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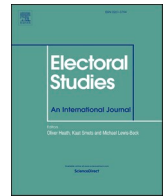
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Dark necessities? Candidates' aversive personality traits and negative campaigning in the 2018 American Midterms

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ABSTRACT

Are candidates with “dark” personality profiles more likely to go negative? We triangulate data for the 2018 Senate Midterms in the United States from two independent sources (the automated coding of social media posts and an expert survey) and test the extent to which the candidates’ “dark” personality traits (narcissism, psychopathy, and Machiavellianism) are associated with their negativity and incivility. By and large, we find that this is the case, especially when combining the separate traits into broader indicators of “dark” personality (“dark core” and underlying personality dimensions). These results resist robustness checks via models run with alternative specifications, such as using measures of personality (and campaign) that are adjusted to filter out the ideological profile of experts, additional covariates, more restrictive modelling, and alternative measurement of key dependent variables.

1. Introduction

The 2018 American Midterms turned out to be an exceptionally antagonistic election. According to the [Wesleyan Media Project \(2018\)](#), almost half of the ads aired in the run-up to the Midterms were purely negative, and 69% contained attacks. Yet, even casual observers would easily note that not all candidates were equally hostile. For instance, in Texas, neither Ted Cruz (R) nor Beto O'Rourke (D) were particularly shy in going on the offensive against each other,¹ whereas Andrew Gillum (D) ran a mostly positive campaign against Ron DeSantis (R) for the Florida Governor race.² What drives such differences in campaign hostility?

Modern campaigns are highly professionalized endeavors (e.g., [Plasser, 2000](#)), and it is undeniable that broad campaigning tactics - for instance, which messages to push and when - are the result of carefully crafted and integrated strategies. When looking at the specific drivers of campaign negativity, some broad trends are well known. Previous research discusses the effects of some macro level factors, such as the competitiveness of the race ([Elmelund-Praestekaer, 2008](#); [Fowler et al., 2016](#)), as well as of the political profile of candidates. For instance, most

studies find that challengers tend to attack more than incumbents ([Lau and Pomper, 2004](#); [Nai, 2020](#)). Yet, it is also equally undeniable that differences in character and personality are powerful drivers of different political “styles”, above and beyond the contextual and strategic constraints. Research has produced over the years a substantial wealth of work showing that dispositional individual differences - personality traits, in other terms - matter greatly to explain the social and political behavior of individuals (e.g., [Chirumbolo and Leone, 2010](#); [Mondak, 2010](#)). Recently, scholars have also shown that this is equally the case for political elites (e.g., [Lilienfeld et al., 2012](#); [Rubenzer et al., 2000](#); [Watts et al., 2013](#)). For instance, [Ramey et al. \(2017\)](#) demonstrate that agreeable members of the Congress of the United States are less effective in passing legislation, [Watts et al. \(2013\)](#) highlight that grandiose narcissism in American presidents increases the chances of tolerating unethical behaviors in subordinates, and [Nai and Martinez i Coma, 2019](#) show that populist candidates tend to score higher in psychopathy than “mainstream” politicians. All in all, these works suggest that differences in the personality of political figures matter to explain their political “style”. To the best of our knowledge, however, no evidence has tested this assumption when it comes to campaigning strategies.

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¹ “Beto O'Rourke Goes on The Attack Against Ted Cruz”, by Wade Goodwyn, *NPR*, 17 October 2018. <https://www.npr.org/2018/10/17/658308233/beto-orourke-goes-on-attack-against-ted-cruz>.

² “Republican Ana Navarro calls Trump ‘racist pig’ on CNN, will vote for Democrat Andrew Gillum”, by Brendan Cole, *Newsweek*, 5 November 2018. <https://www.newsweek.com/video-republican-ana-navarro-calls-trump-racist-pig-cnn-will-vote-democrat-1200834>.

In this article we ask to what extent dispositional differences in competing candidates can be associated with their use of a hostile campaigning style. We focus more specifically on the “socially aversive” aspects of personality (the Dark Triad of narcissism, psychopathy, and Machiavellianism; Paulhus and Williams, 2002); it seems intuitively logical that the “darker” side of personality is closely associated with an aggressive campaigning style. Due to the lack of large-scale data able to retrace both the content of candidates’ campaigns and their personality profiles, evidence of this is virtually inexistent. Triangulating data from different independent sources (an automated coding of social media posts and an expert survey), we test if the personality of candidates having competed in the US 2018 Senate Midterms is associated with the content of their campaigns. We broadly expect the “dark” personality traits to be associated with a more negative and (especially) uncivil form of campaigning.

2. Personality and negativity

2.1. Dark triad

Studies in psychology suggest that humans can have socially aversive yet non-pathological facets of personality (Moshagen et al., 2018). One of the most widely known inventories measuring the “dark” components of personality is the Dark Triad. This approach claims that humans’ “malevolent” aspect of personality consists of three components: narcissism, psychopathy, and Machiavellianism (Paulhus and Williams, 2002). These components have been shown to be associated to ideological positioning and political attitudes and behaviors (Jonason, 2014; Arvan, 2013). However, only very few studies have associated the darker sides of human personality to campaigning or communication activities (Nai et al., 2018).

Evidence from other behavioral disciplines allows us to expect that candidates scoring high on the Dark Triad are more likely to go negative on their opponents. Psychopathy is probably the one “dark” trait having the strongest and more direct association with the use of negativity in campaigns. Psychopaths usually show “a cognitive bias towards perceiving hostile intent from others” (Levenson, 1990, p. 1074) and are impulsive, prone to callous social attitudes, and show a strong proclivity for interpersonal antagonism (Jonason, 2014). Individuals high in psychopathy do not possess the ability to recognize or accept the existence of anti-social behaviors, and thus should be expected to more naturally adopt a more confrontational, antagonistic and aggressive style of political competition. Individuals high in psychopathy have been shown to have more successful trajectories in politics (Lilienfeld et al., 2012), also due to the prevalence of social dominance in this trait. They are furthermore often portrayed as risk-oriented agents (Levenson, 1990). In this sense, we could expect individuals that score high in psychopathy to make a particularly strong use of attacks, regardless of the risk of backlash effects (e.g., Garramone, 1984).

Like psychopathy, narcissism, and especially its “grandiose” component of flamboyant attention seeking, has been shown to predict more successful political trajectories (Watts et al., 2013), also due to the prevalence of social dominance intrinsic in the trait. Narcissism is, furthermore, linked to overconfidence and deceit (Campbell et al., 2004) and hypercompetitiveness (Watson et al., 1998), which could explain why narcissists are more likely to engage in angry/aggressive behaviors and general incivility in their workplace (Penney and Spector, 2002), particularly when criticism threatens their self-esteem (Baumeister et al., 2000). Narcissism is furthermore linked to reckless behavior and risk-taking (Campbell et al., 2004), and thus individuals high in this trait are expected to disregard the risk of backlash effects to defend their image.

Evidence exists that Machiavellianism has also an aggressive and malicious side - not unlike psychopathy, with which some suggest it forms the “Malicious Two” (Rauthmann and Kolar, 2013). People high in Machiavellianism are “characterized by cynical and misanthropic

beliefs, callousness, a striving for argentic goals (i.e., money, power, and status), and the use of calculating and cunning manipulation tactics” (Wisse and Sleebos, 2016, p. 123), and in general tend to display a malevolent behavior intended to “seek control over others” (Dahling et al., 2009). Behavioral evidence suggests that high Machiavellianism is associated with bullying at work (Pilch and Turska, 2015) and the use of more “negative” and aggressive forms of humor (Veselka et al., 2010).

