSEA = .07, 90% CI [.06, .08], CFI = .77, Akaike information criterion = 82287.85, standardized root mean square residual = .07. Modification indices suggested that the model would improve if we allowed a subset of error variances to be correlated, and specifically for within-factor items (see Figure 1). The revised model showed good fit to the data, $\chi^2(305, N = 1{,}053) = 1037.14$, $p < .001$, RMSEA = .05, 90% CI [.04, .06], CFI = .90, Akaike information criterion = 81428.27,

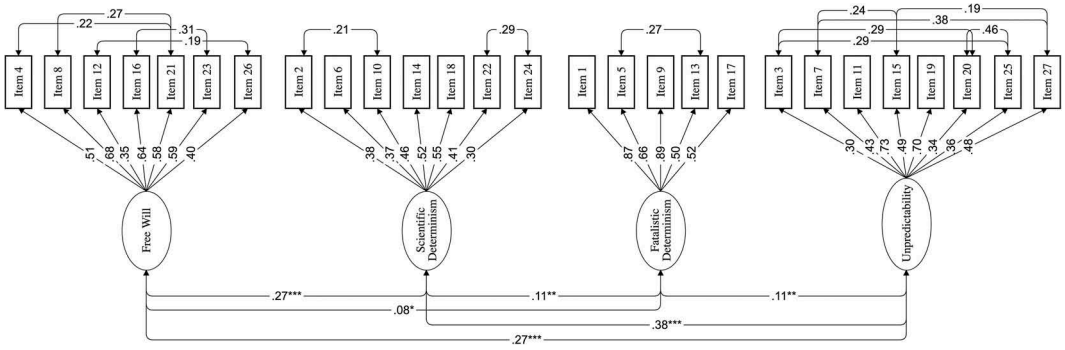

Figure 1. Confirmatory factor analysis results for FAD scale. *Note*. **$p < .01$. ***$p < .001$.

standardized root mean square residual = .06. As depicted in Figure 1, all items had significant loadings on the relevant factor. Also, the structural correlation coefficients between latent variables revealed that all associations were positive and significant (see Figure 1).

To assess the divergent validity of the Turkish version of the FAD-Plus, we examined if FAD-Plus factors significantly differ from one another in terms of different religious affiliations (i.e., atheist, theist without any organized religion, Muslim, and other). One-way analysis of variance (ANOVA) results showed significant group differences for free will, $F(4, 1038) = 5.37$, $p < .001$; scientific determinism, $F(4, 1038) = 2.66$, $p < .05$; and fatalistic determinism, $F(4, 1038) = 123.91$, $p < .001$, but not for the unpredictability dimension of FAD-Plus, $F(4, 1038) = 1.78$, *ns*. Specifically, participants who defined themselves as atheist reported lower levels of free will ($M = 3.13$, $SD = 0.96$) compared to their counterparts who defined themselves as Muslim ($M_{\text{Sunni}} = 3.43$, $SD = 0.66$), 95% CIs [−.55, −.06]; ($M_{\text{Alawi}} = 3.41$, $SD = 0.67$), 95% CIs [−.75, −.11], and to those who identified themselves as theists without any organized religion ($M = 3.34$, $SD = 0.72$), 95% CIs [−.39, −.04]. Participants who identified themselves as atheist also reported higher levels of scientific determinism ($M = 3.48$, $SD = 0.72$) and lower levels of fatalistic determinism ($M = 1.43$, $SD = 0.64$), compared to participants who defined themselves as Alawite ($M = 3.14$, $SD = 0.70$), 95% CIs [−.12, −.01]; ($M = 2.49$, $SD = 0.83$), 95% CIs [.08, .32], respectively, and Sunni ($M = 3.31$, $SD = 0.57$), 95% CIs [.02, .35]; ($M = 3.08$, $SD = 0.84$), 95% CIs [.07, .69], respectively.

