



Individual differences in need satisfaction and intentions to vote for specific political parties – results from Germany

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Abstract

Understanding the psychological basis of individuals' voting intentions is of tremendous importance because voting for specific parties and politicians can influence political developments. In the present study associations of individuals' satisfaction of each of Maslow's five basic need categories with voting intentions were investigated in a German sample and these results were compared to results on associations between personality and voting intentions. An online survey was completed by $N = 2593$ ($n = 1035$ men) individuals. Participants provided information on socio-demographic characteristics, filled in the Need Satisfaction Inventory, the Big Five Inventory, and stated which of the major German parties they would vote for if general elections were held the following Sunday. Data were analyzed using the statistical software R and RStudio. Among others, it was found that higher satisfaction of physiological needs and higher satisfaction of safety and security needs were associated with intentions to vote for the currently governing party alliance, the CDU/CSU, versus for the right-wing AfD. Regarding personality, among others Openness was positively associated with intentions to vote for nearly every party (except the CDU/CSU) versus for the AfD. Effect sizes of associations were overall rather small; generally speaking, those related to the Need Satisfaction Inventory were even slightly smaller than those found for personality traits. The present results indicate that other factors aside from needs and personality must be considered to understand voting. Therefore, this study sets a starting point for further investigations to replicate and expand the present findings.

Keywords Big Five of personality · Maslow · Need satisfaction · Voting intentions · Germany

Introduction

Previous research in the field of political psychology has among others investigated individual differences, for example in stable personality traits, and how they relate to political ideologies and party preferences (Krieger et al., 2019; Vecchione et al., 2011). However, effect sizes of these associations are usually rather small and next to differences in stable personality traits, researchers also emphasize the importance of individual values and needs in political contexts (Inglehart, 1971). In line with this, Maslow's theory presents basic needs which are probably related to voting preferences beyond personality according to theory and research. This assumption is supported by i) links found between

dissatisfaction and voting for right-wing parties (Bayerischer Rundfunk (2018) as cited in Statista 2020; Dilling, 2018; Nier, 2017), ii) associations between perceived threat and voting preferences (e.g., Goerres et al., 2018), iii) and the theory by Ronald Inglehart (1971, 2015) (a more elaborate discussion of these points can be found in paragraph *Theoretical Background and Literature*). Nonetheless, Maslow's theory has barely been investigated in light of voting preferences. To close this research gap, we investigated associations between satisfaction of each of the basic need categories according to Maslow and current voting intentions in a German sample.

Theoretical Background and Literature

Understanding political attitudes, ideologies, and voting decisions has been a key topic in the field of political psychology for many years. Several researchers investigated stable personality traits like the Big Five in light of this research objective. These works showed that especially Openness (to Experience) and Conscientiousness are relevant factors to

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understand political attitudes. High scores in Openness describe individuals who are open to new ideas, art, aesthetics, and other cultures and like to try new dishes. Individuals scoring high in Conscientiousness are described as being orderly and they carry out their duties carefully and thoroughly and they work hard (John & Srivastava, 1999; Rammstedt & Danner, 2017). In light of political ideologies, Openness has been positively associated with a more left-leaning ideological positioning, whereas Conscientiousness has been positively related to a more right-leaning ideological positioning (Chirumbolo & Leone, 2010; Krieger et al., 2019). In a similar fashion, Openness and Conscientiousness have repeatedly been found to positively relate to political liberalism and conservatism, respectively (Cooper et al., 2013; Hirsh et al., 2010; Mondak & Halperin, 2008; Sibley et al., 2012).

In line with the findings on political ideology, the Big Five, specifically Openness and Conscientiousness, have been brought into association with party preferences in the German context, before. Major German parties/party alliances currently represented in the federal parliament are (ordered from politically "left" to politically "right"): DIE LINKE (The Left), the left-wing German party; the SPD (Social Democratic Party of Germany), a center-left party; Bündnis 90/Die Grünen (Alliance 90/The Greens), which was long time mostly associated with standing up for environmental and social issues; the FDP (Free Democratic Party), which shows economic liberal positions, a restrictive attitude towards refugee and European policies, and is classified as a center-right party; the alliance of CDU and CSU (Christian Democratic Union of Germany, Christian Social Union in Bavaria), which is a conservative center-right party alliance; the AfD (Alternative for Germany), a right-wing populist party, which among others represents critical attitudes towards the EU, the Euro, and immigration (information on German parties can be obtained at Bundeszentrale für politische Bildung (2020), DW (2018), Expatica (2020), Schleunes et al. (2020), and Volkens et al. (2020)). With regard to associations between party preferences in the German context and the Big Five, previous research indicates that, generally speaking, Conscientiousness is associated with voting for more conservative and center-right parties, such as the alliance of CDU/CSU, and with more positive attitudes towards parties of such a political orientation compared to more left parties. At the same time, research indicates Openness to be generally negatively associated with voting for center-right parties and positively with voting for more left-leaning parties as well as with positive attitudes towards parties like the SPD and Bündnis 90/Die Grünen (Schoen & Schumann, 2007; Sindermann et al., 2020; Vecchione et al., 2011).

However, despite the significance of findings on associations between personality (i.e., Openness and Conscientiousness) and political ideology and voting, the effect sizes of these associations are usually small; see, for

example, meta-analytic correlations of political ideology with Openness and Conscientiousness in the German context which were $r = |0.07|$ and $r = |0.06|$, respectively (Krieger et al., 2019). This highlights the importance to investigate other factors aside from the Big Five in this research field. On the one hand, other factors include personality traits beyond the Big Five, such as the Honesty-Humility domain of the HEXACO-Model, or more narrow personality traits which might have predictive advantages over the Big Five (Ashton & Lee, 2007; Feher & Vernon, 2021; Lee & Ashton, 2008). On the other hand, further factors comprise variables aside from stable personality traits. In line with the latter idea, we want to draw attention to the theory of Abraham Maslow.