All in all, these trends lead us to conclude that candidates high in the Dark Triad should be more likely to adopt more aggressive communication patterns. Recent evidence showing that all three dark traits are positively associated with cyberbullying and trolling in online communication (Buckels et al., 2014) seems to confirm this assumption. We thus have:

H1. Higher scores on the dark personality traits are associated with greater campaign negativity.

2.2. Negativity and incivility

Negativity is usually defined in directional terms as “any criticism leveled by one candidate against another candidate” (Geer, 2006, p. 23), that is, the use of political attacks against the opponents (their program, their ideas, their record) instead of promoting one’s own position. This purely directional perspective is often complemented by qualifying characteristics that determine the *nature* of the attacks delivered - for instance in terms of their focus (against the character of the opponent or their policy propositions; e.g., Hopmann et al., 2018), or relevance (Fridkin and Kenney, 2011) - but the core definition of negativity within the usual framework reflects the presence of an attack against the opponents, regardless of its forms. Directional negativity, such defined, is of course not the only rhetorical feature within the contemporary understanding of what “negative campaigning” entails. Indeed, research on negative campaigning often distinguishes directional negativity - that is, the presence of attacks against opponents - from incivility (e.g., Brooks and Geer, 2007; Mutz and Reeves, 2005). Incivility is “easy to identify (you know it when you see it)” (Sobieraj and Berry, 2011, p. 25) but, contrarily to negativity, is notorious hard to define. All available descriptions include the idea that incivility “violates some agreed upon standard of society” (Maisel, 2013, p. 204), although there is no agreement on what those standards are. However, one key characteristic is that uncivil messages are unusual impolite, harsh, and disrespectful (e.g., Fridkin and Kenney, 2011; Hopmann et al., 2018; Mutz and Reeves, 2005), and tend to rely on exaggerations and hyperbole (Jamieson and Falk, 1998; Papacharissi, 2004). In this sense, incivility represents a form of messages that breach the established norms of polite and respectful (political) discussions. If incivility is often reflected as the use of particularly harsh and uncompromising attacks against the opponents (e.g., the use of ad-hominem attacks or plain insults), negativity and incivility often go hand in hand. Nonetheless, from a conceptual standpoint, uncivil messages need not be (directionally) negative, as incivility does not necessarily have to be framed as an attack towards the opponents.

We also expect incivility to be positively associated with candidates’ dark personality traits. However, because incivility intrinsically reflects a harsher, uncompromising and more strident form of rhetoric, we expect stronger effects when compared to the effects for negativity. In other terms, we expect candidates’ dark traits to particularly drive the use of incivility, even more so than they should drive negativity. The expectations described above for the association between dark personality and negativity make intuitively even more sense for incivility. Violating standards of “good behavior” by being impolite, harsh, or disrespectful seems logically to be in the backyard of candidates who tend to appear as socially dominant and callous (high psychopathy), who tend to aggressively defend their self-esteem (high narcissism), or who do not hesitate to lie and manipulate to succeed (high Machiavellianism). Hence, we expect:

H2. The effects of the dark personality traits are stronger for

incivility than for negativity.

2.3. Campaigning on social media

Assuming that the personality of candidates influences their communication style requires a further consideration about the nature of such communication. If, as we assume, a link between the two can be shown, then it should be equally assumed that the channel in which the communication takes place allows for the expression of character or personal idiosyncrasies of the candidates. In other terms, personality effects should particularly exist in channels characterized by “spontaneity” and interactivity (Elmelund-Præstekær, 2010). With this in mind, we focus here on candidates’ campaigns on social media - and more specifically on Twitter.

The meteoric rise of political campaigning in social media stands in sharp contrast with more “traditional” techniques of political communication (Gainous and Wagner, 2014; Graham et al., 2016; Straus et al., 2013), such as TV ads, where the image of the candidates is carefully and strategically crafted and polished (e.g., Johnston and Kaid, 2002). As for TV ads, negativity is endemic in social media (e.g., Auter and Fine, 2016; Ceron & d’Adda, 2016; Evans and Clark, 2016; Gross and Johnson, 2016). Furthermore, and broadly speaking, research tends to suggest that the main trends of strategic campaigning found for traditional techniques - for instance, that challengers tend to attack more than incumbents (Lau and Pomper, 2004) - exist in equal measure for social media as well (Gainous and Wagner, 2014). Yet, online communication, especially via social media, is fundamentally different from the more “traditional” communication channels in one main aspect: it allows political actors to bypass journalistic gatekeeping and to communicate directly with their audience (Bennett and Manheim, 2006). Such facilitated access to the people is one of the reasons why online communication is particularly favored by populists and challengers (Jungheer et al., 2019). Even more importantly, communication in social media can be expected to represent more of a “spontaneous, unrehearsed discourse” (Margaretten and Gaber, 2014). To be sure, it would be naïve to believe that communication in social media by top candidates is completely spontaneous and uncontrolled. Yet, we believe that an argument can be made that, if indeed the personality of candidates can be reflected in their communication style, then this should be more apparent in this form of communication than in the more “traditional” formats.

3. Methods

We present below results for a series of models where the tone of candidates’ campaign in the 2018 U.S. Senate Midterm elections is regressed on their personality traits, plus controls for their personal profile and context. Whereas the measures of campaign tone come from different sources (see below), the measure of candidates’ personality comes from a survey of 213 American experts.

Expert ratings provide an alternative way to measure social and political phenomena and are especially useful for settings where collecting large-scale comparative data is unrealistic or unpractical (e.g., Polk et al., 2017). This is, for instance, the case of comparative research on the tone of election campaigns used by candidates across the world; large-scale comparative research on this topic is virtually inexistent, due to the complexity of accessing, coding and comparing discursive materials across countries, cultures, and languages. Expert surveys allow to circumvent this problem. Yet, the use of expert ratings is not without caveats, as we discuss below.

3.1. Experts ratings

3.1.1. Procedure and sample

In the direct aftermath of the Midterm elections of November 2018 we contacted via email a sample of scholars with expertise in elections,

politics and political communication and working for an American higher education institution. They were asked to evaluate the campaign in general and, depending on the state where they live, the personality and campaigning style of the two competing candidates for the Senate in that state. Only candidates for which at least two scholars provided independent ratings are included in the dataset; we therefore exclude North Dakota, West Virginia, Hawaii, Nevada and Wyoming from our analyses for robustness reasons. Six other candidates had to be excluded due to missing values on key personality variables. The final dataset contains information for 50 candidates having competed in 27 states. The number of expert ratings collected varies between 2 (for, e.g., Delaware) and 30 (California), with an average of 8.04 experts per candidate (for detailed information see Table A1 in Appendix A).

On average, experts in the whole sample lean as expected to the left ($M = 3.22/1-10$, $SD = 1.43$); 66% of them identify as a Democrat, 21% as Independent, and only 4% as a Republican. 27% of them are female. On average, experts rated themselves as very familiar with election campaigns in their state ($M = 7.81/0-10$, $SD = 2.05$) and estimated that the questions in the survey were relatively easy to answer ($M = 7.52/0-10$, $SD = 2.39$).