In addition to religious identification, we examined gender differences and found no gender difference for FAD-Plus dimensions (see Table 1). Repeated measures ANOVA results also suggested significant FAD-Plus dimension differences within responses, $F(1, 1051) = 171.01$, $p < .001$. Specifically, our participants rated free will items ($M = 3.38$, $SD = 0.71$) higher than fatalistic determinism ($M = 2.71$, $SD = 0.99$), 95% CIs [.60, .74], and unpredictability ($M = 3.20$, $SD = 0.68$), 95% CIs [.13, .24]. Correlations among participants' age and their religiosity level also provided significant results. As seen in Table 1, participants' age was positively associated with free will ($r = .11$, $p < .001$) and fatalistic determinism ($r = .07$, $p < .05$). Similarly, increased religiosity was related to increased free will ($r = .14$, $p < .001$) and fatalistic determinism ($r = .57$, $p < .001$). We further tested whether there are differences in the magnitude of the relationship between free will–religiosity and fatalistic determinism–religiosity links among Carey and Paulhus's (2013) predominantly Christian sample (Study 1) and the present sample. Because both this study and Carey and Paulhus's Study 1 mainly comprised student participants, we chose to compare these samples to each other. The correlations of free will and religiosity were significantly different from each other ($z = 2.86$, $p = .002$), suggesting that free will is less related to religiosity in our sample than the Christian sample. We conducted the same analysis in order to compare the correlations of fatalistic determinism and religiosity in both samples. The results revealed that the correlation is again significantly different from each other ($z = -4.09$, $p < .001$), suggesting that fatalistic determinism is more related to religiosity in our sample.

Finally, we also estimated a model in which religiosity predicts FAD-Plus dimensions using path analysis. Results revealed that all FAD-Plus dimensions were predicted by the religiosity level in the expected directions. Religiosity positively predicted free will ($\beta = .13$, $p < .001$) and fatalistic determinism ($\beta = .63$, $p < .001$), whereas it negatively predicted scientific determinism ($\beta = -.10$, $p < .01$) and unpredictability ($\beta = -.12$, $p < .001$). To compare the strength of the associations

Table 1. Descriptive statistics from Study 1.

	Male		Female		Total			Correlations	
	M	*SD*	*M*	*SD*	*M*	*SD*	*t*	Age	Religiosity
Free will	3.40	.72	3.36	.70	3.38	.71	.73	.11***	.14***
Scientific determinism	3.36	.61	3.32	.59	3.33	.60	1.14	−.01	−.06
Fatalistic determinism	2.65	1.02	2.76	.95	2.71	.99	1.91	.07*	.57***
Unpredictability	3.20	.70	3.19	.66	3.20	.68	.05	.05	−.07*

*$p < .05$. ***$p < .001$.

between religiosity and FAD-Plus dimensions, we constrained all paths as equal, then compared the resulting model with the unconstrained model. Two models were statistically different ($\Delta\chi^2 = 512.25$, $p < .001$), suggesting that religiosity more strongly predicted fatalistic determinism than other dimensions (i.e., free will, scientific determinism, and unpredictability).

In line with the previous work of Carey and Paulhus (2013), all FAD-Plus subscales were positively (and significantly) correlated with one another, including Scientific and Fatalistic Determinism (but see Caspar, Verdin, Rigoni, Cleeremans, & Klein, 2017, for a conflicting finding). This might suggest that laypeople are compatibilists in the sense that they believe in both free will and determinism at the same time (see also Nahmias et al., 2005, 2006). However, it must be noted that another alternative is that participants show an acquiescence bias (see Knowles & Condon, 1999). In other words, most of the participants generally respond positively and with high values to the scales. Because FAD-Plus scale does not have any reverse-coded items, this might result in an acquiescence bias. Thus, we urge caution for this interpretation of the findings.

Once the reliability of FAD-Plus was ascertained, we examined its relation to religiosity and belief in a just world, one of the indicators of conservatism. We used the Intrinsic, Extrinsic, and Quest Religiosity scales to measure religiosity.