Abraham Maslow described basic needs as motivating drivers of human behavior and development. In his initial theory on human motivation, Maslow constituted five basic needs (need categories) also termed drives or goals (Maslow, 1943). Physiological needs comprise hunger, thirst, and the need for sex. Safety needs include needs for a secure life and a job, savings, and insurances. Love or belongingness needs include needs of closeness to friends, family, and loved ones. Esteem needs deal with various needs associated with one's self-esteem, one's worth, strength, etc. (Maslow, 1943). Finally, self-actualization needs "might be phrased as the desire to become more and more what one is, to become everything that one is capable of becoming" (Maslow, 1943, p. 382). Importantly, Maslow posited that these needs are ordered in a hierarchy - physiological, safety, love, esteem, self-actualization - and each need category rises in importance when the previous need category has been satisfied (Maslow, 1943). Although this hierarchy seems fixed, Maslow (1943) himself draws attention to the fact that there are exceptions to the order. For example, lower needs in the hierarchy might be of highest importance for some individuals. Additionally, he noted that already satisfied needs can gain importance at a later point in time again, and that more than one need category can drive human behavior. Moreover, he actualized and expanded his theory later on (Maslow, 1969).

Nevertheless, Maslow's hierarchy of needs has been the center of a lot of criticism (Neher, 1991; Wahba & Bridwell, 1976). Despite the criticism, which we acknowledge, it is reasonable to assume that part of Maslow's theory, specifically satisfaction of the basic need categories, is associated with voting (intentions) for specific political parties due to three reasons: Firstly, research has frequently shown that, for example, voting for the German right-wing AfD was linked to dissatisfaction or disappointment with other parties (Bayerischer Rundfunk (2018) as cited in Statista 2020; Nier, 2017) or democracy in Germany as well as to distrust in political institutions (Dilling, 2018; Goerres et al., 2018). With regard to these associations, it can be hypothesized that dissatisfaction with other parties or democracy might be due to unmet individual basic

needs, hence, dissatisfaction of basic needs. In the present political context, especially the dissatisfaction of physiological and safety needs might be of importance to explain voting for the right-wing AfD. Secondly, research on group and individual level repeatedly showed that threat and authoritarianism are linked. For example, it has been shown that social indicators of authoritarianism were higher on group level in times of severe threat compared to times of low threat (Doty et al., 1991; Sales, 1973). Moreover, on individual level, Duckitt and Sibley (2010) propose that the worldview of a dangerous world underlies right-wing authoritarianism. Right-wing authoritarianism, in turn, was found to positively associate with intentions to vote for the AfD in a German sample (Sindermann et al., 2020). Moreover, fear of personal economic decline, which might be based on subjectively perceived threat, has also been associated with voting for the AfD (Goerres et al., 2018). Importantly, on an individual level, such a perceived threat, and fear consecutively, might be rooted in an already existing low satisfaction of basic needs, especially the lower order needs such as physiological and safety needs. This, in turn, might lead to support for authoritarian leaders or, in the specific case of Germany, voting for the AfD (results on associations between satisfaction of basic needs, right-wing authoritarianism, and current voting intentions are presented in the Supplementary Material in Supplementary Tables 8 and 9). Thirdly, the theory by Ronald Inglehart is of considerable importance for the present work. In his “silent revolution” theory, Inglehart proposes that individuals of different birth cohorts, brought up under different circumstances, focus on different values (Inglehart, 1971, 2015). This focus, in turn, explains important social changes and voting preferences in different cohorts, according to Inglehart (1971). Importantly, the theory of Inglehart is based on the work of Abraham Maslow. More specifically, similar to Maslow, Inglehart proposes that individuals pursue various goals (or values), namely materialist and post-materialist values, in a hierarchical order (Inglehart, 1971, 2015). Materialist values comprise goals such as fighting against crime, a stable economy, and strong defense forces, while post-materialist goals comprise goals like having a say in topics related to one's job and the government, freedom of speech, gender equality, and tolerance of gay people, handicapped, and foreigners (Inglehart, 1971, 2015; Inglehart & Norris, 2017). Materialist values align with Maslow's physiological and safety needs, while post-materialist values more closely match Maslow's basic needs of belonging, esteem, and self-actualization (Inglehart, 2015). With regard to materialist and post-materialist values, Inglehart observed that post-war cohorts, which were brought up during times of safety, focused more on post-materialist values in comparison to

materialist values, which were more prevalent in cohorts born/grown up during war, hence, in times on insecurity. Of note, importance of post-materialist values (in comparison to materialist values), in turn, was associated with voting for more left parties or parties focusing on environmental issues (Inglehart, 1971). On the contrary, growing up in times of insecurity and a focus on materialist values was found to be associated with voting for strong leaders, in-group solidarity, and out-group derogation, hence, a focus on authoritarianism and putatively anti-immigrant attitudes. Such attitudes, as outlined above, are in the German context associated with the AfD (Inglehart, 2015; Inglehart & Norris, 2017; Sindermann et al., 2020) and the associations between (in)security and values proposed by Inglehart might be applicable to the individual level.

Summary

In conclusion, there is indication that individuals' (dis)satisfaction of needs is associated with voting (intentions) for specific parties. However, research on these associations is scarce. Given the typically small effect sizes of associations between personality and political orientation and voting related variables, however, it seems critical to investigate additional variables in light of voting intentions for certain parties. The (dis)satisfaction of needs might constitute such variables. Thus, investigating the associations between need satisfaction and voting intentions can contribute to a deeper understanding of the psychological basis of voting intentions.

Therefore, the present study aimed at exploratively investigating individual differences in (dis)satisfaction of basic needs according to the theory by Maslow and how (dis)satisfaction of needs might be associated with current voting intentions for a specific party in the German context. Moreover, we compare these finding to results regarding the Big Five of personality (among others Openness and Conscientiousness) and their associations with current voting intentions. Based on previous research findings and theories mentioned above, we expect lower need satisfaction, especially regarding physiological and safety needs, to be associated with intentions to vote for more right-leaning parties, hence, especially the German AfD. Accordingly, higher satisfaction of these needs should be associated with intentions to vote for other, more left-leaning and environmentally focused parties instead of more right-leaning parties, especially the AfD. In a similar fashion, Openness was expected to be positively associated with intentions to vote for more left-leaning parties but negatively to intentions to vote for more right-leaning parties, specifically the AfD. Conscientiousness was hypothesized to establish opposing associations compared to Openness.