3.1.2. Can experts measure the personality of political figures?

If we are by far not the first to rely on expert ratings to gauge the personality of political figures (e.g., Rubenzer et al., 2000; Lilienfeld et al., 2012; Visser et al., 2017; Rice et al., 2020), doing so might seem unorthodox. In the past, studies were most often limited to the mapping of selected traits such as, e.g., narcissism (Watts et al., 2013), or psychopathy (Lilienfeld et al., 2012), while the use of expert rating to develop full psychological profiles of political figures is rarer (e.g., Visser et al., 2017), in part because actively discouraged in the past (“Goldwater rule”; Lilienfeld et al., 2018). Measuring the personality of political elites directly through psychological assessments or via self-reported measures is extremely hard, for lack of direct access. Some studies were able to use self-reported data (e.g. Dietrich et al., 2012; Joly et al., 2018; Schumacher and Zettler, 2019; Scott and Medeiros, 2020), but this is limited to specific cases and to the best of our knowledge no comparative research exists – especially not for national leaders or “top” candidates. Furthermore, a question could be raised as to whether politicians are honest when answering personality batteries in questionnaires. Because the need to appear under a favorable light in the eye of the voter is part of their vocation, “politicians may be motivated to present themselves as having socially more desirable (‘better’) trait levels than they really have” (Schumacher and Zettler, 2019, p. 176).

A first alternative to self-reports consists in the analysis of secondary data, such as parliamentary speeches, starting from the assumption that the personality of political figures translates into their “production.” Recent studies relying on machine learning techniques show very promising results (Ramey et al., 2017). At the current time it is however not yet clear whether this approach can yield consistent results across different contexts (e.g., different languages or communication situations), and of course the results are contingent on the availability of materials to be coded and - in comparative studies - on the presence of similar materials across all cases under investigation.

Expert ratings represent a second alternative. The approach does not face limitations in terms of social desirability biases, can theoretically be replicated in virtually all contexts, and circumvents the need of having at hand comparable secondary data to code across all cases. Yet, if we have to believe that expert ratings can be used to measure the personality of political figures, three main questions need to be addressed: (i) do experts agree with each other? (ii) on what are they basing their judgments? (iii) are experts “ideologically neutral” when it comes to assess the personality of candidates, some of which they might dislike from a political standpoint? We discuss in this subsection the first two questions. The third question, which is one of the most frequent critiques addressed against expert surveys suing academics, is discussed separately in the next subsection.

First, several studies show the presence of cross-observer agreement on personality assessments (e.g., McCrae and Costa, 1987; Moshagen et al., 2019), suggesting that external observers can rate the personality of other persons in a way that is consistent with their self-assessments. For instance, Jones and Paulhus (2014) show that informant reports for the Dark Triad correlate very strongly with self-reports, especially for psychopathy. On top of this, evidence suggests that informants themselves tend to agree *with each other* (Vazire, 2006, 2010). This second point is of particular interest in our case. Do experts agree with each other? The standard deviations for each candidate personality trait, which can roughly be interpreted as the degree to which experts provide a “consensual” rating, provides a clear indication in this sense. Across all candidates in our dataset the average standard deviation ranges between $SD = 0.79$ (on a 1–7 scale) for emotional stability and $SD = 1.23$ for extraversion; across all candidates and traits, the average standard deviation is $SD = 1.03$, which is relatively low all things considered. In other terms, experts seem to agree with each other quite consistently (see Table B2; Appendix B for details).

The second question concerns the information experts are using to form their judgments. Unfortunately, we have no way to empirically assess this issue - we even wonder if this is something that can be measured in an expert survey in the first place. However, from a logical standpoint, we can assume that experts are able to collate information from a multitude of sources: news media but also public appearances of the candidates themselves (e.g., interviews, debates, rallies), and any communication materials they might produce. Contrarily to other studies (e.g., Visser et al., 2017) scholars in our dataset are experts on politics, elections, or political communication in the USA - in other terms, it is their *job* to know these candidates. Also because of this, their knowledge of the candidates is likely to go above and beyond the most recent appearances of candidates in the media; in this sense, they can be expected to be less influenced than the public at large by the candidates' current campaigns in their assessments, and likely to have a more holistic perception of the candidates. For the data at hand, experts indeed reported a high degree of familiarity with elections in their state (see above).

3.1.3. Expert biases?

Questions have been raised as to whether experts are able to rate political phenomena independently from their ideological preferences (e.g., Curini, 2010; Wright and Tomlinson, 2018). Even if it is undeniable that academia tends to lean towards the left (Maranto and Woessner, 2012), we believe that the theoretical reasons for this to necessarily lead to biased assessments are unclear. It could be that it is expertise from right-leaning experts that is biased; perhaps, motivated reasoning is somewhat more likely on the right - as indirectly suggested by research showing that conservatism is associated with intellectual dogmatism (e.g., Jost et al., 2003; but see Kahana, 2012), or that conservatives tend to score higher in need for cognitive closure, especially if high in political expertise (Federico and Goren, 2009). To be clear, we are not arguing here that this is necessarily the case. Instead, the point we are trying to make is that, because biases cannot intrinsically be associated with left-leaning scholars only, simply showing that (1) experts tend to lean towards the left and that (2) ideology drives their ratings cannot automatically suggest the presence of biased *aggregate* assessments. All in all, although we are very sympathetic to the idea that academia should be more inclusive and diversified,³ we wonder whether it should be automatically assumed that a more liberal academia leads necessarily to biased knowledge.

From an empirical standpoint, some evidence suggests that experts tend to have much more consensual opinions than the public at large (Nai and Maier, 2019). Similarly, in our data, the ideology of experts

³ See, for instance, the Heterodox Academy project. <https://heterodoxacademy.org>.

does not drive at all how they rate the negativity of Republican and Democrat candidates, as shown in both left-right self-placement and partisan identification (see Table C1; Appendix C). In other words, more liberal experts are not more likely to assess negatively the campaign of Republican candidates, and vice-versa.

Nonetheless, we believe that we have to err on the side of caution. For this, we discuss below a series of “adjusted” measures of candidates' personality, that account for the ideological distance between the average expert and the candidate they had to evaluate. Furthermore, we will replicate all models also controlling for the average expert profile in each state sample.

3.2. Personality traits

3.2.1. TIPI and D12

Experts were asked to rate the “dark” personality of the candidates using the “Dirty Dozen” (D12) battery developed by Jonason and Webster (2010). The battery is a series of 12 statements about the candidate (e.g., the candidate “tends to want others to admire them”), for which experts have to rate their agreement (from 1 “Disagree strongly” to 7 “Agree strongly”). The average agreement score on groups of four statements is used to measure the three dark traits of narcissism, psychopathy, and Machiavellianism.⁴ Furthermore, they were also asked to rate the candidates “Big Five” traits (extraversion, agreeableness, conscientiousness, emotional stability, openness) using the TIPI inventory (Gosling et al., 2003). Table B1 in Appendix B reports the scores on all eight personality traits for all candidates in our dataset.

In a recent article, Rice et al. (2020) presented the personality traits of US Senators, using ratings provided by Senate insiders. Their data provides us with a rather unique possibility to check for the external validity of our data, albeit only for the Big Five. Across the candidates that are covered in both datasets, all five personality traits are positively associated, indicating that candidates that score high on a given trait in our dataset (as measured by the experts) also tend to score high on that trait in the Rice et al. (2020) dataset, and vice versa. In three cases, the relationship is statistically significant, and relatively strong; $r(20) = 0.65$, $p < .001$ (agreeableness), $r(19) = 0.59$, $p < .001$ (emotional stability), and $r(20) = 0.40$, $p < .062$ (extraversion). The linear association between the two measures of the five traits is graphically presented in Figure B2 (Appendix B).

