



Inferring political and religious attitudes from composite faces perceived to be related to the dark triad personality traits[☆]

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ABSTRACT

We used composite face images perceived to have different levels of Dark Triad personality traits (narcissism, psychopathy, and Machiavellianism) and asked participants to predict these target individuals' religious and political identities. In Study 1 ($N = 550$), Turkish participants rated faces with higher levels of perceived Dark Triad traits as less likely to be religious, to believe in God, and more likely to be left-winger, and to vote for a left-leaning party in all categories except for male narcissism. In a pre-registered follow-up study ($N = 1001$), we recruited a nationally representative US sample and replicated the same results with minor differences regarding male and female narcissism, and voting preferences. Participants' own political and ideological identities and their stereotypical evaluation of the target groups were mostly ineffective in explaining their predictions. The results suggest that people can perceive faces with higher levels of Dark Triad traits as less religious and less conservative.

1. Introduction

The ideological divide among distant social groups (i.e., believers vs. atheists; liberals vs. conservatives) can have serious negative influences on our democracy and societal relations, resulting in group bias. Group bias includes parochialism (i.e., ingroup favoritism and outgroup discrimination; Ginges, Hansen, & Norenzayan, 2009) and moral distrust and prejudice against outgroups (i.e., atheists), even in secular societies (Gervais et al., 2017). Various alternative explanations for this ideological divide have been proposed, ranging from intuitive thinking style (Yilmaz & Alper, 2019) to negativity bias (Hibbing, Smith, & Alford, 2014). While some recommend liberals and non-believers to adopt group binding foundations that conservatives have already endorsed to bridge the ideological divide (Haidt & Kesebir, 2010), others suggest that analytic thought (Yilmaz & Saribay, 2017) or actively open-minded thinking (Baron, 2019) provide more viable solutions. However, more recent research (e.g., Rule & Ambady, 2010; Rule, Garrett, & Ambady, 2010) implies that the ideological divide in the domains of religion and politics may even be visible in implicit facial cues.

Past research suggests that individuals can make rapid inferences

about personality traits of others, at least with some degree of accuracy, in the zero acquaintance conditions by solely looking at their faces (e.g., Alper, Bayrak, & Yilmaz, 2020; Holtzman, 2011; Oosterhof & Todorov, 2008; Shiramizu, Kozma, DeBruine, & Jones, 2019; Todorov, Said, Engell, & Oosterhof, 2008; Willis & Todorov, 2006). Individuals rely on these inferences even when there are more apparent cues (Jaeger, Evans, Stel, & van Beest, 2019; Jaeger, Todorov, Evans, & van Beest, 2020; Olivola, Tingley, & Todorov, 2018; Olivola & Todorov, 2010); and these inferences influence attitudes, decisions, and behaviors in a variety of important domains, such as close relationships, business, and ideology (Todorov, Olivola, Dotsch, & Mende-Siedlecki, 2015). Therefore, understanding whether the identity of the ideological opponent in the domains of religion and politics is apparent in the facial cues is critical. In the current study, using composite face images that are stereotypical examples of faces perceived as belonging to people with high or low levels of Dark Triad personality traits (Holtzman, 2011), we ask participants to predict these individuals' religious and political identities. Since the Dark Triad traits, often linked with untrustworthiness, are negative and appalling (Paulhus & Williams, 2002; Rauthmann & Kolar, 2012), understanding whether people tend to associate these faces with certain ideological groups in the absence of any external cues is

[☆] All data and materials are accessible at <https://osf.io/xasfw>.

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important as a first step. It might also have important social implications about how to provide a scalable intervention to decrease this potentially strong bias. Therefore, in this research, we evaluated the possibility of whether the ideological identity of the faces in the domains of religion and politics may be visible in implicit facial cues using a convenient Turkish and a nationally representative US sample.

1.1. The Dark Triad personality traits

Paulhus and Williams (2002) suggested that Machiavellianism, narcissism, and psychopathy are three distinct but related personality traits that reflect the malevolent side of humans. The concept of Machiavellianism refers to manipulative tactics of social behaviors containing emotional coldness, cynical worldview, immorality, and lack of empathy (Jones & Paulhus, 2009). Narcissism is characterized by being pompous, self-absorbed, dominant, and assertive (Paulhus & Williams, 2002). Finally, psychopathy is defined as a predisposition for recklessness, selfishness, arrogance, and impulsivity (Hare & Neumann, 2008).

Over the past two decades, the research in Dark Triad personality traits has accumulated extensive evidence showing that three Dark Triad traits are highly correlated and associated with various types of transgressive and norm-violating social outcomes (Muris, Merckelbach, Otgaar, & Meijer, 2017). For instance, several studies highlighted associated factors such as risky behaviors (Crysel, Crosier, & Webster, 2013), counterproductive work behaviors (O'Boyle, Forsyth, Banks, & McDaniel, 2012), antisocial tactics (Jonason & Webster, 2012), desire to power and vanity (Lee et al., 2013), exploitative short-term mating strategies (Jonason, Valentine, Li, & Harbeson, 2011), sex-related issues (Zeigler-Hill, Besser, Morag, & Campbell, 2016), and antisocial behaviors and aggression (Baughman, Dearing, Giammarco, & Vernon, 2012).

There is research supporting the idea that Dark Triad personality traits are associated with self-reported political ideology. For example, Jonason (2014) found that having narcissistic and psychopathic tendencies are positively correlated with political conservatism, and Machiavellianism is related to lower levels of political liberalism. All of the Dark Triad traits were found to be associated with socially and economically conservative attitudes such as the support for free-market ideology, capital punishment, strict orders for security, opposition to gay marriage, and gun control (Arvan, 2013). They were also found to be associated with negative attitudes towards outgroups, such as immigrants (Hodson, Hogg, & MacInnis, 2009). Social dominance orientation and right-wing authoritarianism, two predictors of political conservatism, were also found to be associated with the Dark Triad personality traits (Hodson et al., 2009; Jones & Figueredo, 2013). Several studies have also attempted to link the Dark Triad traits of political candidates and their election performance. For example, Nai (2019) examined the success of 122 candidates in 55 recent elections worldwide based on expert ratings towards their personality traits and found that a higher level of psychopathy is associated with better election results; and narcissism is associated with success, especially for conservative candidates.