Materials and Methods

Procedure and Sample

Procedure

The present sample is a convenience sample which was recruited via an anonymous online study in German language between April 2019 and August 2020. The study was conducted on the SurveyCoder platform (<https://www.surveycoder.com/>; <https://ckannen.com/>) and included several measures on digital technology use (not of interest for the present study), personality as well as basic needs and current voting intentions. Advertisement was spread via various online and offline methods (social media, TV, etc.). Everyone who was at least 12 years old, had Internet access, and understood German language could participate in the present study; but only German citizens and individuals from the age of 18 are included in the present analysis (see *Data Cleaning in the Supplementary Material*). Participants received anonymized feedback on several of the questionnaires (e.g., on personality) as an incentive.

Final Sample

After data cleaning (see *Supplementary Material*) a final sample size of $N = 2593$ ($n = 1035$ men, $n = 1558$ women) individuals remained. The mean age of the sample was $M = 37.29$ years ($SD = 12.40$) with a range from 18 years to 81 years. Most participants stated some kind of university degree ($n = 1119$ (university) + $n = 368$ (university of applied sciences)) or A-level/high school diploma ($n = 567$) as their highest educational degree.

It must be noted that the present sample partly overlaps with samples from other studies reporting data from this larger research project, such as a study on the associations between the Big Five, right-wing authoritarianism, news consumption and voting preferences ($n = 927$) (Sindermann et al., 2020), and a study on the associations between need satisfaction and the Big Five as well as the Affective Neuroscience Personality Scales ($n = 746$) (Montag et al., 2020).

The data and R-code that support the findings of this study are available in the Open Science Framework repository at <https://osf.io/umk26/>.

Self-Report Measures

Need Satisfaction Inventory

To assess the degree of satisfaction of each of the five basic need categories according to Maslow, we utilized the German version of the Need Satisfaction Inventory (NSI) (Lester, 1990; Montag et al., 2020). It consists of 10 items

for each basic need category; hence, a total of 50 items which are answered on a 6-point Likert-scale. The scales of the inventory are labelled Physiological Needs, Safety and Security, Belonging, Esteem, and Self-Actualization. The participants saw a response scale from $(-3) =$ “strong disagreement” to $(+3) =$ “strong agreement” (excluding the “0”). For calculations, the responses were scored from 1 to 6. Internal consistency estimates using Cronbach’s alphas ranged from .61 (Physiological Needs) to .82 (Self-Actualization).

Next to satisfaction of each of the basic need categories, participants were also asked to rank the subjective importance of the fulfillment of each of the five basic need categories (Montag et al., 2020). The least important need category was ranked as 1 and the most important one was ranked as 5. The order of the needs to be ranked was presented as described in Montag et al. (2020). This order was fixed and could have influenced the actual reported rankings. This seems not to be the case, though, as the final emerging order differed strongly from the presented order.

Big Five Inventory

The German version of the Big Five Inventory (BFI) was applied to assess the Big Five of personality: Openness (to Experience), Conscientiousness, Extraversion, Agreeableness, Neuroticism (John et al., 1991; Rammstedt & Danner, 2017). Despite the German version consisting of 45 items (one additional item in the Agreeableness scale), we used the 44-items according to the English original questionnaire. Therefore, the questionnaire consists of 44 items and can be split into five scales assessing the broad Big Five domains. In addition, facets can be assessed but are not detailed in the present work to not overload it. Each item is answered on a 5-point Likert-scale from (1) = “very inapplicable” to (5) = “very applicable”. Cronbach’s alphas of the five scales lied between .71 (Agreeableness) and .86 (Neuroticism and Extraversion).

Current Voting Intentions

To assess the current voting intention of the participants, they were asked to indicate which party they would vote for if general elections were held the following Sunday. In Germany this question is known as the “Sonntagsfrage”. Participants could choose between the German parties CDU/CSU, SPD, Bündnis 90/Die Grünen, FDP, DIE LINKE, AfD, and the response options “others” and “I would not vote”. The response option “others” indicates voting for one of the smaller parties not currently represented in the German federal parliament, the Bundestag.

Statistical Analysis

All statistical analyses were implemented in R version 4.1.0 (R Core Team, 2018) and RStudio version 1.4.1106 (RStudio Team, 2020). First, associations of the variables of interest with age, gender, and educational background were investigated to control for these socio-demographic variables in final analyses, if necessary. Results of these analyses are detailed in the *Supplementary Material* in the paragraph *Associations with Age, Gender, and Education (Potential Confounding Variables)* and in Supplementary Tables 1, 2, 3, 4, and 5).

Next, we investigated whether satisfaction of basic needs would predict intentions to vote for any party versus to not vote when taking into account the aforementioned control variables by means of a logistic regression analysis. The same procedure was implemented to check whether the Big Five would predict intentions to vote for any party versus to not vote. These analyses were of importance to check whether there are basic differences between putative voters and non-voters in the present sample (Dawkins, 2017; Mondak et al., 2010; Mondak & Halperin, 2008; Sindermann et al., 2020). Of note, individuals were split into two groups of educational backgrounds (“no degree or some kind of school degree” versus “some kind of university degree”) because some of the initial seven groups only contained very few individuals.

To investigate the main research question, namely the associations of satisfaction of each of Maslow’s basic need categories and the Big Five with voting intentions for specific parties, descriptive statistics in the total sample as well as in the groups of individuals with voting intentions for different parties separately were calculated. Moreover, multinomial logistic regression models were calculated to predict voting intention by the control variables (see above) and i) satisfaction of the basic need categories or ii) the Big Five.

Finally, we compared the distributions of the most important need categories between groups by means of a X^2 -test for reasons of completeness.