3.2.2. “Dark core”

Short measures of personality are by far not perfect measures. With only a few items per trait, they sacrifice validity for reliability (Spain et al., 2014; Bakker and Lelkes, 2018) and cannot thus be expected to reproduce the full nuances of personality shades and facets. This is even more likely when people are asked to rate third parties. Indeed, evidence exists that external observers unconsciously use simplified assessment scheme when rating the personality of public figures (e.g., Caprara et al., 2007). Looking specifically at the Dark Triad, several studies suggest the existence of a “dark core” underlying the three original traits (e.g., Paulhus and Williams, 2002; Book et al., 2015; Moshagen et al., 2018; see also Furnham et al., 2013), starting from the assumption that narcissism, psychopathy and Machiavellianism can have differential effects but are also strongly correlated.

This is the case in our data as well. A Principal Component Analysis (PCA) shows the existence of one unique underlying dimension (Eigenvalue = 2.41, Proportion = 0.80), and an additive scale built on the three variables yields, unsurprisingly, a very high reliability ($\alpha = .86$). The “dark core” is, furthermore, associated in a predictable way with other personality traits within the Big Five inventory (measured through the TIPI short scale, Gosling et al., 2003), e.g., as shown in Table 1, the “dark core” is negatively associated with agreeableness,

⁴ $\alpha = .79$ (narcissism), $\alpha = .95$ (psychopathy), $\alpha = .96$ (Machiavellianism).

Table 1
Personality, Zero-order correlations.

		N	P	M	"dark core"	E	A	C	Es	O	Rep.
N	r	.									
	p										
	N										
P	r	0.65	.								
	p	0.000									
	N	50									
M	r	0.67	0.80	.							
	p	0.000	0.000								
	N	50	50								
"dark core"	r	0.81	0.93	0.94	.						
	p	0.000	0.000	0.000							
	N	50	50	50							
E	r	0.18	-0.04	-0.10	-0.02	.					
	p	0.215	0.786	0.499	0.913						
	N	50	50	50	50						
C	r	-0.44	-0.71	-0.53	-0.64	0.11	0.73	.			
	p	0.001	0.000	0.000	0.000	0.457	0.000				
	N	50	50	50	50	50	50				
Es	r	-0.59	-0.86	-0.64	-0.79	-0.07	0.92	0.78	.		
	p	0.000	0.000	0.000	0.000	0.631	0.000	0.000			
	N	50	50	50	50	50	50	50			
O	r	-0.31	-0.58	-0.49	-0.53	0.52	0.55	0.51	0.46	.	
	p	0.027	0.000	0.000	0.000	0.000	0.000	0.000	0.001		
	N	50	50	50	50	50	50	50	50		
Republican	r	0.61	0.74	0.66	0.75	-0.07	-0.79	-0.58	-0.75	-0.65	.
	p	0.000	0.000	0.000	0.000	0.636	0.000	0.000	0.000	0.000	
	N	50	50	50	50	50	50	50	50	50	
Female	r	-0.06	-0.04	-0.12	-0.08	0.19	-0.04	0.25	0.11	0.03	-0.13
	p	0.704	0.778	0.406	0.567	0.184	0.777	0.076	0.447	0.838	0.373
	N	50	50	50	50	50	50	50	50	50	50

N 'Narcissism', P 'Psychopathy', M 'Machiavellianism'.
E 'Extraversion', A 'Agreeableness', C 'Conscientiousness', Es 'Emotional stability', O 'Openness'.

conscientiousness and emotional stability, as discussed in [Jonason et al. \(2013\)](#).

3.2.3. Second-order factors

The existence of the "dark core" that combines the three traits, as discussed above, echoes the idea that individual personality traits reflect a simplified, underlying structure of human personality. At the candidate level, [Caprara et al. \(2007\)](#) show the presence of 2 second-order factors: the first is characterized by friendliness, conscientiousness and emotional stability, whereas the second by energy/extraversion and openness. This structure reflects the two major underlying personality dimensions discussed at the individual level ("alpha" and "beta", [Digman, 1997](#)).

We have explored the existence of such underlying personality dimensions in our data, looking at simultaneously the Big Five and Dark Triad traits, via a PCA. Results are plotted in [Fig. 1](#) (loadings plot).⁵

The PCA revealed two orthogonal underlying dimensions, explaining respectively 61.0% (Factor 1) and 17.7% (Factor 2) of the variance; the different explanatory power of the two factors is roughly reflected in the proportions of the graph. The first underlying factor (F1, reversed) echoes [Caprara et al.'s \(2007\)](#) dimension of friendliness, conscientiousness and emotional stability, which in our case includes the opposed effect of the three "dark" traits (absent from their study). The second factor echoes the dimension of energy/extraversion and openness in [Caprara et al. \(2007\)](#); in our data, extraversion and openness score positively whereas all other traits (including the Dark Triad) have a negligible effect. [Fig. 2](#) plots all candidates on these two underlying factors.

3.2.4. Adjusted measures of personality

A question could be raised as to whether less (ideologically) skewed samples yield more nuanced personality assessments. To assess the extent of this potential bias, we have computed "adjusted" measures of candidates' personality traits. Inspired by the procedure described in [Walter and Van der Eijk \(2019\)](#) we have calculated such adjusted measures by regressing each candidate's value on the different personality trait (including the "dark core" and the two underlying dimensions) on the difference between the average expert left-right position and the candidate's partisan identification. This latter was computed in such a way that (high) positive scores indicate that the average expert are (strongly) to the left of a Republican candidate, whereas (high) negative scores indicate that the average expert are (strongly) to the right of a Democrat candidate ($M = 0.22, SD = 0.50$); this measure captures, in other terms, how "ideologically distant" the expert sample and the candidate they evaluated are. In a second step, we have stored the regression residuals - that is, the part of the dependent variable (assessed personality) that is *not* explained by such ideological distance - into a new variable. In doing so, we have in other terms computed measures of candidates' personality traits that are independent of the ideological distance between the (average) expert and the candidate.

The original and adjusted variables are overall strongly correlated; $r(48) = 0.78, p < .001$ (narcissism), $r(48) = 0.66, p < .001$ (psychopathy), $r(48) = 0.75, p < .001$ (Machiavellianism), $r(48) = 0.65, p < .001$ ("dark core"), $r(48) = 0.58, p < .001$ (first underlying dimension, F1) and $r(48) = 0.99, p < .010$ (second underlying dimension, F2). [Figure B1 \(Appendix B\)](#) shows the linear association between the original and adjusted measures.

Assessing the "predicted" judgment of "moderate" experts does make sense intuitively. These adjustments start from the assumptions that experts become increasingly "biased" (that is, far from the "true" value)

⁵ Factor 1 (x-axis) reversed to facilitate interpretation.