Study 2

Method

Participants

Six hundred thirty Turkish people participated in this study. Research assistants randomly contacted the participants in the streets of Istanbul. The participants completed the surveys at their own pace and returned them in a maximum of 45 min. Ages ranged from 18 to 71 ($M = 27.36$, $SD = 9.78$; 54% female). The majority identified themselves as Muslim (Sunni, $n = 438$; Alawite, $n = 18$). Of the remaining participants, 92 were atheists, 36 believed in god but were not affiliated with a religion, 29 reported affiliation with a religion other than Islam, and 17 did not respond.

Materials and procedure

In addition to the FAD-Plus scale (Paulhus & Carey, 2011) adapted in the first study, the Intrinsic–Extrinsic Religiosity Scale, originally developed by Allport and Rose (1967) and revised by Tiliopoulos, Bikker, Coxon, and Hawkin (2007), was used. The Intrinsic Religiosity scale comprises eight items (sample item: "I try hard to live all my life according to my religious beliefs"), whereas the Extrinsic Religiosity scale comprises six items (sample item: "I go to church because it helps me make friends"). Although intrinsic motivation refers to a person's religiosity originating from some internal motivations, extrinsic motivation refers to the religiosity caused by external sources such as material gain. Therefore, people with intrinsic motivation are thought to internalize their religious beliefs, whereas people with extrinsic motivation are considered religious because of concerns such as anxiety of reputation or social desirability (Paloutzian & Park, 2005).

In addition to these religiosity scales, a Quest Religiosity Scale, developed by Batson and Ventis (1982), was used. This type of religiosity generally refers to resisting absolute answers of religion and being open to existential questions (sample items: "I am constantly questioning my religious beliefs"; "As I grow and change, I expect my religion also grow and change"). Questioning religious rules and teachings, and experiencing changes in beliefs and having an open-minded motivation to experience religion are some of the features of quest religiosity. We used the versions adapted by Bahçekapili and Yilmaz (2017) for the three religiosity scales.

The Just World Belief Scale, developed by Dalbert, Montada, and Schmitt (1987), was used to determine the participants' just world beliefs. Although it is not the exact operational definition of the concept of political conservatism, it can be seen as an indicator because research suggests that

this belief is highly related with at least some types of conservatism (Anderson, Cooper, & Okamura, 1997; Dittmar & Dickinson, 1993; Furnham, 2003; Furnham & Procter, 1989; Lambert & Raichle, 2000). This is seen not only in the United States (Dalbert, 1999) but also in Turkey (Göregenli, 2004; Sarıbay, Olcaysoy Ökten, & Yılmaz, 2017). Belief in a just world has also been used by Carey and Paulhus (2013) to investigate its relation with free will/determinism beliefs. We thus attempted to do a conceptual replication of this association in Turkey. The scale comprises six items on a 6-point scale from 1 (*strongly disagree*) to 6 (*strongly agree*).

In addition to these scales, the participants were given a standard demographic form including gender, age, one item religiosity question from 1 (*not at all religious*) to 7 (*highly religious*), and one item political orientation question from 1 (*left*) to 7 (*right*). All materials were given in paper-and-pencil forms in stable order.

Results and discussion

Independent samples *t*-test results revealed that there was no gender difference in terms of the FAD-Plus and religiosity dimensions (see Table 2). One-way ANOVA was run to see if people who defined themselves with different religious affiliations rated FAD-Plus and religiosity dimensions differently. Results showed that people with different religious affiliations rated scientific determinism, fatalistic determinism, intrinsic, quest, extrinsic religiosity, and belief in a just world differently (see Table 2 for *F* values). Specifically, participants defining themselves as "other group" reported the lowest level of scientific determinism, compared to other groups, 95% CIs [.01, .79]. Participants defining themselves as Muslim (Sunni) reported the highest fatalistic determinism, 95% CIs [.35, .84], and intrinsic religiosity, 95% CIs [.50, .83], and the lowest level of quest religiosity compared to other religious affiliations, 95% CIs [−.68, −.04]. Theists without any organized religion and Muslims (Alawites) also reported lower levels of extrinsic religiosity, 95% CIs [−.19, −.14], and belief in a just world, 95% CIs [.01, .56], compared to individuals who defined themselves with other religious affiliations (see Table 2 for mean and standard deviation values). Finally, a repeated measures ANOVA result suggested significant FAD-Plus dimension differences within responses, $F(3, 559) = 65.00$, $p < .001$. Bonferroni post hoc test revealed that participants in our sample reported free will higher than other dimensions, 95% CIs [.30, .48]. A repeated measure ANOVA also yielded significant religiosity dimension differences, $F(2, 559) = 139.91$, $p < .001$. Participants reported intrinsic religiosity higher than quest, 95% CIs [.36, .53], and extrinsic religiosity, 95% CIs [.33, .59] (see Table 2).