Results

Descriptive Statistics

Descriptive statistics of the NSI and BFI can be found in Table 1. Regarding voting intentions, $n = 212$ (8.2%) individuals stated that they would vote for DIE LINKE, $n = 192$ (7.4%) for the SPD, $n = 1173$ (45.2%) for Bündnis 90/Die Grünen, $n = 170$ (6.6%) for the FDP, $n = 343$ (13.2%) for the CDU/CSU, $n = 88$ (3.4%) for the AfD, and $n = 280$ (10.8%) for other parties. Hence, $n = 135$ (5.2%) indicated that they would not vote. Note that this distribution does neither reflect the actual voting distribution in Germany in the federal elections 2017 (Bundeszentrale für politische Bildung, 2017) nor

Table 1 Descriptive statistics of the Need Satisfaction Inventory (NSI) and the Big Five Inventory (BFI)

	Total Sample ($N=2593$)	
	<i>M</i>	<i>SD</i>
NSI		
Physiological Needs	4.10	0.71
Safety and Security	4.39	0.72
Belonging	4.26	0.76
Esteem	4.39	0.79
Self-Actualization	4.32	0.80
BFI		
Openness	3.59	0.62
Conscientiousness	3.60	0.66
Extraversion	3.42	0.79
Agreeableness	3.53	0.55
Neuroticism	2.91	0.80

NSI = Need Satisfaction Inventory, BFI = Big Five Inventory

the voting intentions of representative German samples in 2019/2020 (Guttmann, 2021).¹

Significant associations of age, gender, and educational background were found with NSI scales, BFI scales, and with voting intentions (see *Supplementary Material*, Supplementary Tables 1–5). Therefore, it was decided to include these variables in further analyses.

Differences in Satisfaction of Basic Needs and the Big Five between Groups of Individuals with Different Voting Intentions

In a binomial logistic regression model with age, gender, education, and z-standardized scores of the NSI scales as predictors, no effect except the effect of education (“having some kind of university degree” versus “no degree or some kind of school degree”; positive effect; 95% CI of odds: [1.52;3.17]) on voting versus non-voting was significant. The same model including the five z-standardized BFI scale scores instead of the NSI scale scores showed similar results: having some kind of university degree versus no degree or some kind of school degree positively predicted voting (95% CI of odds: [1.52;3.17]). An additional significant positive effect on voting was observed for Openness (Estimate (log odds) = 0.33, $p < 0.001$; 95% CI of odds: [1.16;1.67]).

¹ We shortly elaborated on the idea to extract a new sample from this sample in which the distribution would fit the distribution obtained in the past general elections. However, this would either lead to a tremendous loss of power (when drawing a sample without replacement) or to many duplicate datasets (when drawing a sample with replacement) given the specific distribution of voting intentions in the initial sample.

Within putative voters and regarding the NSI scales (see Table 2), individuals indicating that they would vote for DIE LINKE and the AfD, hence, the left- and right-wing parties in Germany, frequently showed descriptively lowest scores in the NSI scales; alongside individuals who would vote for “other” parties. Based on the empirical and theoretical considerations in the introduction, we decided to calculate multinomial logistic regression models to predict current voting intentions with the group of individuals who would vote for the AfD as reference group. With regard to the BFI, we were specifically interested in Openness and Conscientiousness. While descriptively the group of individuals who would vote for DIE LINKE reported highest scores in Openness, individuals who would vote for the AfD showed lowest scores within putative voters. Highest scores in Conscientiousness were found in the group of individuals who would vote for the CDU/CSU followed by putative AfD voters. Lowest scores were found in the group of individuals who would vote for DIE LINKE. Once more, we decided to present results with individuals who would vote for the AfD as reference group. This decision was based on the empirical findings on associations between right-leaning political self-positioning (and because the AfD is the most right-wing major party in Germany) and Openness as well as Conscientiousness mentioned in the introduction of this work. Of note, the respective models with voters of DIE LINKE as reference group are presented in the *Supplementary Material* in Supplementary Tables 6 and 7 for reasons of transparency and completeness.

Results of the multinomial logistic regression models with individuals indicating that they would vote for the AfD as reference group and the NSI scales as predictors are presented in Table 3. Across nearly all parties, being female was associated with higher intentions to vote for another party than the AfD (except for voting for the FDP).

Regarding the NSI scales, it turned out that intentions to vote for DIE LINKE were negatively associated with scores in the Belonging scale; for a one standard deviation increase in the Belonging scale, the odds of intentions to vote for DIE LINKE versus AfD decreased by 31.0% (95% CI of odds: [0.51;0.94]). The intention to vote for Bündnis 90/Die Grünen was associated with increasing scores in the scales Physiological Needs and Safety and Security; for a one standard deviation increase in Physiological Needs or Safety and Security the odds of intentions to vote for Bündnis 90/Die Grünen versus the AfD increased by 49.1% (95% CI of odds: [1.10;2.01]), or 76.9% (95% CI of odds: [1.25;2.50]), respectively. The intention to vote for the FDP was positively associated with Safety and Security; more specifically, for a one standard deviation increase in Safety and Security the odds of intentions to vote for the FDP versus the AfD increased by 67.6% (95% CI of odds: [1.11;2.54]). The intention to vote for the CDU/CSU (versus the AfD) was positively associated with scores in Physiological Needs, Safety and Security, and negatively with scores in Esteem. Put differently, for a one standard deviation increase in Physiological Needs, Safety and Security, or Esteem the odds of intentions to vote for the CDU/CSU versus the AfD increased by 47.1% (95% CI of odds: [1.06;2.03]), 89.1% (95% CI of odds: [1.30;2.75]), or decreases by 45.7% (95% CI of odds: [0.37;0.80]), respectively. Intentions to vote for “other” parties were negatively associated with scores in Self-Actualization; for a one standard deviation increase in Self-Actualization the odds of voting intentions for “other” parties versus the AfD decreased by 32.1% (95% CI of odds: [0.47;0.97]). Please note that interpretations regarding the in-/decrease of odds are always based on the premise that all other variables are constant; additionally, scores presented rely on the unrounded log odds.