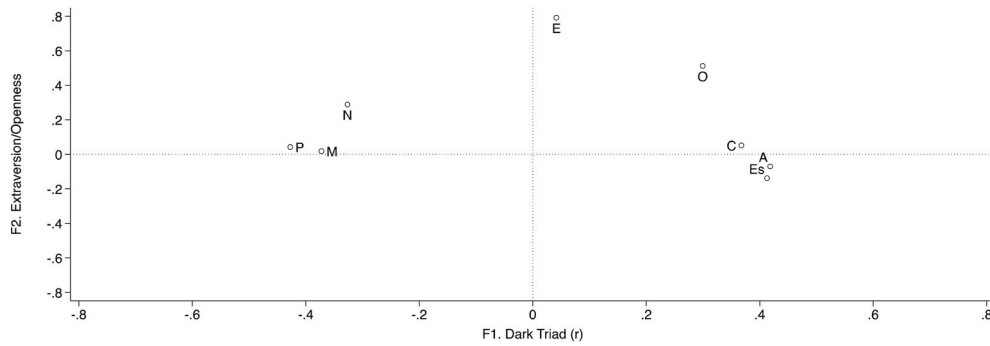


Fig. 1. Second-Order personality factors. Loadings plot; personality components scores on underlying dimensions. The proportion between the two axes reflects the relative importance of the two factors (F1 explains roughly 3.6 times more variance than F2).

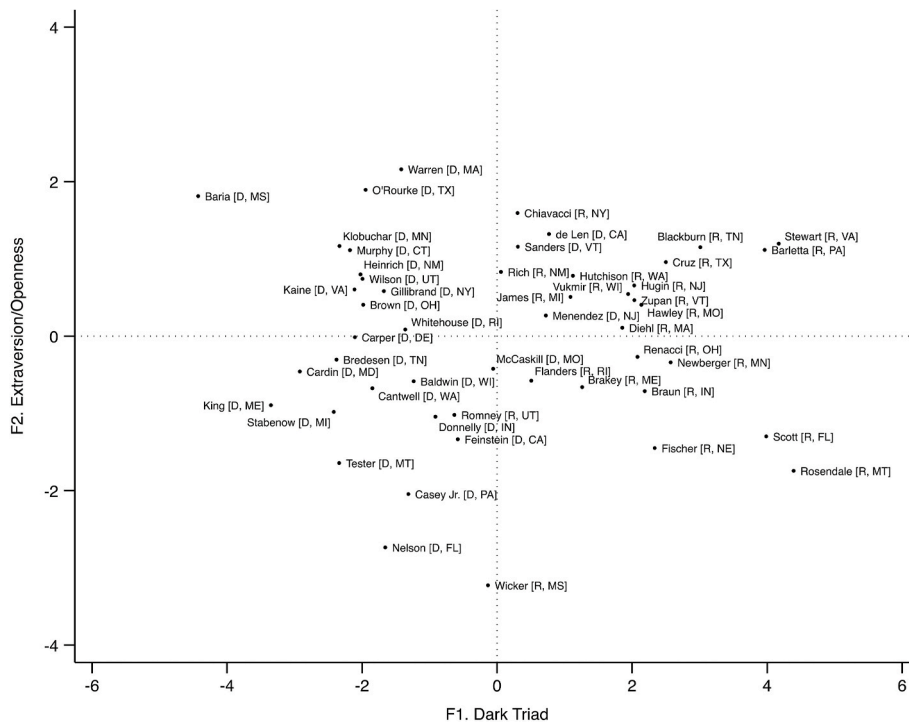


Fig. 2. Candidate scores on Second-Order personality factors. Please note that the first factor (x-axis) explains roughly 3.6 times more variance than the second factor (y-axis). The Figure does not reflect these proportions to avoid excessive overlaps; cardinal distances between candidates should thus be interpreted cautiously.

as they move away from the mid-point of the ideological scale; if this assumption holds, then a sample of experts that is, on average, far from this mid-point (as scholars have been shown to be, [Maranto and Woessner, 2012](#)) has to yield a skewed average rating. Yet, the fact that “moderates” have a less biased opinion than (left-wing) non-moderates remains only an assumption and - as discussed above - one that could also quite easily be questioned theoretically. We have thus no strong a-priori reasons to expect that these “adjusted” measures of personality are necessarily correcting a bias instead of inserting a different one - because completely eliminating the influence of ideological positions of experts. Nonetheless, to push forward the debate about the “correctness” of expert assessments, we will estimate all our models also using these adjusted variables, as a complementary set of analyses. As we will discuss below, results are robust regardless of the measure of personality used (original or adjusted).

3.3. Measuring negativity and incivility

The main models discussed in this article concern the expression of

campaign tone (negativity and incivility), which we expect to be a function of the candidates’ personality traits. We discuss below models for two separate measures of campaign negativity, coming from as many independent sources: the percentage of candidates’ negative and uncivil tweets, and the experts’ general assessment of the candidates’ campaign tone.

3.3.1. Negativity and incivility on Twitter

We trained an algorithm to automatically classify the tweets posted by the competing candidates in the 2018 US Senate Midterms in terms whether or not they used attacks against their opponents ([Petkevic and Nai, 2020](#)). To do so, we collected all tweets posted by the competing candidates between September 1 and November 8, 2018 (N = 16,173

tweets).⁶ The number of tweets per candidate collected varies considerably, from $N = 24$ for Mitt Romney (R, UT, @MittRomney) to $N = 1028$ for Rick Scott (R, FL, @SenRickScott), with an average of 256.7 tweets per candidate. A first initial random sample of 198 tweets was manually coded by a team of four research assistants on a series of dimensions, including the presence of attacks (Krippendorff's $\alpha = 0.75$).⁷ Discrepancies among the coders were solved by the authors of this study. The final coding of these tweets was fed to the developing algorithm via a supervised machine learning approach (Kotsiantis, 2007), along a selected series of “good examples” identified by all coders within all non-coded tweets as containing an attack. These annotated additional examples were instrumental to compensate for the fact that, comparatively speaking, the “presence” of the phenomenon under investigation was infrequent in the coded sample. Building from the coding of the random sample of 198 tweets and the additional selected examples, a multilayer perceptron neural network (MLP; Pedregosa et al., 2011) classifier was trained to automatically annotate the whole dataset of 16,173 tweets.

Looking at all classified tweets, the area under the ROC (receiver operating characteristic) curve, which broadly quantifies the performance of a classification model, is 0.82, with F1 scores of 0.81 for absence of attacks and 0.83 for presence of attacks. In other terms, the final algorithm was able to correctly classify 81% of tweets as not containing an attack and 83% of tweets as containing one. Precision and recall scores for the absence of attacks are, respectively, 0.84 and 0.77; for the presence of attacks, these scores are, respectively, 0.80 and 0.86. Overall, 31.5% of all 16,173 tweets were classified by the algorithm as containing an attack. Starting from this classification, we computed the proportion of negative tweets (that is, the percent of tweets that contain an attack) for each candidate, as reported in Table A1 (Appendix A).

The proportion of negative messages is a straightforward indicator, but “it makes the implicit assumption that all candidates are equally able to get their message across to the voters” (Lau and Pomper, 2004, p. 46). In this sense, the sheer number of tweets (roughly reflecting the “intensity” of the candidate’s campaign) is likely to matter as well, albeit also not on its own (see also Stevens, 2009, on volume and proportion of negativity). To reflect the fact that campaigns that are perceived as more negative are those that have a higher share of negative tweets *and* are globally more intense, we have computed the “weighted” presence of negative tweets for each candidate by simply multiplying the proportion of negative tweets by their absolute number (see Table A1; for a similar procedure see Lau and Pomper (2004). In our case, a high “weighted negativity” reflects a large number of tweets that are particularly negative, thus combining both the relative presence of negativity (proportion) and its absolute value (frequency). The result of this multiplication ($M = 94.7$, $SD = 92.2$) was then standardized to ensure comparability across models with different dependent variables ($M = 0$, $SD = 1$).