In addition to politics, a longstanding research line also suggests that religiosity is negatively correlated with possessing Dark Triad traits (Ghorbani, Watson, Krauss, Bing, & Davison, 2004; Jonason, Li, & Czarna, 2013). While psychopathy and Machiavellianism are negatively related to general religious beliefs and intrinsic religiosity (Aghababaei, Mohammadtabar, & Saffarinia, 2014), narcissism is positively related to extrinsic (Lowicki & Zajenkowski, 2017) and negatively to intrinsic religiosity (Aghababaei et al., 2014). The propensity to engage in all seven deadly sins (wrath, envy, gluttony, greed, lust, pride, and sloth) is positively (and moderately) correlated with Dark Triad personality traits (Brud, Rogoza, & Cieciuch, 2020). Haddad, Angman, Archer, and Garcia (2016) also demonstrated that believing (vs. disbelieving) in religion is negatively associated with only the psychopathy subscale of the Dark Triad traits.

Hence, past research clearly indicates that individual differences in Dark Triad traits are associated with the endorsement of certain political ideologies and religious orientations. Another but related research line also suggests that first impressions often made based on the target's physical appearance influence human behavior (e.g., Todorov et al., 2008; Todorov, Mandisodza, Goren, & Hall, 2005; Willis & Todorov, 2006). Human faces involve important signs that give survival-related (e.g., ingroup or outgroup; attractive or not) information about people (DeBruine, 2002; Mason, Cloutier, & Macrae, 2006). Therefore, first impressions are often formed based on facial cues (Todorov, 2012) and serve adaptive functions since they provide information on dangers and opportunities (Oosterhof & Todorov, 2008). One set of traits that people are, at least partially, successful at predicting by looking at faces is the Dark Triad traits. Holtzman (2011) asked participants to infer the personality traits of male and female targets by looking at the composite human faces with high or low scores on the Dark Triad personality traits. Results showed that participants identify all Dark Triad personality traits accurately. However, participants were more accurate in predicting the personality of female targets than males. Using a novel set of composite face photographs, Shiramizu et al. (2019) conceptually replicated Holtzman (2011) and found that narcissism can be accurately inferred for both male and female targets. However, psychopathy was inferred in only male condition, and Machiavellianism was not correctly identified in any condition, partially replicating Holtzman's findings. In a recent pre-registered study, Alper et al. (2020) used the same stimuli with that of Holtzman (2011) and tested the accuracy of inferences for personality traits from faces in WEIRD (the US) and non-WEIRD (Turkey) samples (Henrich et al., 2010). They found that all the Dark Triad traits were accurately identified in the composite face images.

Although there is a dearth of empirical investigations, past attempts were trying to find evidence for the idea that people can infer religious and political identities from just looking at a stranger's face. For example, Rule et al. (2010) found that different religious affiliations (e.g., Mormons and non-Mormons) are accurately inferred from their faces. There is also some evidence suggesting that political orientations (including Democrats/Republicans and left/right categorizations) can be successfully categorized from photographs of faces with an accuracy level above chance (e.g., Olivola et al., 2018; Olivola, Sussman, Tsetsos, Kang, & Todorov, 2012; Rule & Ambady, 2010; Samochowiec, Wänke, & Fiedler, 2010). Furthermore, in a recent study (Burris, 2020), participants who were blind to the identity of the targets rated atheists as more likely to be atheists by watching a silent video of an interview. They also rated atheists to be less trustworthy and likable. However, to our knowledge, no research has yet been conducted on whether people stereotypically associate the Dark Triad faces with certain political and religious affiliations.

1.2. The current study

Considering the literature summarized above, in the current study, we test whether composite faces, perceived as having different levels of Dark Triad personality traits (narcissism, psychopathy, and Machiavellianism), are perceived to be related to certain political and religious identities. Considering at least partial success of people in accurately predicting the target person's personality regarding Dark Triad (e.g., Alper et al., 2020; Holtzman, 2011; Shiramizu et al., 2019), there would be important social implications if those predictions lead to estimations regarding the target person's political and religious orientation as well. Associating faces related to interpersonally aversive traits with political and religious group memberships would suggest the existence of certain implicit stereotypes, and that people adhere to these stereotypes possibly without being aware of them, by only looking at a stranger's face.

In Study 1, we examine whether the faces perceived to be higher in the Dark Triad are also associated with certain religious and political identities in a non-WEIRD (Turkish) sample. In a pre-registered follow-

up study (Study 2), we attempted to replicate the main findings using a nationally representative WEIRD (the US) sample. Considering that observers' own political and religious attitudes might relate to which social group they associate Dark Triad traits with, in Study 2, we also investigate whether participants' own attitudes and affiliations predict and moderate their perceptions.

2. Study 1

2.1. Participants

The sample was recruited in two different ways. Some participants were undergraduate students, and they participated in exchange for extra course credit. Others were recruited via Twitter and the participant pool of a previous, unrelated, study. They participated in exchange for eligibility in a gift draw. The resulting sample was 550¹ (330 females, 111 males, 3 others, 106 not responded; $M_{\text{age}} = 24.40$, $SD = 6.14$). The analyses, regarding participants' own religiosity, belief in God, political orientation, and voting preferences, included 444 participants as the remaining participants preferred not to state their own attitudes.

2.2. Materials

2.2.1. Face images

Holtzman (2011) created composite face images of 10 people with the lowest or highest scores on Dark Triad (narcissism, psychopathy, and Machiavellianism) traits (see Holtzman, 2011, for more details). As there are two sexes (male and female) and three Dark Triad traits, there was a total of six categories. For each category, there were two composite images: One for the composite image of people with lower Dark Triad, and one for the higher Dark Triad. These images did not only belong to a group of people with lower or higher levels of Dark Triad but also blind raters could accurately predict which one had higher levels of the Dark Triad traits (Alper et al., 2020; Holtzman, 2011). In the current study, for each of the six categories, we placed the images with higher or lower scores side by side, in an order randomized for each participant, and asked them to predict their religious and political attitudes, without telling them the personality traits each image was associated with. We named the image on the left as Person A, and the image on the right as Person B.

2.2.2. Perception of religiosity

For each of the six categories, we asked participants to look at the two images (one with lower and one with a higher level of the Dark Triad) and predict Person A and Person B's religiosity levels (1 = *not religious at all*, 7 = *very religious*). We also asked them to predict whether Person A and B were "believers" (coded as 0) or "non-believers (atheists)" (coded as 1). Thus, for each image in each category, we collected one continuous and one categorical measure of perceived religiosity.