Zero-order correlations showed significant associations between the study variables (see Table 3). Specifically, participants' age was positively associated with the free will dimension. Also, individuals' political orientation (higher scores refer to right-wing orientation) was reversely linked to scientific determinism and quest religiosity, whereas it was positively associated with fatalistic determinism, belief in a just world, intrinsic and extrinsic religiosity, and attending religious activities and meetings. Intrinsic religiosity was positively associated with fatalistic determinism and belief in a just world, whereas it was negatively associated with unpredictability. Extrinsic religiosity, however, was positively associated with unpredictability. It was also positively linked with fatalistic determinism and belief in a just world. Belief in a just world was positively associated with free will and fatalistic determinism. Finally, all FAD-Plus and religiosity dimensions were associated with one another significantly (see Table 3)

Considering positive and significant correlations among FAD-Plus dimensions, we ran a path analysis to disentangle the associations between religiosity dimensions, belief in a just world, and FAD-Plus dimensions in the same regression equation. As depicted in Figure 2, results revealed that intrinsic religiosity predicted fatalistic determinism ($\beta = .15$, $p < .01$) and unpredictability ($\beta = -.18$, $p < .01$). Quest religiosity predicted scientific determinism ($\beta = .21$, $p < .001$), whereas extrinsic religiosity predicted fatalistic determinism ($\beta = .41$, $p < .001$). Moreover, increased belief in a just world was related to increased free will belief ($\beta = .14$, $p < .01$).

Table 2. Descriptive statistics from Study 2.

	Gender					Religious Affiliation											
	Female		Male			Atheist		Theist[a]		Muslim (Sunni)		Muslim (Alawi)		Other			Total	
	M	SD	M	SD	t	M	SD	M	SD	M	SD	M	SD	M	SD	F	M	SE
Free will	3.77	.65	3.87	.64	1.88	3.81	.73	4.05	.61	3.82	.64	3.98	.68	3.74	.41	1.51	3.84	.03
Scientific determinism	3.42	.67	3.45	.65	.73	3.60_{b}	.66	3.55_{b}	.69	3.42_{b}	.67	3.57_{b}	.47	3.19_{a}	.57	**2.79***	3.45	.03
Fatalistic determinism	3.37	.90	3.31	1.01	.69	3.24_{a}	1.04	2.39_{b}	1.01	3.50_{a}	.86	2.73_{b}	1.01	$3.08_{a,b}$	.97	**15.40*****	3.35	.04
Unpredictability	3.43	.67	3.37	.72	1.01	3.47	.66	3.41	.62	3.40	.71	3.51	.42	3.30	.80	.44	3.41	.03
Intrinsic religiosity	3.54	.86	3.67	.89	1.68	3.38_{a}	.99	2.42_{b}	.55	3.80_{c}	.77	2.95_{d}	.79	3.14_{e}	.86	**27.80*****	3.59	.04
Quest religiosity	2.73	.95	2.67	1.08	.75	2.87_{b}	1.14	2.98_{b}	1.03	2.65_{a}	1.00	3.01_{b}	.84	3.00_{b}	.94	**2.48***	2.69	.05
Extrinsic religiosity	3.14	.67	3.15	.85	.14	3.14_{b}	1.12	2.29_{a}	.91	3.26_{b}	.56	2.47_{a}	.85	3.14_{b}	.87	**19.05*****	3.15	.03
Belief in a just world	3.22	1.14	3.33	1.18	1.13	3.22_{a}	1.30	2.99_{b}	.91	3.32_{a}	1.15	2.54_{b}	1.03	3.23_{a}	1.09	**2.51***	3.26	.05