A similar procedure was repeated to identify the tweets that contained “incivility”, defined in the codebook for the initial manual coding as tweets that contain “a harsh, shrill, uncivil, offensive, vulgar language.”⁸ Classification scores for incivility are, broadly speaking, similar

to those mentioned above for negativity. They are, respectively, 0.93 (precision), 0.95 (recall), and 0.94 (F1) for the absence of incivility, and 0.80 (precision), 0.75 (recall), and 0.77 (F1) for the presence of incivility. Overall, 5.8% of all 16,173 tweets were classified by the algorithm as containing incivility. As for negativity, we use in our analyses a “weighted” measure of incivility, that accounts for both its relative and absolute presence jointly ($M = 18.3$, $SD = 26.0$), which we standardized to ensure comparability across models with different dependent variables ($M = 0$, $SD = 1$). Tables D1 and D2 (Appendix D) present selected examples of tweets that were coded as, respectively, negative or uncivil.

3.3.2. General negativity (expert assessment)

Scholars in our expert survey were also asked to rate to what extent candidates used “negative campaigning” against their opponent during the election, that is, to what extent they relied on campaigning messages “criticising their opponents’ programs, ideas, accomplishments, qualifications, and so forth.” For each candidate, they provided a rating between -10 “Very negative” and $+10$ “Very positive”. We simplified into a 0–10 negativity scale where 10 means “Very negative”, which we will use in our analyses (standardized). We will use this variable as an additional measure of negativity, on top of the percent of negative and uncivil tweets. Because they were cued to assess the campaign “on the whole,” experts can be expected to provide an assessment of the “general negativity” of the campaign, that is, including potentially also the overall “harshness” of the exchanges between the candidates. In this sense, the general assessment of the expert reflects a more holistic perception of the campaign, that should account for both negativity and incivility. Results using this more general variable should thus be less nuanced than the separate analysis for negativity and incivility (on Twitter), but nonetheless go in the same direction. Fig. 3 plots the bivariate relationship between the negativity and incivility on Twitter, and the general tone of the campaign (expert score).

4. Results

We present below a series of models where the negativity and incivility of candidates’ campaign is regressed on their profile and the profile of the context. For each dependent variable we present three models: the first model tests for the direct effect of the three Dark Traits, the second model tests for the effect of the “dark core”, and the third model tests for the effect of the two underlying personality dimensions (thus, indirectly, also accounting for the candidates’ profile in term of their Big Five scores). To exclude major confounding effects, all models are controlled by four factors that have been shown to be associated with the use of more negative campaigns: incumbency status (challengers are more likely to go negative; Lau and Pomper, 2004), party affiliation (candidates on the right have been shown to be more likely to go negative; Nai, 2020), gender (female candidates can be expected to use less negative campaigns, Fridkin et al., 2009; Krupnikov and Bauer, 2014 - but the evidence on this is often contested; e.g., Maier, 2015), and competitiveness of the race (Elmelund-Praestekaer, 2008; Fowler et al., 2016); competitiveness of the race is measured via a binary variable that takes the value 1 for “safe states” and the value 0 for more competitive states (based on the projections made by POLITICO in the weeks before the election⁹). All analyses are Generalized Least Squares (GLS) with robust standard errors, with candidates nested within states.

4.1. Negativity and incivility on Twitter

Table 2 presents two series of models. The first series estimates the “weighted” negativity in candidates’ tweets (M1 to M3), whereas the second series estimates the “weighted” incivility (M4 to M6). In all cases,

⁶ Tweets were collected via vicinitas.io, a website that allows for post-hoc bulk download of tweets for selected Twitter handles. Three candidates did not, to the best of our knowledge, post any tweets in that period (even though they do have a twitter handle): Chele Chiavacci (R, NY, @CheleNYC). Leah Vukmir (R, WI, @LeahVukmir), and Lawrence Zupan (R, VT, @LawrenceZupan).

⁷ Calculated with the ReCal online tool (<http://dfreelon.org/utills/recalfront/recal-oir/>) by Deen Freelon.

⁸ In this case, the initial intercoder reliability before consolidation was quite low (Krippendorff's $\alpha = 0.17$). The use of selected “good examples” was then particularly instrumental to allow for the development of the automated classifying algorithm.

⁹ <https://www.politico.com/election-results/2018/house-senate-race-ratings-and-predictions/>.

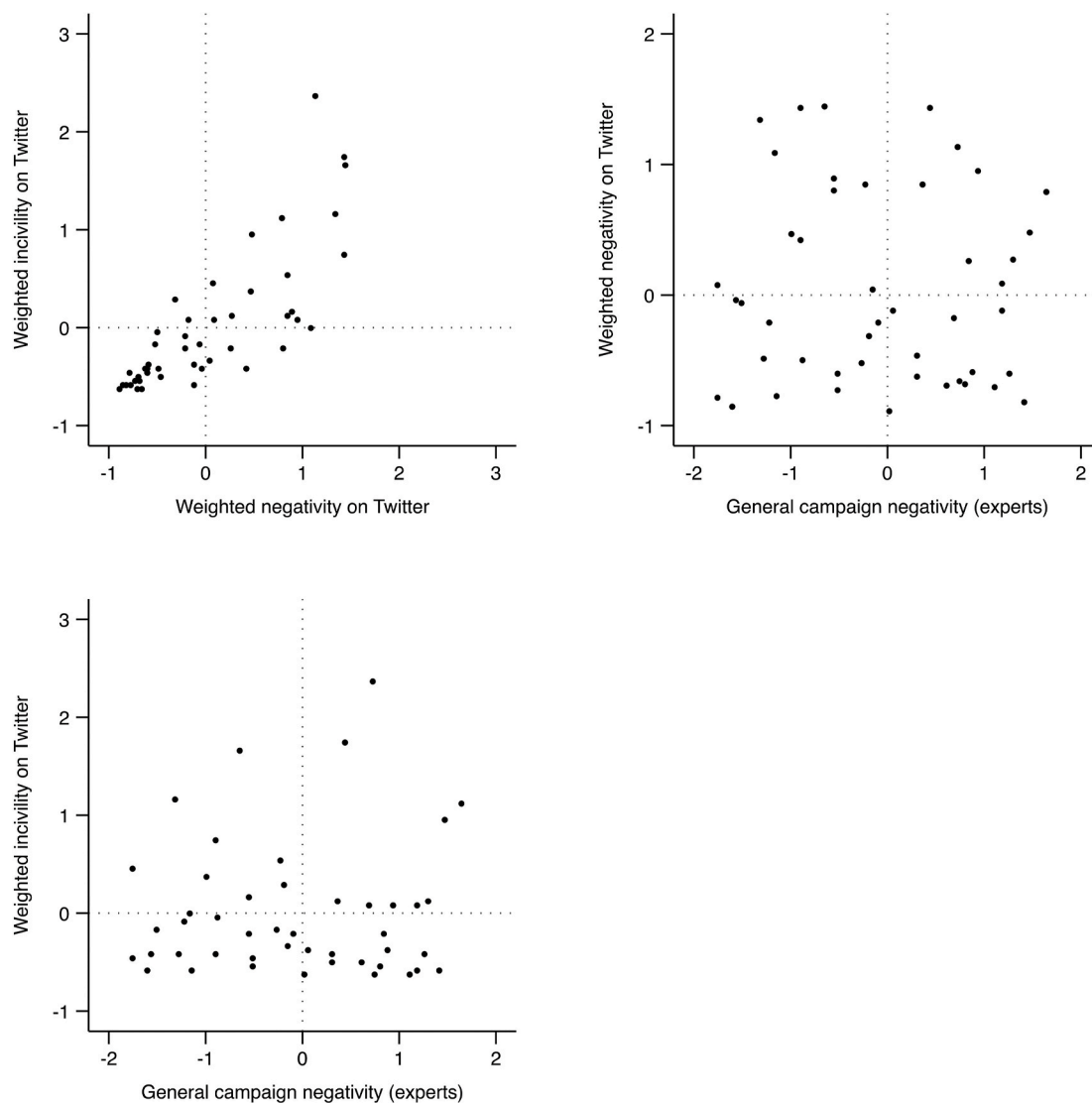


Fig. 3. Relationship between the negativity, incivility, and general campaign tone. All variables are standardized ($M = 0$, $SD = 1$), so that the scores for each observation reflect the difference in number of standard deviations from the mean of the original variable. The visualizations exclude one extreme candidate (Corey Stewart, R, VA), who scores particularly high on weighted negativity and incivility.