Table 2 Descriptive statistics of the Need Satisfaction Inventory (NSI) and the Big Five Inventory (BFI) split by groups of individuals with different voting intentions

	DIE LINKE (n=212)	SPD (n=192)	Bündnis 90/Die Grünen (n=1173)	FDP (n=170)	CDU/CSU (n=343)	AfD (n=88)	Others (n=280)	Would not vote (n=135)
NSI								
Physiological Needs	3.96 (0.74)	4.08 (0.75)	4.17 (0.65)	4.13 (0.67)	4.23 (0.71)	3.74 (0.83)	3.96 (0.76)	3.87 (0.76)
Safety and Security	4.22 (0.74)	4.36 (0.70)	4.46 (0.68)	4.51 (0.70)	4.55 (0.69)	4.06 (0.83)	4.24 (0.72)	4.17 (0.82)
Belonging	3.96 (0.72)	4.33 (0.69)	4.29 (0.74)	4.34 (0.72)	4.50 (0.76)	4.06 (0.89)	4.15 (0.76)	4.06 (0.83)
Esteem	4.24 (0.79)	4.42 (0.78)	4.42 (0.77)	4.54 (0.72)	4.47 (0.78)	4.29 (0.86)	4.32 (0.81)	4.18 (0.89)
Self-Actualization	4.12 (0.83)	4.32 (0.82)	4.35 (0.77)	4.47 (0.71)	4.53 (0.79)	4.20 (0.84)	4.15 (0.81)	4.15 (0.86)
BFI								
Openness	3.72 (0.58)	3.58 (0.62)	3.67 (0.60)	3.58 (0.59)	3.43 (0.61)	3.33 (0.67)	3.57 (0.62)	3.33 (0.66)
Conscientiousness	3.33 (0.68)	3.61 (0.70)	3.60 (0.64)	3.61 (0.65)	3.82 (0.62)	3.68 (0.67)	3.53 (0.63)	3.59 (0.69)
Extraversion	3.28 (0.76)	3.56 (0.76)	3.45 (0.78)	3.46 (0.84)	3.47 (0.79)	3.37 (0.79)	3.34 (0.76)	3.26 (0.82)
Agreeableness	3.53 (0.55)	3.54 (0.48)	3.61 (0.52)	3.44 (0.55)	3.50 (0.55)	3.25 (0.61)	3.46 (0.56)	3.41 (0.65)
Neuroticism	2.99 (0.80)	2.96 (0.78)	2.89 (0.78)	2.75 (0.80)	2.83 (0.79)	2.95 (0.90)	2.97 (0.78)	3.05 (0.87)

NSI = Need Satisfaction Inventory, BFI = Big Five Inventory

Table 3 Multinomial logistic regression model to predict voting intentions by the Need Satisfaction Inventory with the group of individuals who would vote for the AfD as reference group

	DIE LINKE (n = 212)		SPD (n = 192)		Bündnis 90/Die Grünen (n = 1,173)		FDP (n = 170)		CDU/CSU (n = 343)		Others (n = 280)	
	Coefficient (SE)	p	Coefficient (SE)	p	Coefficient (SE)	p	Coefficient (SE)	p	Coefficient (SE)	p	Coefficient (SE)	p
Intercept	-0.04 (0.22)	0.848	-0.06 (0.22)	0.793	1.51 (0.18)	<0.001	-0.19 (0.23)	0.421	0.44 (0.20)	0.031	0.48 (0.20)	0.020
Age	-0.36 (0.13)	0.005	-0.21 (0.13)	0.100	-0.44 (0.11)	<0.001	-0.29 (0.13)	0.028	-0.02 (0.12)	0.859	-0.23 (0.12)	0.058
Gender	0.89 (0.28)	0.001	1.00 (0.28)	<0.001	1.22 (0.25)	<0.001	0.44 (0.29)	0.128	1.20 (0.26)	<0.001	1.09 (0.27)	<0.001
Education	1.34 (0.28)	<0.001	1.21 (0.29)	<0.001	1.38 (0.25)	<0.001	1.67 (0.30)	<0.001	0.95 (0.27)	<0.001	0.76 (0.27)	0.005
Physiological Needs	0.30 (0.17)	0.084	0.31 (0.18)	0.084	0.40 (0.15)	0.009	0.13 (0.18)	0.474	0.39 (0.17)	0.020	0.26 (0.17)	0.119
Safety and Security	0.35 (0.20)	0.080	0.34 (0.20)	0.099	0.57 (0.18)	0.001	0.52 (0.21)	0.015	0.64 (0.19)	0.001	0.32 (0.19)	0.097
Belonging	-0.37 (0.16)	0.019	0.14 (0.16)	0.401	-0.06 (0.14)	0.662	0.06 (0.17)	0.734	0.28 (0.15)	0.065	-0.08 (0.15)	0.613
Esteem	-0.02 (0.20)	0.904	-0.11 (0.21)	0.608	-0.19 (0.18)	0.299	-0.09 (0.22)	0.666	-0.61 (0.20)	0.002	0.05 (0.20)	0.817
Self-Actualization	-0.29 (0.19)	0.136	-0.24 (0.20)	0.215	-0.21 (0.17)	0.214	-0.05 (0.20)	0.821	0.12 (0.19)	0.512	-0.39 (0.18)	0.036

Gender was coded as 0 = men, 1 = women; Education was coded as 0 = no degree or some kind of school degree, 1 = some kind of university degree; all predictors except gender and education were z-standardized; estimates are log odds; non-voters were not included in the analyses; AIC (Akaike Information Criterion) = 7592.03

Results of the multinomial logistic regression models with individuals who indicated that they would vote for the AfD as reference group and the BFI scales as predictors are presented in Table 4. Regarding the BFI scales, it turned out that odds of intentions to vote for DIE LINKE increased by 100% for one standard deviation increase in Openness (95% CI of odds: [1.51;2.64]), and by 59.2% for one standard deviation increase in Agreeableness (95% CI of odds: [1.20;2.10]), and decreased by 48.4% for one standard deviation increase in Conscientiousness (95% CI of odds: [0.39;0.69]), and by 26.6% for one standard deviation increase in Extraversion (95% CI of odds: [0.55;0.99]). Intentions to vote for the SPD versus the AfD were also associated with higher Openness and Agreeableness: for a one standard deviation increase in Openness or Agreeableness the odds of intentions to vote for the SPD versus the AfD increased by 36.9% (95% CI of odds: [1.04;1.80]) or 60.2% (95% CI of odds: [1.21;2.12]), respectively. Intentions to vote for Bündnis 90/Die Grünen were associated with higher Openness, lower Conscientiousness, and higher Agreeableness; put differently: for a one standard deviation increase in Openness and Agreeableness, the odds for voting intention for Bündnis 90/Die Grünen versus the AfD increased by 69.0% (95% CI of odds: [1.33;2.15]) and 76.5% (95% CI of odds: [1.38;2.25]), respectively; for one standard deviation increase in Conscientiousness the odds decreased by 25.7% (95% CI of odds: [0.57;0.96]). Intentions to vote for the FDP were positively associated with scores in Openness: one standard