Note. Differing subscript letters indicate significant group differences in post-hoc tests. Bold values indicate significant main effects.
[a]Theists without any organized religion.
*$p < .05$. ***$p < .001$.

Table 3. Zero-order correlations between the Study 2 variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Free will	1	.292***	.109**	.286***	.178***	.036	.077	.032	.058	.033	.083*	.038	.177***
2. Scientific determinism		1	.181***	.423***	.053	−.083	.056	.237***	−.050	−.045	−.059	−.084*	.078
3. Fatalistic determinism			1	.281***	.205***	.399***	.505***	−.032	.443***	.327***	.361***	.327***	.050
4. Unpredictability				1	.063	−.102*	.149***	.151***	−.047	−.144***	−.042	−.046	.074
5. Belief in a just world					1	.244***	.323***	.051	.258***	.199***	.215***	.275***	.067
6. Intrinsic religiosity						1	.518***	−.296***	.658***	.593***	.575***	.485***	−.012
7. Extrinsic religiosity							1	.108**	.557***	.452***	.437***	.380***	.078
8. Quest religiosity								1	−.191***	−.133**	−.178***	−.194**	.013
9. Religiosity									1	.562***	.552***	.553***	.046
10. Religious meetings (mosque)										1	.570***	.475***	−.016
11. Religious activities (praying)											1	.384***	.076
12. Political orientation												1	−.024
13. Age													1