the dependent variables have been standardized ($M = 0$, $SD = 1$), so that the scores for each observation reflect the difference in number of standard deviations from the mean of the original variable.

Looking at the first models for both dependent variables (M2 and M4) we see that the separate personality traits have, individually, a rather marginal effect. The only significant effect found is for psychopathy on negativity (M1); compared with candidates that score extremely low on this trait, candidates very high on psychopathy score almost two additional standard deviations above the mean in terms of weighted negativity (marginal effects).

The table shows then that candidates scoring higher on the “dark core” are significantly more likely to score higher on weighted negativity and incivility (M2 and M5). The effect on incivility is relatively strong; marginal effects (Fig. 4) show that candidates scoring the lowest on the “dark core” of personality score about one standard deviation below the mean of incivility, whereas candidates scoring the highest on the “dark core” score approximately two standard deviations above the mean of incivility. The effect on weighted negativity is similar, albeit less strong. This evidence supports both of our main expectations - that is, that the dark components of human personality are associated in candidates with more negative and (especially) more uncivil campaigns.

The last models for both dependent variables (M3 and M6) test for the effect of the two underlying personality dimensions. F1 contrasts candidates with high scores on the Dark Triad with candidates scoring high on agreeableness, conscientiousness, and emotional stability; F2 identifies especially candidates scoring high on extraversion and openness. M3 shows that candidates scoring high on the second dimension (F2) are significantly more likely to go negative on their opponents on social media - most likely reflecting the energy and social dominance facets associated with extraversion, which is frequently associated with charismatic leadership (e.g., Bono and Judge, 2004). M6 then shows that candidates scoring high on the first underlying dimension (F1) are significantly more likely to use incivility, confirming the expected positive association between dark personality traits and incivility.

4.2. Expert assessments of negativity

Experts in our database were also asked to assess the tone of the candidates’ campaigns. To provide additional confirmation of the trends discussed above, Table 3 regresses such assessment on the candidates’ profile and personality traits. As we discussed above, because experts are asked to assess the campaign “on the whole”, their measure of campaign

Table 2
Negativity and incivility on Twitter.

	Uncivil tweets ("weighted")																	
	M1			M2			M3			M4			M5			M6		
	Coef	(Se)	sig	Coef	(Se)	sig	Coef	(Se)	sig	Coef	(Se)	sig	Coef	(Se)	sig	Coef	(Se)	sig
Incumbent Republican	-0.30	(0.32)		-0.27	(0.31)		-0.03	(0.34)		0.05	(0.26)		0.11	(0.24)		0.19	(0.32)	
Female	-1.32	(0.49)	**	-1.17	(0.45)	†	-1.17	(0.64)		-1.05	(0.53)	*	-0.92	(0.46)	*	-1.08	(0.72)	
State safe	-0.41	(0.30)		-0.34	(0.26)		-0.43	(0.29)		-0.37	(0.26)		-0.36	(0.24)		-0.42	(0.28)	
Narcissism	0.57	(0.47)		0.54	(0.40)		0.40	(0.35)		0.61	(0.51)		0.54	(0.44)		0.43	(0.43)	
Psychopathy	-0.02	(0.21)								-0.05	(0.22)							
Machiavellianism	0.35	(0.18)	†							0.29	(0.18)							
Dark core	0.09	(0.17)		0.48	(0.28)	†				0.25	(0.20)		0.58	(0.29)	*			
F1. Dark Triad							0.29	(0.20)								0.35	(0.21)	†
F2. Extrav/Open							0.25	(0.10)	*							0.15	(0.11)	
Constant	-0.66	(0.70)		-1.13	(0.93)		0.60	(0.43)		-1.19	(0.62)	†	-1.83	(0.91)	*	0.40	(0.41)	
N(candidates)	47			47			47			47		47			47			
N(states)	27			27			27			27		27			27			
R2	0.175			0.147			0.242			0.187		0.167			0.215			
Model Chi2	11.35			8.400			13.63			9.808		9.487			6.191			

Note: All models are random effects Generalized Least Squares (GLS) with robust standard errors, where candidates are nested within states. Minimum two experts per candidate (personality ratings). All dependent variables are standardized (M = 0, SD = 1), so that the scores for each observation reflect the difference in number of standard deviations from the mean of the original variable. ***p < 0.001, **p < 0.01, *p < 0.05, †p < 0.1.

tone is supposed to capture all elements of negativity, including volume and harshness of the campaign and beyond idiosyncrasies of different channels. In line with what found for Twitter posts, candidates scoring high on psychopathy (M1), on the “dark core” (M2) and on the first underlying personality dimension (F1 “Dark Triad”; M3) are significantly more likely to score higher on general negativity.

Broadly speaking, the results presented in Table 2 (social media) and Table 3 (general campaign assessment by experts) converge quite convincingly in the direction of two our expectations: Dark personality is likely associated with a greater use of negativity (H1) and (especially) incivility (H2) in election campaigns.

4.3. Robustness checks

A question could be raised as to whether the ideological preferences of experts affect their personality ratings and, in turn, the dynamics at stake (e.g., Curini, 2010; Wright and Tomlinson, 2018). We discuss here two series of robustness checks with this critique in mind. First we replicate all models using instead the “adjusted” personality measures, based on a procedure inspired by Walter and Van der Eijk (2019) that uses regression residuals as a way to exclude the interference of ideological differences between the (average) expert and the candidate they evaluate. Tables C2 and C3 in Appendix C replicate the main analyses discussed above, using these “adjusted” personality ratings instead of the original ones. Results are strongly consistent with the ones using the original non-adjusted variables. Second, we replicated all main analyses but controlling also for the experts’ average profile (at the state level) in terms of left-right positioning, gender, familiarity with elections and simplicity in answering the questionnaire (Tables C4 and C5) and for the experts’ “agreement” on the three Dark Traits (standard deviations; Tables C6 and C7)¹⁰ results for these additional tests are in line with those discussed in the main text, even if weaker for the content of campaigns on Twitter. Broadly speaking, these results suggest that potential biases due to the ideological skewness of expert samples should not be overestimated.