deviation increase in Openness was associated with increased odds of intentions to vote for the FDP versus the AfD of 41.2% (95% CI of odds: [1.07;1.87]). Intentions to vote for the CDU/CSU (versus the AfD) were positively associated with scores in Agreeableness. Put differently, for a one standard deviation increase in Agreeableness, the odds of voting intentions for the CDU/CSU versus the AfD increased by 40.5% (95% CI of odds: [1.08;1.82]). Finally, intentions to vote for “other parties” compared to voting for the AfD were associated with Openness, Conscientiousness, and Agreeableness: for a one standard deviation increase in Openness or Agreeableness, the odds of intentions to vote for “other parties” versus the AfD increased by 55.0% (95% CI of odds: [1.19;2.02]) or 35.9% (95% CI of odds: [1.04;1.77]), respectively. For a one standard deviation increase in Conscientiousness, the odds of voting intentions for “other parties” versus the AfD decreased by 30.2% (95% CI of odds: [0.53;0.92]). Please note that interpretations regarding the in-/decrease of odds are always based on the premise that all other variables are constant; additionally, scores presented rely on the unrounded log odds.

Differences in Importance Ratings of Fulfillment of Different Basic Need Categories between Individuals with Voting Intentions for Different Parties

Although the distributions of basic need categories whose fulfillment was rated as most important significantly differed

Table 4 Multinomial logistic regression model to predict voting preferences by the Big Five Inventory (BFI) with the group of individuals who would vote for the AfD as reference group

	DIE LINKE (n=212)		SPD (n=192)		Bündnis 90/Die Grünen (n=1173)		FDP (n=170)		CDU/CSU (n=343)		Others (n=280)	
	Coefficient (SE)	p	Coefficient (SE)	p	Coefficient (SE)	p	Coefficient (SE)	p	Coefficient (SE)	p	Coefficient (SE)	p
Intercept	0.08 (0.23)	0.746	0.10 (0.23)	0.655	1.69 (0.19)	<0.001	-0.18 (0.25)	0.471	0.49 (0.21)	0.022	0.62 (0.22)	0.004
Age	-0.31 (0.13)	0.015	-0.23 (0.13)	0.070	-0.46 (0.11)	<0.001	-0.31 (0.13)	0.018	-0.10 (0.12)	0.405	-0.24 (0.12)	0.041
Gender	0.74 (0.28)	0.010	0.71 (0.29)	0.013	0.91 (0.25)	<0.001	0.37 (0.29)	0.200	0.97 (0.27)	<0.001	0.95 (0.27)	<0.001
Education	1.33 (0.28)	<0.001	1.29 (0.28)	<0.001	1.48 (0.25)	<0.001	1.79 (0.29)	<0.001	1.16 (0.26)	<0.001	0.79 (0.27)	0.004
Openness	0.69 (0.14)	<0.001	0.31 (0.14)	0.026	0.52 (0.12)	<0.001	0.34 (0.14)	0.016	0.07 (0.13)	0.607	0.44 (0.13)	0.001
Conscientiousness	-0.66 (0.15)	<0.001	-0.28 (0.15)	0.055	-0.30 (0.13)	0.023	-0.28 (0.15)	0.065	0.09 (0.14)	0.534	-0.36 (0.14)	0.010
Extraversion	-0.31 (0.15)	0.040	0.11 (0.15)	0.468	-0.16 (0.13)	0.225	-0.07 (0.16)	0.638	-0.08 (0.14)	0.556	-0.22 (0.14)	0.122
Agreeableness	0.46 (0.14)	0.001	0.47 (0.14)	0.001	0.57 (0.12)	<0.001	0.22 (0.15)	0.141	0.34 (0.13)	0.010	0.31 (0.14)	0.023
Neuroticism	-0.06 (0.16)	0.718	0.09 (0.16)	0.575	-0.06 (0.14)	0.653	-0.27 (0.16)	0.099	-0.12 (0.15)	0.418	-0.08 (0.15)	0.576

Gender was coded as 0 = men, 1 = women; Education was coded as 0 = no degree or some kind of school degree, 1 = some kind of university degree; all predictors except gender and education were z-standardized; estimates are log odds; non-voters were not included in the analyses; AIC (Akaike Information Criterion) = 7544.73

between groups of individuals with different voting intentions ($X^2(28) = 58.54, p < 0.001$), Fig. 1 shows that most of the individuals in each of the groups rated either the fulfillment of physiological needs or belonging needs as most important. Similarly, in the complete sample, satisfaction of belonging needs was on average rated as most important ($M = 3.57, SD = 1.26$) followed by the satisfaction of physiological needs ($M = 3.19, SD = 1.59$), safety and security ($M = 2.90, SD = 1.28$), esteem ($M = 2.67, SD = 1.26$), and self-actualization ($M = 2.66, SD = 1.44$). Nevertheless, within the groups of individuals who would vote for the AfD and individuals who indicated that they would not vote, it seems like a higher proportion of individuals than in other groups value the fulfillment of esteem needs as most important.