2.2.3. Perception of political orientation

For each of the six categories, we asked participants to look at the two images and predict each person's ideology (1 = *extremely left-wing*, 7 = *extremely right-wing*). We also asked them to predict whether each person would vote for AKP (the right-wing political party that has been in power in Turkey since 2002 and won 42.6% of the votes in the 2018 general elections) or CHP (the left-wing political party that has been the main opposition party in Turkey since 2002 and won 22.6% of the votes

¹ Some participants did not complete all of the materials. Since (1) we did not have any pre-registered exclusion criterion, (2) each task was independent of the previous or subsequent ones, and (3) excluding some participants would mean loss of data, we decided to conduct our analyses on all available data. Thus, N of 550 corresponds to the maximum number of available participants, and N for each analysis ranged from 533 to 550.

in the 2018 general elections).

2.2.4. Manipulation checks

To check whether the images with higher Dark Triad traits were indeed perceived to be so, as compared to their lower Dark Triad counterparts, we asked which of the two persons (Person A or B) looked more narcissistic, psychopathic, or Machiavellian, depending on the category, after providing brief definitions of these concepts (Alper et al., 2020; Holtzman, 2011). It was a forced-choice paradigm, and participants had to choose either Person A or Person B.

2.2.5. Demographic form

We asked participants' age, sex, education level (1 = *primary school*, 7 = *PhD*), perceived socioeconomic status (1 = *lowest level in the ladder*, 10 = *highest level in the ladder*), religiosity (1 = *not religious at all*, 7 = *very religious*), belief in God (0 = *believer*, 1 = *non-believer (atheist)*), ideology (1 = *extremely left-wing*, 7 = *extremely right-wing*), and the political party they voted for in the last election. Age, sex, education level, and perceived socioeconomic status were exploratory variables; and they were not included in the analyses. The detailed analyses involving the variables of participants' religiosity, belief in God, ideology, and political party preferences were reported in the Online Supplementary Material (SM) 1.

2.3. Procedure

Participants were directed to an online questionnaire. There were separate blocks for each of the six (two sexes by three Dark Triad traits) categories. Each block consisted of two pages. At the top of the first page, two images, one with a higher and one with a lower score on one of the Dark Triad traits, were placed in an order that was randomized for each participant. Below the images, there were questions on their perception of religiosity and political attitudes of the persons in the images. On the second page, the same images were used, but now the only question was the manipulation check question. After the two pages were completed, participants moved on to the next block. The order of blocks was also randomized for each participant. At the end of the study, all participants filled out the same demographic form.

3. Results

3.1. Manipulation checks

All manipulations worked as intended: Participants picked the face with the higher level of Dark Triad with an accuracy rate significantly higher than 50% for female narcissism, $\chi^2(1) = 109.148$, $p < .001$, male narcissism, $\chi^2(1) = 23.144$, $p < .001$, female psychopathy, $\chi^2(1) = 64.878$, $p < .001$, male psychopathy, $\chi^2(1) = 14.201$, $p < .001$, female Machiavellianism, $\chi^2(1) = 62.902$, $p < .001$, and male Machiavellianism, $\chi^2(1) = 3.702$, $p = .027^2$, categories.

3.2. Predicting religiosity

Among female images, the faces that were perceived to be highly narcissistic, $t(543) = -5.378$, $p < .001$, $d = -0.231$, psychopathic, $t(539) = -6.769$, $p < .001$, $d = -0.291$, and Machiavellian, $t(549) = -7.511$, $p < .001$, $d = -0.320$, were perceived to be less religious (see Table 1).

² Unlike all the other p -values reported in this paper, p -values for manipulation checks were reported as one-tailed. It has been argued that it is more reasonable to use one-tailed p -values for clearly directional hypotheses, like in the case of manipulation checks (Lakens, 2016). The p -values reported for the tests of hypotheses are two-tailed, as pre-registered.

Table 1

Results of paired-sample t-tests depicting how the perceived Dark Triad traits are related with the perception of religiosity in the Turkish sample (Study 1).

		<i>t</i>	<i>df</i>	<i>p</i>	Mean difference	SE difference	Cohen's <i>d</i>	95% CI for <i>d</i>			
									Lower	Upper	
Female	High narcissism	-	Low narcissism	-5.378	543	< 0.001	-0.452	0.084	-0.231	-0.316	-0.145
	High psychopathy	-	Low psychopathy	-6.769	539	< 0.001	-0.587	0.087	-0.291	-0.377	-0.205
	High Machiavellianism	-	Low Machiavellianism	-7.511	549	< 0.001	-0.620	0.083	-0.320	-0.406	-0.234
Male	High narcissism	-	Low narcissism	4.122	541	< 0.001	0.376	0.091	0.177	0.092	0.262
	High psychopathy	-	Low psychopathy	-9.675	532	< 0.001	-0.895	0.092	-0.419	-0.507	-0.330
	High Machiavellianism	-	Low Machiavellianism	-7.685	548	< 0.001	-0.750	0.098	-0.328	-0.414	-0.242

Note. Higher scores indicate a higher level of religiosity.

Similarly, among male images, the faces that were perceived as highly psychopathic, $t(532) = -9.675, p < .001, d = -0.419$, and Machiavellian, $t(548) = -7.685, p < .001, d = -0.328$, were perceived to be less religious. However, the highly narcissistic male face was perceived to be more, not less, religious, $t(541) = 4.122, p < .001, d = 0.177$.

3.3. Predicting belief in God

For all images in all categories, except for male narcissism, participants predicted that the faces belonged to a believer more than 50% of the time (see Table 2). However, the likelihood to predict that the faces with a lower level of perceived Dark Triad (low narcissism, psychopathy, or Machiavellianism) belonged to a believer was relatively higher. Considering the paired binomial nature of the data, we performed McNemar (1947)'s Test to investigate whether the distribution of responses in low vs. high Dark Triad categories is significantly different from each other. In female narcissism, $\chi^2(1) = 33.136, p < .001$, female psychopathy, $\chi^2(1) = 24.939, p < .001$, female Machiavellianism, $\chi^2(1) = 24.824, p < .001$, male psychopathy, $\chi^2(1) = 57.831, p < .001$, and male Machiavellianism, $\chi^2(1) = 62.297, p < .001$, there were significant differences. In short, in all categories except for male narcissism, participants were significantly more likely to associate the faces with lower levels of perceived Dark Triad with belief in God. There was no significant difference in distribution of ratings for male narcissism category, $\chi^2(1) = 0.176, p = .675$.