*$p < .05$. **$p < .01$. ***$p < .001$

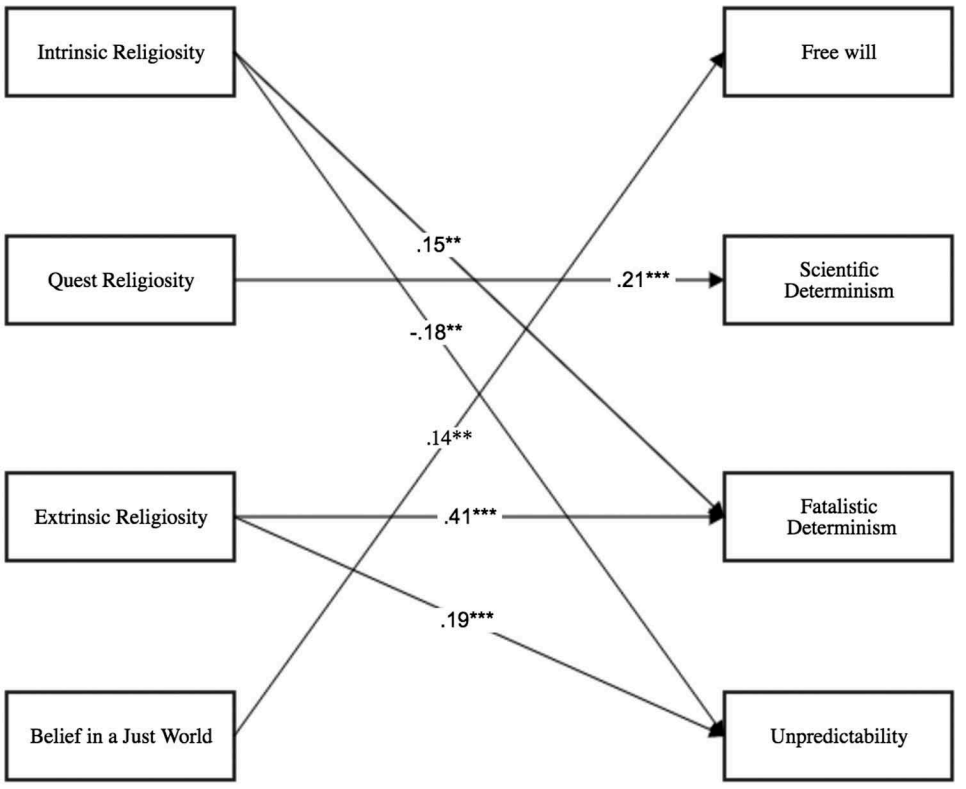

Figure 2. The associations between religiosity, belief in a just world, and FAD dimensions. *Note*. $^{**}p < .01$. $^{***}p < .001$.

Thus, the results suggest that free will is not consistently related to religiosity in a predominantly Muslim country. However, it seems that fatalistic determinism is strongly related to both religiosity and conservatism. The unique predictor of free will belief is the belief in a just world. Quest religiosity is positively related to scientific determinism. Thus, the results suggest that free will–religiosity link is not the same as in Western samples. In addition, in line with Study 1 and Carey and Paulhus's (2013) American samples, participants in this sample are mostly compatibilists (for a conflicting result in a French sample, see Caspar et al., 2017).

General discussion

Overall, these findings indicate that FAD-Plus is a reliable measure of free will–determinism beliefs in a predominantly Muslim culture. The most endorsed belief by the participants was free will, whereas the least endorsed belief was fatalistic determinism. Religiosity was not consistently related to free will, but there was a robust association between religiosity and fatalistic determinism. There were no gender differences in the four types of belief. The relation of belief in free will to various measures of religiosity in this culture was not the same as in Western cultures as revealed in Carey and Paulhus (2013). Although free will was related to religiosity in Study 1, the main and strongest predictor of religiosity was fatalistic determinism. We also demonstrated in Study 2 that free will belief is not consistently related to any type of religiosity (viz., intrinsic, extrinsic, quest, and general religiosity and religious participation) but is related to belief in a just world, one of the indicators of conservative ideology in Turkey (Göregenli, 2004). Thus, the results suggest that free will belief is not inherently related to religiosity in Turkey. The

differences between the two samples (mostly college students in Study 1 and a community sample in Study 2) might have played some role in this discrepancy. As in the United States, there are some findings to support the view that college students tend to be more liberal than community samples in Turkey (Yilmaz & Saribay, in press). It is already known that when age increases, political conservatism tends to increase (see Truett, 1993). Our college sample (Study 1) was also less religious than the community sample (Study 2).[1] In addition, the magnitude of the variance is different for a single item and multiple response items. This is one possible reason why this divergent pattern in estimations might be observed.[2]

Fatalistic determinism is positively associated with all religiosity measures (except quest religiosity) and conservatism, but most of the effect is driven by extrinsic religiosity. Scientific determinism is not consistently related to either religiosity or conservatism. Unpredictability is negatively related to intrinsic religiosity and frequency of religious attendance in religious meetings, whereas it is positively related to extrinsic and quest religiosity. These findings partially replicate Carey and Paulhus's (2013) previous findings in that they had found a significant relation only between unpredictability and intrinsic religiosity and did not find a consistent pattern of relationship between religiosity and fatalistic determinism. Thus, our results might suggest that free will belief is more central to predominantly Christian samples as Carey and Paulhus showed, whereas fatalistic determinism is more central to predominantly Muslim samples as our samples showed. This conclusion is also compatible with some other cross-cultural research showing that Muslim people express more fatalistic tendencies than Christian people (i.e., Pew Research Center, 2012).

Keller (2005) demonstrated that scientific determinism, operationalized as genetic determinism, is related to conservative attitudes. However, this might not be true for a predominantly Muslim country, because any type of science might refer to progressivism in Turkey rather than conservatism. Turkey is a country that passed secularism as the law only about 90 years ago; its religious values are still strong (Çarkoğlu & Kalaycioğlu, 2009), and it can be considered that secularization is not as internalized as in Western countries (Yilmaz & Bahçekapili, 2015). In this context, a positive relation between scientific determinism and conservatism cannot be expected in Turkey. Scientific determinism also has a negative relation with right-wing political orientation, which strengthens the argument that scientific determinism is not associated with conservative ideology in Turkey.