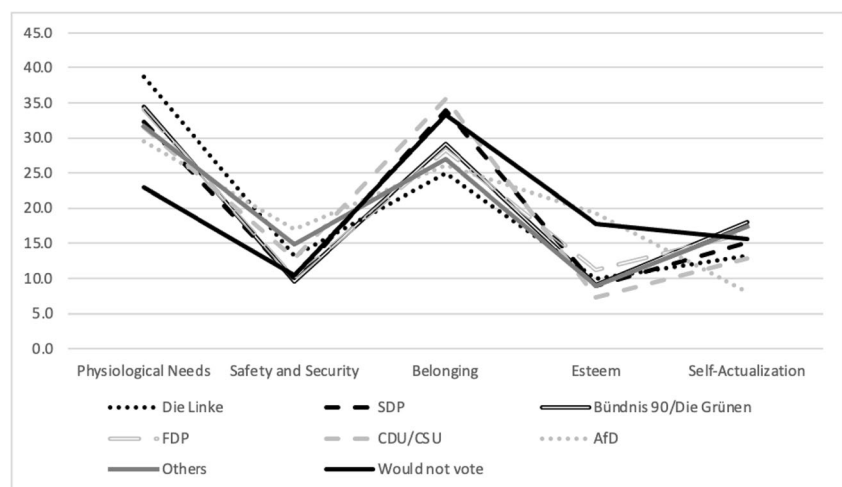
Discussion

The present study aimed at investigating associations between satisfaction of each of the five basic need categories based on Maslow's theory and voting intentions in a German sample. Furthermore, we aimed at comparing these results to associations between the Big Five of personality and voting intentions. Broadly speaking, we expected higher satisfaction of basic need categories, especially physiological and safety needs, to be associated with intentions to vote for more liberal and left-leaning parties, while lower satisfaction of basic needs was expected to be associated with intentions to vote for more right-leaning parties; in more detail: the AfD. Additionally, Openness was expected to relate to intentions to vote for more liberal or left-leaning parties while Conscientiousness was assumed to be associated with intentions to vote for more conservative or right-leaning parties. These assumptions were, however, not completely confirmed by the data.

Descriptively, within putative voters, the group of individuals stating that they would vote for the AfD showed lowest scores in satisfaction of physiological and safety (see NSI scale Safety and Security) needs. However, also the group of individuals who stated that they would vote for DIE LINKE showed descriptively low scores in satisfaction of these needs. Moreover, individuals who indicated that they would vote for DIE LINKE showed lowest scores in the satisfaction of belonging/love, esteem, and self-actualization needs within individuals who indicated that they would vote.

Moreover, multinomial logistic regression models overall indicated that higher satisfaction of the basic need category of physiological needs and higher satisfaction of the basic need category of safety needs were associated with intentions to vote for Bündnis 90/Die Grünen, the FDP (only safety needs), and the CDU/CSU versus the right-wing AfD. While the results with respect to intentions to vote for Bündnis 90/Die Grünen are in line with our initial assumptions, it might seem surprising that satisfaction of these basic needs was also associated with voting for the FDP and the CDU/CSU; because the FDP is categorized as center-right party and the CDU/CSU is a center-right, conservative party alliance (Bundeszentrale für politische Bildung, 2020; DW, 2018; Expatica, 2020; Volkens et al., 2020; Schleunes et al., 2020). From our point of view, a potential explanation for the finding regarding the CDU/CSU is the following: during data collection for the present study, the CDU/CSU was one of the governing parties in the German federal parliament, the Bundestag. Additionally, the chancellor, Angela Merkel, was a member of the CDU (Die Bundesregierung, n.d.; Henley, 2017). The other governing party was the SPD, which, however, was not favored by as many people during the time of data collection for the present study (Guttman, 2021). Therefore, satisfaction of basic needs might positively impact on voting intentions for the CDU/CSU, although being a center-right, conservative party alliance, because one is satisfied with the

Fig. 1 Percentages of individuals within the respective voting intention group who rated the fulfillment of the respective basic need category as most important.



current situation and wants to keep things as they are; hence, one would vote for the currently governing party alliance (CDU/CSU), again. Moreover, it needs to be noted, that both the FDP and the CDU/CSU are not as far on the right side of the political spectrum as is the AfD (Volkens et al., 2020).

Moreover, it seems somewhat surprising that satisfaction of physiological needs and satisfaction of safety needs were not at all associated with intentions to vote for DIE LINKE, the left-wing party in Germany, versus the AfD. However, this might be explained by the fact that, similar to the AfD, DIE LINKE can be understood as a populist party (Bakker et al., 2016). Populism can broadly and shortly be defined as an ideology, which envisions society as consisting of two groups; each being homogeneous in itself but both being opposing to each other (Mudde, 2004). The two groups are “‘the pure people’ versus ‘the corrupt elite’” (Mudde, 2004, p. 562). Generally, populism is associated with support for politics grounded in the general will of the people, not the elite (Mudde, 2004). If needs are met and one is satisfied, one might not be drawn to such policies or ideologies but rather want to keep the currently leading parties in power (i.e., the CDU/CSU; see *Supplementary Material*, Supplementary Table 6 for associations between NSI scales and intentions to vote for the CDU/CSU versus DIE LINKE).

With regard to personality, we found that Openness was positively associated with intentions to vote for DIE LINKE, the SPD, Bündnis 90/Die Grünen, the FDP, and “others” versus the AfD. The first three of the parties are understood as left-from-the-center parties (Volkens et al., 2020). Therefore, these results regarding Openness are in line with previous research and assumptions (Schoen & Schumann, 2007; Sindermann et al., 2020; Vecchione et al., 2011). The positive association between Openness and intentions to vote for the FDP versus the AfD might be explained by the fact that the FDP is not as far on the right side of the political spectrum as is the AfD (Volkens et al., 2020). Only partly in line with our assumptions, Conscientiousness was negatively related to intentions to vote for DIE LINKE and Bündnis 90/Die Grünen (and “other” parties) but not with intentions to vote for the SPD versus the AfD (the latter association just failed to be significant in the multinomial logistic regression model). Interestingly, especially Agreeableness turned out to be a significant positive predictor of intentions to vote for nearly all parties (except the FDP) versus the AfD. This might be due to the fact that more agreeable individuals are described as cooperative, forgiving, considerate, and do not like to argue/fight with others (John et al., 1991; Rammstedt & Danner, 2017). Therefore, individuals scoring high in Agreeableness might not agree with slogans of the AfD being critical against immigration or the EU (Decker, 2020). This might, in turn, lead to higher intentions to vote for all parties except the AfD.