3.4. Predicting ideology

Among female images, the faces perceived to be highly narcissistic, $t(543) = -4.719, p < .001, d = -0.202$, psychopathic, $t(539) = -5.126, p < .001, d = -0.221$, and Machiavellian, $t(549) = -6.888, p < .001, d = -0.294$, were perceived to be more liberal (see Table 3).

Among male faces, the faces perceived to be highly psychopathic, $t(532) = -8.011, p < .001, d = -0.347$, and Machiavellian, $t(548) = -7.167, p < .001, d = -0.306$, were perceived to be more liberal. However, highly narcissistic male face was perceived to be less, not more, liberal, $t(541) = 3.650, p < .001, d = 0.157$.

Table 2

Distribution of predictions of belief in God in the Turkish sample (Study 1).

		Believer	Non-believer	N	Difference within the same row
Female	High narcissism	379 (0.697)	165 (0.303)	544	$\chi^2(1) = 84.104, p < .001$
	Low narcissism	461 (0.847)	83 (0.153)	544	$\chi^2(1) = 262.654, p < .001$
	High psychopathy	398 (0.737)	142 (0.263)	540	$\chi^2(1) = 121.363, p < .001$
	Low psychopathy	466 (0.863)	74 (0.137)	540	$\chi^2(1) = 284.563, p < .001$
	High Machiavellianism	419 (0.762)	131 (0.238)	550	$\chi^2(1) = 150.807, p < .001$
	Low Machiavellianism	485 (0.880)	66 (0.120)	551	$\chi^2(1) = 318.623, p < .001$
Male	High narcissism	399 (0.736)	143 (0.264)	542	$\chi^2(1) = 120.915, p < .001$
	Low narcissism	392 (0.723)	150 (0.277)	542	$\chi^2(1) = 108.052, p < .001$
	High psychopathy	308 (0.573)	228 (0.427)	534	$\chi^2(1) = 11.393, p = .001$
	Low psychopathy	427 (0.800)	107 (0.200)	534	$\chi^2(1) = 191.760, p < .001$
	High Machiavellianism	306 (0.557)	243 (0.443)	549	$\chi^2(1) = 7.230, p = .007$
	Low Machiavellianism	435 (0.792)	114 (0.208)	549	$\chi^2(1) = 187.689, p < .001$

3.5. Predicting voting preferences

In all categories, except for male narcissism, participants predicted that the faces belonged to a CHP supporter more than 50% of the time (see Table 4). However, the likelihood to associate a face perceived to be higher on Dark Triad (high narcissism, psychopathy, or Machiavellianism) with being CHP supporter was relatively higher in all categories, except for male narcissism. For male narcissism, the finding was the opposite. McNemar's tests indicated that the distributions in high and low Dark Triad categories are significantly different for all categories, including female narcissism, $\chi^2(1) = 4.085, p = .043$, female psychopathy, $\chi^2(1) = 22.811, p < .001$, female Machiavellianism, $\chi^2(1) = 23.766, p < .001$, male narcissism, $\chi^2(1) = 16.886, p < .001$, male psychopathy, $\chi^2(1) = 46.569, p < .001$, and male Machiavellianism, $\chi^2(1) = 52.961, p < .001$. In all categories, except for male narcissism, faces with higher levels of Dark Triad faces were more likely to be associated with being a CHP supporter. For male narcissism, the opposite was true: The less narcissistic face was more likely to be associated with being a CHP supporter.

3.6. Exploratory analyses

We repeated the same analyses by calculating the composite scores for high and low levels of Dark Triad and found the same results (see SM 1). We also investigated whether participants' own beliefs and political orientations influenced their predictions, using linear mixed models (see SM 1 for the details and the statistics). Participants' own ideology and voting behavior were not associated with their predictions regarding ideology and voting behavior, respectively, of the given faces. Less religious participants were more likely to associate a highly narcissistic male face with being more religious, and highly Machiavellian male face

Table 3

Results of paired-sample t-tests depicting how the perceived Dark Triad traits are related with the perception of ideology in the Turkish sample (Study 1).

		<i>T</i>	<i>df</i>	<i>p</i>	Mean difference	<i>SE</i> difference	Cohen's <i>d</i>	95% CI for <i>d</i>		
									Lower	Upper
Female	High narcissism – Low narcissism	-4.719	543	< 0.001	-0.395	0.084	-0.202	-0.287	-0.117	
	High psychopathy – Low psychopathy	-5.126	539	< 0.001	-0.420	0.082	-0.221	-0.306	-0.135	
	High Machiavellianism – Low Machiavellianism	-6.888	549	< 0.001	-0.584	0.085	-0.294	-0.379	-0.208	
Male	High narcissism – Low narcissism	3.650	541	< 0.001	0.312	0.085	0.157	0.072	0.241	
	High psychopathy – Low psychopathy	-8.011	532	< 0.001	-0.702	0.088	-0.347	-0.434	-0.259	
	High Machiavellianism – Low Machiavellianism	-7.167	548	< 0.001	-0.679	0.095	-0.306	-0.391	-0.220	

Note. Higher scores indicate a more right-wing (as opposed to left-wing) ideology.

Table 4

Distribution of predictions of voting preferences in the Turkish sample (Study 1).