In line with previous research (e.g., Carey & Paulhus, 2013; Nahmias, Coates, & Kvaran, 2007; Nahmias et al., 2005, 2006), our participants see free will and both types of determinism as compatible. On the other hand, this finding is not consistent with some other findings using the FAD-Plus scale (Caspar et al., 2017; Paulhus & Carey, 2011; Study 2; but see Alper & Sümer, 2017). One might argue that the positive associations between all FAD-Plus subscales were surprising and prima facie difficult to explain. Perhaps it might show that either people display an acquiescence bias or Muslim people living in Turkey have an understanding of the compatibilist view in the philosophical sense. In other words, they believe in the fact that free will exists, but they also believe that God has already determined our fate. Another implication of these findings is that, contrary to what previous studies have claimed (e.g., Rakos, Laurene, Skala, & Slane, 2008; see also Stroessner & Green, 1990), free will and determinism beliefs of laypeople are not opposites, and therefore should not be considered as a bipolar scale. Because they both have a positive relation with each other and they have different relations with measures such as religiosity and conservatism, it can be argued that these two concepts are independent of each other.

[1]The average response to the single-item religiosity question from 1 (*not at all religious*) to 7 (*highly religious)* was 3.73 (SD = 1.79) in Study 1 and 4.68 (SD = 1.68) in Study 2.

[2]We compared the single-item measure of religiosity used in Study 1 and the multi-item scale used in Study 2 by Levene's tests. Specifically, we examined equality of variance for two separate samples. Results revealed that variance for the single item religiosity used in Study 1 was not equal to intrinsic, Levene Statistic (1, 1582) = 336.05, $p < .001$; quest, Levene Statistic (1, 1582) = 20.99, $p < .001$; and extrinsic religiosity, Levene Statistic (1, 1582) = 27.96, $p < .001$, variances, respectively. Thus, the results support our claim that the magnitude of the variance might be responsible for the divergent pattern in estimations.

Limitations and future directions

It must be noted, however, that our findings are only preliminary, and thus future studies should be conducted to truly understand the underlying mechanisms of these beliefs. For example, in Baumeister's (2008) model, self-control is viewed as a mediator variable between free will belief and conservatism. Hence, the mediating role of self-control on the relationship between free will belief and conservatism should be examined outside Christian samples.

A criticism that can be directed to the FAD-Plus scale is that it does not measure a number of issues corresponding to the beliefs of free will–determinism in a philosophical sense. Therefore, more philosophically minded researchers have developed a new set of measurement tools to measure these beliefs (e.g., Nadelhoffer, Shepard, Nahmias, Sripada, & Ross, 2014). It is, therefore, necessary to look at whether similar results emerge using the new tools in order to understand whether these findings correspond to the beliefs of free will–determinism in the sense understood by philosophers. Actually, scores on FAD-Plus is not a reliable way to see if people are compatibilists or incompatibilists in the philosophical sense, as high scores on all subscales may be due to the acquiescence bias. The fact that there is no reverse item in FAD-Plus attests to this argument. Hence, both Carey and Paulhus (2013) and our findings regarding the compatibilism–incompatibilism discussion should be evaluated with caution.

Conclusion

When we take the findings of these two studies as a whole, free will belief is not consistently related to religiosity in the two large samples in which the majority of individuals are Muslims. Religiosity and fatalistic determinism, on the other hand, have a strong and consistent relationship. This shows that fatalistic determinism in a predominantly Muslim country has a central role in the belief systems of Muslims. These two studies, as far as we know, have for the first time examined the relationship between free will–determinism beliefs and religiosity and conservatism in a predominantly Muslim country. However, no hypothesis has been tested on the mediating variables in these two studies. Therefore, future studies should further test different theoretical models in non-Christian samples regarding the underlying mechanisms that lead to free will–determinism beliefs.

