# Quid pro quo in Web 2.0. Connecting personality traits and Facebook usage intensity to uncivil commenting intentions in public online discussions

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**Abstract**

Fueled by tragic incidents worldwide, many studies have investigated dispositional factors that lead to virtual abuse and cyberbullying. In contrast to this, less extreme forms of uncivil online behavior have received only little attention. The current paper strives to overcome this research gap by focusing on uncivil commenting intentions in public Facebook discussions. We presented controversial online comments to a convenient student sample of 256 Facebook users asking them to consider their likely response on several scales ranging from a functional to a uncivil style of reasoning. Users' intended commenting was then linked to several personality traits (Big Five, Dark Triad, sensation seeking, and impulsivity) and their Facebook intensity. Analyses revealed openness, agreeableness, and experience seeking as negative predictors of participants' intention to comment uncivilly, whereas attentional impulsivity, boredom susceptibility as well as intense Facebook use emerged as positive predictors. No connections were found for the Dark Triad. Possible explanations for these effects are discussed.

Keywords: cyberhate, incivility, personality, social media

Each day, more than a billion people access social networking services (SNS) to broadcast their personal life, socialize with fellow users, or simply procrastinate. The heightened importance of SNS for social and political discourse has been motivating users to join public discussions by expressing their personal viewpoint on different issues (Taha, Hastings, & Minei, 2015). Unfortunately, this development has paved the way for new forms of virtual abuse, which often lead to severe real-life consequences for their victims (Kowalski, Giumetti, Schroeder, & Lattaner, 2014). Motivated by these precarious effects, numerous studies have attempted to find explanations for the occurrence of ‘cyberhate,' connecting it to personality traits, motivational, and socio-demographic factors (Fichman & Sanfilippo, 2015). Furthermore, recent literature has also started to explore the phenomenon of ‘trolling’—online comments that only serve to bring chaos and emotional distress to strangers, while hiding this intention behind a pseudo-sincere identity (Buckels, Trapnell, & Paulhus, 2014).

Alongside these highly destructive activities, more subtle manifestations of uncivil online behavior are commonplace in online discussions (Coe, Kenski, & Rains, 2014; Hmielowski, Hutchens, & Cicchirillo, 2014). These milder forms of misconduct include generalizing or dramatizing statements, nonspecific insults, as well as provocative and impolite comments in public online discussions that are not necessarily directed toward certain individuals (unlike cyberbullying, cyberhate, or trolling). Although previous studies have shown that both impoliteness and incivility are actually less common in SNS compared to more anonymous online platforms (Halpern & Gibbs, 2013; Rowe, 2015), a recent finding by Rösner and colleagues (2016) indicates that SNS users might indeed show a similar increase in hostile intent after being exposed to uncivil comments. Therefore, a single provocative posting can elicit hostile cognitions among its recipients, making SNS such as Facebook a permanent source of uncivil intentions. A perceived hostile social norm within these online discussions can then result in an increased likelihood to respond aggressively, thus creating a vicious circle of online incivility (Rösner & Krämer, 2016).

Further psychological insight on the emergence of those milder forms of incivility is scarce. Extant research thus far has focused mainly on the influence of contextual factors, such as framing (Borah, 2013), inequality among commenters (Blom, Carpenter, Bowe, & Lange, 2014), or various content characteristics of the respective article (Coe et al., 2014). Even though a large body of research has confirmed that personality traits contribute to the way people engage in social media—thereby promising a robust prediction of users' actions—commenters' dispositions are seldom taken into account to explain uncivil commenting (for a notable exception see Krishnan, 2016). By examining an important antecedent of those behaviors in the form of individuals' intended responses to uncivil comments in public online discussions (Sheeran, 2002), the current paper is addressing this research gap, connecting several personality factors to harmful cognitions.

## Social media and user personality

Although SNS encourage their users to update their status regularly, it is also possible to present only little data to the respective community. Likewise, some users may apply a neutral tone to their virtual identity while others demonstrate little restraint in publishing embarrassing or hostile content. Nevertheless, those online behaviors that are typically considered more extreme must not be pathologized since existing research found more similarities than differences between users who occasionally participate in uncivil online behavior and perpetrators of severe cyber-aggression (France, Danesh, & Jirard, 2013). Accordingly, we proceed on the assumption that uncivil commenting (i.e., generalizing and blatant comments on public SNS pages) should be associated with similar personality correlates as more serious cases of online harassment. Thus, we link previous insights about behavioral consequences of the Big Five, the Dark Triad, impulsivity and sensation seeking (in their function as empirically relevant predictors of online behavior) with users' spontaneous reactions to provocative statements made by unknown others.