		CHP supporter	AKP supporter	N	The difference within the same row
Female	High narcissism	395 (0.726)	149 (0.274)	544	$\chi^2(1) = 111.243, p < .001$
	Low narcissism	360 (0.662)	184 (0.338)	544	$\chi^2(1) = 56.941, p < .001$
	High psychopathy	393 (0.728)	147 (0.272)	540	$\chi^2(1) = 112.067, p < .001$
	Low psychopathy	309 (0.572)	231 (0.428)	540	$\chi^2(1) = 11.267, p < .001$
	High Machiavellianism	402 (0.731)	148 (0.269)	550	$\chi^2(1) = 117.302, p < .001$
	Low Machiavellianism	316 (0.575)	234 (0.425)	550	$\chi^2(1) = 12.225, p < .001$
Male	High narcissism	310 (0.572)	232 (0.428)	542	$\chi^2(1) = 11.225, p < .001$
	Low narcissism	383 (0.707)	159 (0.293)	542	$\chi^2(1) = 92.576, p < .001$
	High psychopathy	409 (0.767)	124 (0.233)	533	$\chi^2(1) = 152.392, p < .001$
	Low psychopathy	290 (0.544)	243 (0.456)	533	$\chi^2(1) = 4.144, p = .042$
	High Machiavellianism	415 (0.756)	134 (0.244)	549	$\chi^2(1) = 143.827, p < .001$
	Low Machiavellianism	281 (0.512)	268 (0.488)	549	$\chi^2(1) = 0.308, p = .579$

with being less religious. Moreover, atheist participants were more likely to associate highly psychopathic female faces and highly Machiavellian male faces with being an atheist. There were no effect on the remaining categories. Thus, the results showed that participants' own attitudes were largely ineffective at predicting their predictions. For those categories with a significant effect, participants were more likely to associate Dark Triad with their ingroup members, except for the case of male narcissism.

4. Study 2

In Study 2, we aimed to replicate the findings of Study 1 on a nationally representative sample from a different culture, the US. To generalize our findings, we chose the US as the comparison country because (1) the US is psychologically very distant from Turkey (Muthukrishna et al., 2020), and (2) recruiting an online nationally representative sample is more convenient for the US. Study design and hypotheses were pre-registered prior to data collection (<https://osf.io/mtx8g>). We hypothesized that the findings of Study 1 would replicate.

4.1. Participants

Prolific (www.prolific.co) data collection platform provides online nationally representative samples, stratified based on the proportion of following subgroups in the US population, based on the data from US Census Bureau (Colby & Ortman, 2015): Age (five 9-year brackets; 8–27, 28–37, 38–47, 48–57, and 58+), sex (male or female), and ethnicity (five categories; Asian, Black, White, Mixed, and Other). We aimed for 1000 US participants and ended up with 1001 participants (486 females, 510 males, 5 other, $M_{age} = 45.16, SD = 16.03$). The sample size was large enough to detect a within-subjects *d* of 0.11 with a power of 0.95, assuming a two-tailed alpha of 0.05.

4.2. Materials

The materials were the same as in Study 1 except for the following differences: (1) Instead of asking a single item for ideology, we used two

different items: “In general, how liberal (left-wing) or conservative (right-wing) would these people be on *social* (or *economic*) issues?”; (2) We used “Democratic” vs. “Republican” response options for the predicting voting preferences question, instead of “CHP” vs. “AKP”; (3) instead of asking “belief in God,” we phrased the question as belief in God (or gods), considering the religious diversity in the US; (4) we asked participants to report their general evaluation of Atheists, Believers, Republicans, and Democrats, using 6 items on a 7-point response format, on the following traits: Cold vs. warm, unfriendly vs. friendly, distrustful vs. trustful, negative vs. positive, contempt vs. respect, disgust vs. admiration (Wright, Aron, McLaughlin-Volpe, & Ropp, 1997), and (5) the materials were in English. The general evaluation scale had high reliability with Cronbach's alpha scores of 0.948 for atheists, 0.950 for believers, 0.964 for both Republicans and Democrats. Therefore, we calculated mean scores and considered low scores as negative and high scores as positive attitudes towards the group in question. The detailed analyses involving the demographic variables and general evaluation of target groups are reported in the SM 2.

5. Results

5.1. Manipulation check

As in Study 1, all manipulations worked as we intended: Participants picked the face with the higher level of Dark Triad with an accuracy rate significantly higher than 50% for female narcissism, $\chi^2(1) = 65.983, p < .001$, male narcissism, $\chi^2(1) = 64.960, p < .001$, female psychopathy, $\chi^2(1) = 88.121, p < .001$, male psychopathy, $\chi^2(1) = 101.659, p < .001$, female Machiavellianism, $\chi^2(1) = 52.389, p < .001$, and male Machiavellianism, $\chi^2(1) = 24.624, p < .001$, categories.

5.2. Predicting religiosity

Among female images, the faces perceived to be highly narcissistic, $t(1000) = -7.071, p < .001, d = -0.223$, psychopathic, $t(1000) = -9.934, p < .001, d = -0.314$, and Machiavellian, $t(1000) = -6.652, p < .001, d = -0.210$, were perceived to be less religious (see Table 5).

Similarly, among male faces, the faces perceived to be highly

Table 5

Results of paired-sample t-tests depicting how the perceived Dark Triad traits are related with the perception of religiosity in the US sample (Study 2).

			<i>t</i>	<i>Df</i>	<i>p</i>	Mean difference	<i>SE</i> difference	Cohen's <i>d</i>	95% CI for <i>d</i>	
									Lower	Upper
Female	High narcissism	– Low narcissism	–7.071	1000	< 0.001	–0.440	0.062	–0.223	–0.286	–0.161
	High psychopathy	– Low psychopathy	–9.934	1000	< 0.001	–0.608	0.061	–0.314	–0.377	–0.250
	High Machiavellianism	– Low Machiavellianism	–6.652	1000	< 0.001	–0.403	0.061	–0.210	–0.273	–0.148
Male	High narcissism	– Low narcissism	–5.115	1000	< 0.001	–0.325	0.063	–0.162	–0.224	–0.099
	High psychopathy	– Low psychopathy	–8.511	1000	< 0.001	–0.525	0.062	–0.269	–0.332	–0.206
	High Machiavellianism	– Low Machiavellianism	–5.010	1000	< 0.001	–0.325	0.065	–0.158	–0.221	–0.096

Note. Higher scores indicate a higher level of religiosity.

narcissistic, $t(1000) = -5.115, p < .001, d = -0.162$, psychopathic, $t(1000) = -8.511, p < .001, d = -0.269$, and Machiavellian, $t(1000) = -5.010, p < .001, d = -0.158$, were perceived to be less religious.

5.3. Predicting belief in God

For all images in all categories, except for male narcissism, participants predicted that the faces belonged to a believer more than 50% of the time (see Table 6). McNemar's tests yielded significant effects for female psychopathy, $\chi^2(1) = 52.980, p < .001$, female Machiavellianism, $\chi^2(1) = 28.203, p < .001$, male narcissism, $\chi^2(1) = 20.295, p < .001$, male psychopathy, $\chi^2(1) = 59.059, p < .001$, male Machiavellianism, $\chi^2(1) = 22.483, p < .001$, while it was non-significant for female narcissism, $\chi^2(1) = 0.089, p = .776$. In other words, except for female narcissism, in all other categories, the faces perceived to have lower levels of Dark Triad were more likely to be labeled as believers.