Overall, when interpreting the present findings, one also needs to consider the following fact: despite previous research reporting that the major parties are ordered alongside a continuum from left to right, this ordering might be criticized. A study implemented by employees of a German newspaper investigated party programs of major German parties for the general elections in 2017 with an algorithm. The findings include that topics discussed by the parties in their programs vary greatly. Moreover, the study found that for different topics (e.g., economics, foreign policy) the degree of left-versus right-leaning content varies within programs of the parties (Kühne et al., 2017). This was also one of the reasons why we chose multinomial logistic regression, in which no ordering in the dependent variables is assumed in comparison to ordinal logistic regression analysis. Therefore, while an overall left- versus right-dimensional order might be intuitive, it seems to be relevant to additionally investigate specific topics discussed by the parties and in how far each party supports a politically left- versus right-leaning opinion on specific topics. In line with this, depending on which topics are of interest for putative voters, the associations of basic need satisfaction and personality with voting intentions might change.

Taken together, the present study confirms that satisfaction of some basic needs is associated with intentions to vote for specific parties in a German context. However, contrary to our expectations and somewhat contrary to the theory of Inglehart (1971), the general pattern of descriptive statistics and associations indicates that basic need satisfaction seems to be associated with intentions to vote for the currently governing parties; but not with voting for more left-leaning parties versus right-leaning parties like the AfD. But it needs to be noted that, as expected in the introduction, significant, although small, negative correlations were identified between satisfaction of physiological and safety needs and right-wing-authoritarianism (see *Supplementary Material*, Supplementary Table 8). This replicates the previously discussed link between threat/dissatisfaction and authoritarian attitudes on an individual level. Nevertheless, the present differences in satisfaction scores between groups of individuals with intentions to vote for different parties are generally rather small indicating small effect sizes. In fact, the effect sizes found in the multinomial logistic regression analyses are also quite small (Borenstein et al., 2009; Chen et al., 2010). In a similar fashion, the effect sizes of the Big Five are relatively small, however, still often slightly higher than those of the NSI scales; please also note the slightly smaller AIC (Akaike Information Criterion) for the model including the BFI scales compared to the model including the NSI scales. The small effect sizes alongside results contradicting our initial assumptions based on previous findings and theories call for future research investigating the associations between need satisfaction and voting intentions again, to i) test the replicability of

the present findings and ii) further investigate additional variables to explain results. Forthcoming studies, for example, should additionally take into account in how far individuals attribute their satisfaction or dissatisfaction to the work of the government or specific parties. Taking this factor into account might strengthen the present findings or explain associations with voting intentions in more detail.

Similarly, when interpreting the present findings, one needs to take into account the following *limitations*: First of all, findings of studies on voting (intentions) for specific parties on samples from single countries are naturally hardly generalizable across countries. Moreover, the present sample – although large, diverse, and recruited from the general German population – is a convenience sample and not representative of the general German population. This is among others evident in the differences between the distribution of voting intentions found in the present sample and distributions found in election polls (Guttmann, 2021). Even if results are meaningful, generalizability of findings to the general German population must be tested in future studies. Researchers might want to collaborate with commercial research institutes to receive representative samples, putatively of more than one country, to replicate the present analysis, check reliability and generalizability of findings, and investigate associations in more detail. Additionally, it needs to be taken care of the fact that power differs between the different models predicting voting intentions for a specific party, which influences significances of results. This is due to the fact that the number of participants between groups of individuals with different voting intentions varies. Next, the present study is of cross-sectional nature disallowing definite causal interpretation of the findings. However, since we asked for the current satisfaction of different basic needs and which party participants would vote for if general elections were held on the next Sunday, it seems legit to conclude that need satisfaction influences current voting intentions. Similarly, since the Big Five are understood as rather stable personality traits, it can be assumed that these influence current voting intentions. However, final conclusions about causality can only be drawn based on longitudinal or experimental study designs, which is an interesting approach for future research. Additionally, as mentioned in the introduction, several aspects of the theory by Maslow have been criticized, among others the factorial structure of measures to assess need categories. However, the Need Satisfaction Inventory used in the present study was not part of these investigations (Wahba & Bridwell, 1976). Therefore and based on previous research in English and German language samples, we used the Need Satisfaction Inventory (Lester, 1990; Montag et al., 2020). Most importantly, the final limitation of the present study is that basic need satisfaction is hardly enough to explain all of the variance in voting intentions. Instead, voting intentions seem to depend on

various personal as well as situational variables and their interactions. Future research will need to address additional variables to better understand voting intentions.

Despite these limitations, the present study and its results have important theoretical implications and implications for policy making. Firstly, we in parts replicated previous works on a personality basis of political attitudes and voting intentions, specifically. These findings are extended by small, but significant, associations of (dis)satisfaction of specific need categories with voting intentions, underlining the importance of needs in political research. Importantly, satisfaction seems to be associated with intentions to vote for governing versus non-governing parties, rather than with voting for left- versus right-from-the-center parties in general. Therefore, especially when investigating voting intentions, not only a left- versus right- categorization of political parties must be acknowledged but also contextual factors. From the perspective of the parties and policy makers, the results emphasize the importance of taking into account needs of citizens of a country when passing laws and policies to ensure a large voter base. Not taking into account satisfaction of citizens might lead citizens to vote for other parties (but, again, small effect sizes must be acknowledged).

Conclusion

In conclusion the present study sheds light on the association between individuals' need satisfaction according to the theory of Maslow and voting intentions in the German context. Overall, it seems that satisfaction of basic needs such as physiological and safety needs is generally associated with voting for the currently governing party (alliance). However, instead of overinterpreting the present findings, we call for future studies replicating the present findings to strengthen validity. Moreover, future studies should expand the study design to understand the links in more detail and explain more variance in voting preferences.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s12144-021-02100-z>.

Authors' Contributions C.S. planned the present study. C.M. collected data. C.S. implemented the statistical analysis. C.S. wrote the first draft of the manuscript which was critically revised by C.M. All authors approved submission of the final version of the manuscript.

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Data Availability The dataset generated during and/or analysed during the current study as well as the R-code are available in the Open Science Framework repository, <https://osf.io/umk26/files/>.

Declarations

Ethics Approval This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Ethics Committee of Ulm University, Ulm, Germany.

Consent to Participate Informed electronic consent was obtained from all individual participants included in the study.

Conflict of Interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

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