We have then replicated the analyses for the campaign content on social media but regressing instead the simple (i.e., not weighted) proportion of negative and uncivil tweets (Table C8): results are broadly in line with the main results, even if effects for incivility are weaker. We have then replicated our models using multilevel negative binomial models to account for the zero-inflated (or, better, over-dispersed) nature of the dependent variables (Table C9); results are again weaker, but in the direction of the main models discussed in the text. Finally, we have replicated the analyses for the general tone of the campaign using instead adjusted measures of tone, computed in a similar fashion as described above for personality (i.e., based on regression residuals net of the ideological distance between experts and candidates; Walter and Van der Eijk, 2019); results, in Table C10, are generally robust.

5. Conclusion

To what extent are (dark) personality traits of candidates running for office associated with the content of their campaigns? To answer this question, we collected ratings from academic experts about the personality of candidates running for the 2018 American Senate midterm elections, and assessed their predictive power against two independent measures of campaign content - the negativity and incivility of their campaigns on social media - coming from an automated coding of their tweets posted prior to the election. Our analyses, by and large, suggest that darker personality profiles are associated with a more aggressive, uncivil campaigning style. If the separate traits have, overall, a rather marginal effect on their own - perhaps also a testament of the difficulty

¹⁰ Missing values for some traits explain the lower number of observations in the analyses.

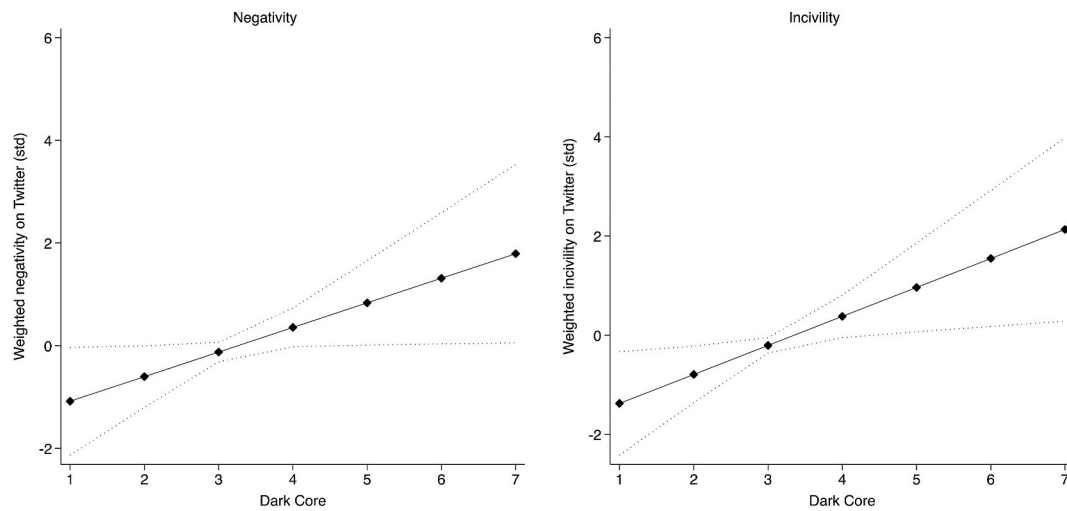


Fig. 4. Negativity, incivility, and candidate dark core. Note. Marginal effects with 90% confidence intervals, based on coefficients in Table 2 (M3 and M6). All covariates fixed at their mean.

Table 3
General negative tone of the campaign (expert ratings).

	General campaign negativity (experts)								
	M1			M2			M3		
	Coef	(Se)	sig	Coef	(Se)	sig	Coef	(Se)	sig
Incumbent	-0.26	(0.20)		-0.20	(0.16)		-0.30	(0.17)	†
Republican	0.37	(0.34)		0.48	(0.30)		-0.10	(0.39)	
Female	0.01	(0.18)		0.03	(0.19)		0.03	(0.16)	
State safe	-0.57	(0.23)	*	-0.63	(0.24)	**	-0.56	(0.20)	**
Narcissism	-0.09	(0.19)							
Psychopathy	0.26	(0.09)	**						
Machiavellianism	0.09	(0.11)							
Dark core				0.33	(0.11)	**			
F1. Dark Triad							0.31	(0.08)	***
F2. Extraversion/Openness							-0.01	(0.07)	
Constant	-0.45	(0.79)		-0.98	(0.48)	*	0.49	(0.23)	*
N(candidates)	50			50			50		
N(states)	27			27			27		
R2	0.657			0.633			0.708		
Model Chi2	248.5			193.3			183.7		

Note: All models are random effects Generalized Least Squares (GLS) with robust standard errors, where candidates are nested within states. Minimum two experts per candidate (personality ratings). All dependent variables are standardized (M = 0, SD = 1), so that the scores for each observation reflect the difference in number of standard deviations from the mean of the original variable.

***p < 0.001, **p < 0.01, *p < 0.05, †p < 0.1.

to disentangle them in political leaders - candidates scoring higher on the “dark core” are significantly more likely to score higher on negativity and incivility. Furthermore, candidates scoring high on the first underlying personality dimension (reflecting high scores on the dark triad and low scores on agreeableness, emotional stability, and conscientiousness) are significantly more likely to use incivility in their tweets. Additional analyses regressing the overall tone of the campaign, as assessed by experts, confirm the association between dark personality profiles and general negativity during campaigns. These results resist robustness checks via models run with alternative specifications, such as using measures of personality (and campaign) that are adjusted to filter out the ideological profile of experts, additional covariates, more restrictive modelling, and alternative measurement of key dependent variables.

Several caveats apply. First, our models are limited by relatively small number of candidates in our sample, preventing us to disentangle potentially interesting moderated effects (e.g., the fact that certain personality traits could be particularly conducive to negativity for incumbents in more competitive states). Second, these results are necessarily contingent to the case studied, US Senate elections. We are, in

parallel, gathering similar information as the one discussed here but for national elections across the world (Nai, 2019); further analyses comparing the trends here with the dynamics in elections worldwide are foreseen, towards assessing whether the association between dark personality and campaign negativity is universal. Third, the use of expert ratings to assess the personality of candidates is undoubtedly to be executed carefully. The ample methodological discussion in this article has, we hope, answered some of the most pressing critiques frequently addressed against this approach. As we have argued, expert judgments are likely to be a rather effective alternative to other approaches to measure the personality of political figures - and, in some cases, the *only* alternative - which are also not clear of methodological hurdles. The fact that our expert ratings correlate positively (and often strongly) with independent measures for a subsample of Senators (Rice et al., 2020), and the fact that alternative models using “adjusted” measures that filter out the effect of ideological differences between experts and candidates yield similar effects, should provide a further confirmation that using expert ratings is not as problematic as some might imagine.

Fourth, we cannot completely rule out that experts inferred the candidates’ personality implicitly also in part from their campaign

behavior. In such a case, then, it is not the personality of candidates that “drives” their campaigning style, but rather the fact that candidates that go more negative are perceived, e.g., as higher on the “dark core.” We believe however that this issue should not be overestimated. Following politics and “knowing” the most important political leaders is part of our experts’ job, part of the very definition of why they were asked to participate in our research in the first place. It seems thus likely that they had many opportunities to observe the top candidates and form an impression on their personalities long before the campaign started. The issue should be much more severe for voters - indeed, voters have been shown to have a rather simplified perception of candidates’ personality (Caprara et al., 2007), and the content of their campaigns is likely to matter greatly in this regard. To be on the safe side, nevertheless, we should not overemphasize the causal relationship between personality and campaign behavior at this stage. Further research that includes a temporal component - for instance, the same candidates assessed over time both in terms of their personality and the content of their campaigns - could help disentangle this relationship, towards a new research agenda on “dark politics”.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.electstud.2020.102233>.

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