5.4. Predicting social conservatism

Among female faces, the faces perceived to be highly narcissistic, $t(1000) = -2.408, p = .016, d = -0.076$, psychopathic, $t(1000) = -5.626, p < .001, d = -0.178$, and Machiavellian, $t(1000) = -2.347, p = .019, d = -0.074$, were perceived to be less socially conservative (see Table 7).

Similarly, among male faces, the faces perceived to be highly psychopathic, $t(1000) = -3.481, p < .001, d = -0.110$, and Machiavellian, $t(1000) = -3.422, p < .001, d = -0.108$, were perceived to be less religious. However, the effect was non-significant for male narcissism, $t(1000) = -0.342, p = .732, d = -0.011$.

5.5. Predicting economic conservatism

In all categories, except for male narcissism, the faces with high levels of perceived Dark Triad were rated as less economically conservative (see Table 8). This effect was significant for female narcissism, $t(1000) = -3.333, p < .001, d = -0.105$, female psychopathy, $t(1000) = -5.016, p < .001, d = -0.159$, female Machiavellianism, $t(1000) = -2.844, p = .005, d = -0.090$, male psychopathy, $t(1000) = -2.875, p$

Table 6

Distribution of predictions of belief in God (or Gods) in the US sample (Study 2).

		Believer	Non-believer	N	Difference within the same row
Female	High narcissism	684 (0.683)	317 (0.317)	1001	$\chi^2(1) = 134.554, p < .001$
	Low narcissism	677 (0.676)	324 (0.324)	1001	$\chi^2(1) = 124.485, p < .001$
	High psychopathy	667 (0.666)	334 (0.334)	1001	$\chi^2(1) = 110.778, p < .001$
	Low psychopathy	803 (0.802)	198 (0.198)	1001	$\chi^2(1) = 365.659, p < .001$
	High Machiavellianism	695 (0.694)	306 (0.306)	1001	$\chi^2(1) = 151.170, p < .001$
	Low Machiavellianism	791 (0.790)	210 (0.210)	1001	$\chi^2(1) = 337.224, p < .001$
Male	High narcissism	627 (0.626)	374 (0.374)	1001	$\chi^2(1) = 63.945, p < .001$
	Low narcissism	713 (0.712)	288 (0.288)	1001	$\chi^2(1) = 180.445, p < .001$
	High psychopathy	590 (0.589)	411 (0.411)	1001	$\chi^2(1) = 32.009, p < .001$
	Low psychopathy	736 (0.735)	265 (0.265)	1001	$\chi^2(1) = 221.619, p < .001$
	High Machiavellianism	590 (0.589)	411 (0.411)	1001	$\chi^2(1) = 32.009, p < .001$
	Low Machiavellianism	685 (0.684)	316 (0.316)	1001	$\chi^2(1) = 136.025, p < .001$

$= .004, d = -0.091$, and male Machiavellianism, $t(1000) = -4.200, p < .001, d = -0.133$. The effect was non-significant for male narcissism, $t(1000) = -0.342, p = .732, d = -0.042$.

5.6. Predicting voting preferences

Among female faces, in all categories, faces with higher levels of perceived Dark Triad were perceived to be more likely to vote for the Republican, as opposed to the Democratic Party (see Table 9). McNemar's Tests revealed that the distribution of responses was unequal for psychopathy (female), $\chi^2(1) = 17.171, p < .001$. Accordingly, the face perceived to be highly psychopathic was relatively more likely than the low psychopathic one to be associated with being a Democrat. However, the same difference was not observed for female narcissism, $\chi^2(1) = 1.349, p = .245$, and female Machiavellianism, $\chi^2(1) = 1.672, p = .196$, categories.

Among male faces, higher or lower Dark Triad faces were not related to the predictions of voting preferences (see Table 9). McNemar's Tests revealed that the distribution of responses was different for Machiavellianism (male), $\chi^2(1) = 5.152, p = .023$. Accordingly, the face perceived to be highly Machiavellian was more likely than the low Machiavellian male face to be labeled as a Democrat. The difference was non-significant for male narcissism, $\chi^2(1) = 0.302, p = .583$, and male psychopathy, $\chi^2(1) = 0.008, p = .927$.

In short, there was no overall pattern of predictions of voting preferences, except for female psychopathy and male Machiavellianism categories, unlike the case in the Turkish sample in Study 1.

5.7. Exploratory analyses

We repeated the same analyses by calculating the composite scores for high and low levels of Dark Triad and found the same results. We also investigated whether participants' own beliefs and political orientations influenced their predictions, using linear mixed models (see SM 1 for the details and the statistics). Participants' own religiosity and voting behavior were not associated with their predictions regarding religiosity and voting behavior, respectively, of the given faces for any of the Dark Triad categories. For belief in God (or gods), social, and economic

Table 7

Results of paired-sample t-tests depicting how the perceived Dark Triad traits are related with the perception of social conservatism in the US sample (Study 2).

			<i>t</i>	<i>df</i>	<i>p</i>	Mean difference	<i>SE</i> difference	Cohen's <i>d</i>	95% CI for <i>d</i>	
									Lower	Upper
Female	High narcissism	– Low narcissism	–2.408	1000	0.016	–0.160	0.066	–0.076	–0.138	–0.014
	High psychopathy	– Low psychopathy	–5.626	1000	< 0.001	–0.367	0.065	–0.178	–0.240	–0.115
	High Machiavellianism	– Low Machiavellianism	–2.347	1000	0.019	–0.151	0.064	–0.074	–0.136	–0.012
Male	High narcissism	– Low narcissism	–0.342	1000	0.732	–0.023	0.067	–0.011	–0.073	0.051
	High psychopathy	– Low psychopathy	–3.481	1000	< 0.001	–0.238	0.068	–0.110	–0.172	–0.048
	High Machiavellianism	– Low Machiavellianism	–3.422	1000	< 0.001	–0.227	0.066	–0.108	–0.170	–0.046

Note. Higher scores indicate a higher level of conservatism on social issues.

Table 8

Results of paired-sample t-tests depicting how the perceived Dark Triad traits are related with the perception of economic conservatism in the US sample (Study 2).