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APPENDIX

Turkish version of the FAD-Plus scale.

Bu bölümde ise sizden aşağıdaki ifadeleri değerlendirmeniz istenmektedir. İfadelerin doğru veya yanlış cevabı yoktur, size uygun cevabı veriniz.

1… Kesinlikle Katılmıyorum **2… Katılmıyorum** **3… Kararsızım**
4… Katılıyorum **5… Kesinlikle Katılıyorum**

1. Geleceğin kader tarafından çoktan belirlendiğine inanıyorum.	1	2	3	4	5
2. İnsanların biyolojik yapıları onların yeteneklerini ve kişiliklerini belirler.	1	2	3	4	5
3. Tesadüfi olaylar insanlık tarihinin asıl belirleyicileri olarak görünmektedir.	1	2	3	4	5
4. İnsanlar verdikleri kararlar üzerinde tam kontrole sahiptir.	1	2	3	4	5
5. Ne kadar çabalarsan çabala, kendi kaderini değiştiremezsin.	1	2	3	4	5
6. Psikologlar ve nörobilimciler er geç insan davranışının tüm yönlerini çözeceklerdir.	1	2	3	4	5
7. Hiç kimse bu dünyada ne olacağını önceden tahmin edemez.	1	2	3	4	5
8. İnsanlar yaptıkları kötü seçimler için tüm sorumluluğu üzerlerine almalıdırlar.	1	2	3	4	5
9. Kaderin herkes için halihazırda bir planı vardır	1	2	3	4	5
10. Genleriniz geleceğinizi belirler.	1	2	3	4	5
11. Yaşam -tıpkı zar atmak ya da yazı tura atmak gibi- öngörülemez görünmektedir.	1	2	3	4	5
12. İnsanlar eğer gerçekten isterlerse her engeli aşabilirler.	1	2	3	4	5
13. Bir şey olacağı varsa olur – Bunu değiştirmek için yapılabilecek pek bir şey yoktur.	1	2	3	4	5
14. Bilim geçmişteki çevrenin şu anki zekanızı ve kişiliğinizi nasıl belirlediğini göstermiştir.	1	2	3	4	5
15. İnsanların ne yapacakları önceden tahmin edilemez.	1	2	3	4	5
16. Suçlular yaptıkları kötü şeyler için tam anlamıyla sorumludurlar.	1	2	3	4	5
17. İnsanlar hoşlansa da hoşlanmasa da, gizemli güçler onların yaşamlarını yönlendiriyor gibi görünmektedir.	1	2	3	4	5
18. Diğer hayvanlarda olduğu gibi, insan davranışı da her zaman doğanın kanunlarına göre işlemektedir.	1	2	3	4	5
19. Yaşam hemen hemen bütünüyle rastgele olduğu için onu öngörmek zordur.	1	2	3	4	5
20. Şans insanların yaşamlarında büyük bir rol oynar.	1	2	3	4	5
21. İnsanlar tam anlamıyla özgür iradeye sahiptir.	1	2	3	4	5
22. Anne-babaların karakterleri çocuklarının karakterlerini belirler.	1	2	3	4	5
23. İnsanlar kötü davranışlardan her zaman sorumlu tutulabilirler.	1	2	3	4	5
24. Çocukluğunun geçtiği ortam bir yetişkin olarak senin başarını belirler.	1	2	3	4	5
25. İnsanlara ne olacağı şans meselesidir.	1	2	3	4	5
26. Sağlam bir irade her zaman bedenin arzularının üstesinden gelebilir.	1	2	3	4	5
27. İnsanların gelecekleri önceden tahmin edilemez.	1	2	3	4	5

Subscales

Free Will: 4, 8, 12, 16, 21, 23, 26.
Scientific Determinism: 2, 6, 10, 14, 18, 22, 24.
Fatalistic Determinism: 1, 5, 9, 13, 17.
Unpredictability: 3, 7, 11, 15, 19, 20, 25, 27.