			<i>t</i>	<i>df</i>	<i>p</i>	Mean difference	<i>SE</i> difference	Cohen's <i>d</i>	95% CI for <i>d</i>	
									Lower	Upper
Female	High narcissism	– Low narcissism	–3.333	1000	< 0.001	–0.215	0.064	–0.105	–0.167	–0.043
	High psychopathy	– Low psychopathy	–5.016	1000	< 0.001	–0.315	0.063	–0.159	–0.221	–0.096
	High Machiavellianism	– Low Machiavellianism	–2.844	1000	0.005	–0.179	0.063	–0.090	–0.152	–0.028
Male	High narcissism	– Low narcissism	–1.342	1000	0.180	–0.087	0.065	–0.042	–0.104	0.020
	High psychopathy	– Low psychopathy	–2.875	1000	0.004	–0.188	0.065	–0.091	–0.153	–0.029
	High Machiavellianism	– Low Machiavellianism	–4.200	1000	< 0.001	–0.274	0.065	–0.133	–0.195	–0.071

Note. Higher scores indicate a higher level of conservatism on economic issues.

Table 9

Distribution of predictions of voting preferences in the US sample (Study 2).

		Democratic	Republican	N	The difference within the same row
Female	High Narcissism	627 (0.671)	329 (0.329)	1001	$\chi^2(1) = 117.531, p < .001$
	Low Narcissism	696 (0.695)	305 (0.305)	1001	$\chi^2(1) = 152.728, p < .001$
	High Psychopathy	646 (0.645)	355 (0.355)	1001	$\chi^2(1) = 84.596, p < .001$
	Low Psychopathy	557 (0.556)	444 (0.444)	1001	$\chi^2(1) = 12.756, p < .001$
	High Machiavellianism	634 (0.633)	367 (0.367)	1001	$\chi^2(1) = 71.218, p < .001$
	Low Machiavellianism	606 (0.605)	395 (0.395)	1001	$\chi^2(1) = 44.477, p < .001$
Male	High Narcissism	500 (0.500)	501 (0.500)	1001	$\chi^2(1) = 0.001, p = .975$
	Low Narcissism	513 (0.512)	488 (0.488)	1001	$\chi^2(1) = 0.624, p = .429$
	High Psychopathy	508 (0.507)	493 (0.493)	1001	$\chi^2(1) = 0.225, p = .635$
	Low Psychopathy	505 (0.504)	496 (0.496)	1001	$\chi^2(1) = 0.081, p = .776$
	High Machiavellianism	523 (0.522)	478 (0.478)	1001	$\chi^2(1) = 2.023, p = .155$
	Low Machiavellianism	473 (0.473)	528 (0.527)	1001	$\chi^2(1) = 3.022, p = .082$

conservatism, all interactions between the participants' own attitudes and their predictions regarding the faces were non-significant, except for the following: Atheist participants were more likely to associate highly narcissistic female faces with being an atheist; socially conservative participants were more likely to associate less psychopathic and less Machiavellian male faces with being socially conservative, and economically conservative participants were more likely to associate low Machiavellian male faces with being economically conservative.

We also investigated whether participants' general attitudes towards atheists, believers, Republicans, and Democrats influenced their predictions. The general evaluation of atheists and believers was entered as covariates to the linear mixed models and their bivariate interactions with the condition (high vs. low Dark Triad face), while predicting religiosity and belief in God (or gods), were investigated. For social conservatism, economic conservatism, and voting preferences, general evaluation of the Republicans and Democrats were entered as covariates, instead of atheists and believers. Among 30 tests (five dependent measures by three Dark Triad traits by two sexes), only four (predicting belief in God or gods in the male narcissism category, predicting social conservatism in the male Machiavellianism category, predicting economic conservatism in the male psychopathy category, and predicting economic conservatism in the male Machiavellianism category) yielded statistically significant ($p < .05$) interactions. However, none of them were still significant after correcting for multiple tests (by dividing 0.05 with 30, which yielded a critical p -value of 0.002). The results suggested

that participants' evaluation of target groups was mostly ineffective in determining their predictions regarding faces (see SM 2 for statistics).

6. Discussion

Using both convenience and nationally representative samples spanning WEIRD (the US) and non-WEIRD (Turkish) countries, we found that, overall, both male and female faces perceived to have higher levels of Dark Triad were associated with less religiosity and less conservatism. Although both studies revealed a similar pattern, there are a few exceptions across the two samples. The findings of Study 1 yielded a clear pattern: The faces perceived to have higher levels of Dark Triad were perceived to be less religious, less likely to believe in God, more liberal, and more likely to vote for CHP (a left-leaning party) as opposed to AKP (a right-leaning party) in all categories except for male narcissism. For the male narcissism category, there was an opposite pattern: A male face with a higher level of perceived narcissism was perceived to be more religious, more conservative, and less likely to be a CHP supporter while there was no effect for belief in God. The results showed that participants' own religious and political identities were mostly ineffective in determining their predictions. Similar to the Turkish sample, the US participants in Study 2 were more likely to associate faces with higher levels of perceived Dark Triad traits with being less religious (in all categories), less likely to believe in God(s) (in all categories except for female narcissism), less socially conservative (in

all categories except for male narcissism), and less economically conservative (in all categories except for male narcissism). However, our prediction that faces with higher levels of perceived Dark Triad traits would be associated with voting for the Republican Party, similar to the case in Study 1, was only partially supported: It was supported for only female psychopathy and male Machiavellianism categories while the effect was non-significant for the remaining categories.

Previous research showed that Dark Triad traits are positively correlated with conservative ideology (e.g., Jonason, 2014) and have a mixed relationship with religiosity (e.g., Aghababaei et al., 2014). Research also suggests that people can distinguish different religious (e.g., Mormons vs. non-Mormons) and political (Democrats vs. Republicans) affiliations based on facial characteristics (Olivola et al., 2018; Rule & Ambady, 2010; Samochowiec et al., 2010). For example, Olivola et al. (2012) asked participants to look at face photographs of candidates running in 1995–2006 gubernatorial and 2000–2008 Senate elections. They found that participants correctly identified the political affiliation of the two competing candidates. In the current research, we found that people are inclined to associate Dark Triad personality traits with disbelief and liberalism. Therefore, the findings of the current research suggest that people can implicitly associate faces with higher levels of perceived Dark Triad traits with disbelief (i.e., atheism) and political liberalism (i.e., left-leaning). Although this finding might seem to contradict some of the past findings (e.g., Jonason, 2014), it should be noted that those findings are usually based on self-report measures of the Dark Triad and ideology, not the face perceptions of zero-acquaintance situations. Additional analyses suggested no moderating role of participants' own religious and ideological orientations or stereotypical evaluations of the target groups.

One potential mechanism underlying the obtained findings could be regarding the assessment of the trustworthiness of the target faces. Past research suggested that humans might have an evolved mechanism to make rapid decisions regarding the target person's trustworthiness (Singer, Kiebel, Winston, Dolan, & Frith, 2004), and people with higher levels of Dark Triad traits are perceived to be less trustworthy in both live dyadic interactions (Rogers, Le, Buckels, Kim, & Biesanz, 2018) and face perception paradigms (Gordon & Platek, 2009). This could explain why faces with higher levels of perceived Dark Triad traits were perceived to be less religious and more likely to be atheist since distrust is a main element in the stereotypes of atheists in many different cultures (Gervais et al., 2017; Gervais, Shariff, & Norenzayan, 2011). This lack of trust exists even among atheist participants (Gervais et al., 2011, 2017). Consistently, it was recently shown that participants who watched silent videos featuring strangers judged atheists to be less trustworthy (Burris, 2020). Thus, labeling faces with higher levels of Dark Triad traits as being less religious and more likely to be an atheist might stem from participants' perception of trustworthiness. Future research should investigate the role of perceived trustworthiness as a potential mediator on this association since our findings speak against this interpretation.

The findings regarding political attitudes, however, are harder to interpret. Past research suggested that likable and trustworthy faces are categorized as Democrat (Rule & Ambady, 2010; Wilson & Rule, 2014). However, in the current research, we found the exact opposite: The faces perceived to have higher levels of Dark Triad traits (which could be argued to be the opposite of being trustworthy; e.g., Rogers et al., 2018) were categorized as more liberal. This finding not only contradicts with the past face perception studies (e.g., Wilson & Rule, 2014) but also the findings indicating that self-identified liberals had lower scores on the Dark Triad traits (Hodson et al., 2009; Jones & Figueredo, 2013). One potential explanation could be that perceiving faces with higher levels of Dark Triad traits to be less religious might be leading to a perception of liberal ideology, as liberals are more likely to be non-religious (e.g., Caprara et al., 2018). Further research is needed to understand the exact mechanism underlying the association between faces with higher levels of Dark Triad traits and liberal political attitudes.

6.1. Practical implications of the findings

Inferring personality traits from faces and attributing certain political and religious attitudes to these faces may have important practical consequences. For example, leadership studies show that candidates whose faces are perceived as more competent receive more votes in the elections (Olivola & Todorov, 2010); and individuals whose faces are perceived to be dominant (Chen, Jing, & Lee, 2014), threatening (Mattes et al., 2010), and sociable (Castelli, Carraro, Ghitti, & Pastore, 2009) are more successful in the elections. In addition, having a face with perceived dominance increases the chances of being hired in more successful companies and getting higher salaries (Rule & Ambady, 2011). Porter, ten Brinke, and Gustaw (2010) found that the defendants whose faces were inferred as untrustworthy were more likely to be found guilty and receive harsher punishment, even when there is insufficient evidence. Therefore, inferences of Dark Triad traits that are closely related to the characteristics mentioned above may affect various areas such as politics, law, and business. Making additional religious and political inferences about people with certain personality traits (i.e., Dark Triad) without any further information on their attitudes may strengthen the stereotypes by adding an element of ingroup/outgroup identity. If people make spontaneous judgments of which social groups a person belongs to, based on only the perceived level of Dark Triad traits in the face, this does not only reveal an existing stereotype but also might influence the spontaneous evaluation of the target person. For example, making inferences about a defendant's political and religious identity based on face perception might influence the punishment the defendant receives, especially in cultures where ingroup favoritism is more salient (Chen, Brockner, & Katz, 1998). Therefore, further research is required to explore the causes and consequences of making inferences about one's political and religious identity based on his/her face, which is associated with Dark Triad traits, and the ways to prevent possible negative consequences associated with these inferences.

6.2. Potential limitations

Past (and the current) research extensively used neutral faces in face photographs in terms of several characteristics such as the size of eyes (e.g., Sacco & Hugenberg, 2009); however, different facial expressions, such as smiling, might be an ecologically more valid approach since the perception of human faces having multiple attributes is a familiar experience. In a comprehensive literature review, Todorov et al. (2015) highlighted that social attribution from faces is not as simple as expected, because it is constructed from various sources, including universal, culture-specific, and idiosyncratic cues. These attributions are influenced by non-perceptual factors such as experience, knowledge, stereotypes, interpersonal relations, and contextual factors.

We also employed a design where the facial images (one with a high and one with a low level of perceived Dark Triad) were placed side by side, which in turn might lead to the impression that one of them has to have a higher score than the other one. Future research could present the images one by one in random order or adopt a between-subjects design and present only one of the two opposite facial images. Although there is no reason to expect that this change in design would make the pattern in the results change into a different direction, the obtained effect sizes could become smaller, which is a potential problem considering that the current effect sizes are already small in magnitude.

Another potential problem with the materials was that the faces associated with one of the Dark Triad traits could also be associated with the other two Dark Triad traits (Holtzman, 2011). Future studies should adopt different visual materials, including faces that are associated with a specific Dark Triad trait while unrelated to the other Dark Triad traits. This would enable us better to isolate the effect regarding a certain personality trait.

6.3. Conclusion

The current findings reveal the first empirical evidence suggesting that people tend to associate faces with higher levels of perceived Dark Triad traits with religious disbelief and political liberalism. We argue that the observed association has potential implications regarding how it might influence spontaneous ingroup/outgroup judgments and the perception of political actors' faces. The findings pave the way for future research tapping into the generalizability and the underlying mechanism related to this phenomenon.

CRedit authorship contribution statement

Sinan Alper: Conceptualization, Methodology, Formal analysis, Data curation, Writing – original draft, Writing – review & editing, Funding acquisition. **Fatih Bayrak:** Conceptualization, Methodology, Writing – original draft, Writing – review & editing. **Onurcan Yilmaz:** Conceptualization, Methodology, Writing – original draft, Writing – review & editing.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.paid.2021.111070>.

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