**The Big Five.** Due to its role as highly comprehensive and popular taxonomy in the field of personality psychology, studies have extensively featured the Five Factor Model (FFM; Costa & McCrae, 1992) to account for different SNS practices. For instance, previous research has demonstrated that users' extraversion scores predict uninhibited SNS behavior with regard to their online self-disclosure (Michikyan, Subrahmanyam, & Dennis, 2014), number of online friends (Lee, Ahn, & Kim, 2014), and update frequency (Correa, Hinsley, & de Zúñiga, 2010). Matching the outgoing and enthusiastic nature of the disposition, extraverted people have also been shown to share more photos and videos than introverts, which might be reinforced by the fact that they receive more positive feedback on their social media updates (Shen, Brdiczka, & Liu, 2015). However, a study on trolling activities indicated that extraverts' tendency to be highly energetic might foster destructive forms of online behavior as well (Buckels et al., 2014). Drawing on these findings, we, therefore, expect that extraverted people are more willing to act carelessly in their spontaneous comments.

**H1a:** Extraversion positively predicts intentions to comment in an uncivil manner.

With regard to users' openness to experience, prior studies have found a positive relationship to extensive self-displays on SNS. As people scoring high in this trait tend to feel curious about technological innovations, they are also eager to adopt many different features of the media (Amichai-Hamburger & Vinitzky, 2010). Concerning public comments, we assume that their openness to different perspectives and opinions should result in a less pronounced preference for aggressive reactions.

**H1b:** Openness to experience negatively predicts intentions to comment in an uncivil manner.

In contrast to this, agreeableness and conscientiousness have been shown to predict reluctant online behaviors. Individuals with high scores in at least one of these traits were found to be more cautious about disclosing embarrassing content (Karl, Peluchette, & Schlägel, 2010). Moreover, they tend to use fewer SNS features and upload fewer photos of

themselves (Amichai-Hamburger & Vinitzky, 2010). Pursuant of the trait's considerate and self-controlled nature, agreeableness also correlates negatively with enjoyment in trolling (Buckels et al., 2014). Due to this tendency to act in a compassionate and self-disciplined way, we expect that both agreeableness and conscientiousness negatively predict users' intentions to show incivility.

**H1c:** Agreeableness negatively predicts intentions to comment in an uncivil manner.

**H1d:** Conscientiousness negatively predicts intentions to comment in an uncivil manner.

Lastly, high scores in neuroticism—which translate as strong tendency to experience stress and emotional instability—have been linked to a strategic form of impression management that emphasizes hidden and idealized aspects of the user's self (Seidman, 2013). According to Michikyan and colleagues (2014), this behavior might relate to the neurotic habit to seek reassurance in protected environments, culminating in the desire to explore other, more confident identities. Therefore, we hypothesize that neuroticism contributes to an uncivil commenting intention, as users influenced by this trait are typically more vulnerable to provocations.

**H1e:** Neuroticism positively predicts intentions to comment in an uncivil manner.

**The Dark Triad.** Apart from the FFM, research on excessive SNS use and virtual misconduct has traditionally resorted to other personality factors. Among the most prominent of them is narcissism, which describes an inflated sense of grandiosity and entitlement and has long attracted the attention of SNS scholars (Buffardi & Campbell, 2008). Studies have shown a strong positive relationship between narcissism and the number of online friends (Buffardi & Campbell, 2008), status updates (Ong et al., 2011), and uploads of self-portraying photos on social media (Bergman, Fearrington, Davenport & Bergman, 2011; Weiser, 2015). Moreover, people high in narcissism also state a higher importance of social media for their personal life (Błachnio, Przepiorka, Rudnicka, 2016). In combination with their exaggerated sense of

entitlement, this increased significance of the media offers fertile ground for narcissists to engage in antisocial behavior. Carpenter (2012) found that users with narcissistic tendencies demand social support from their virtual friends while expressing only little concern in return. The same study also indicated that narcissists tend to retaliate against other users' comments with angry responses. These results are in line with earlier findings in offline settings, which revealed that narcissistic wounds could predict aggression even better than low self-esteem (Bushman & Baumeister, 1998).

**H2a:** Narcissism positively predicts intentions to comment in an uncivil manner.

Due to their common interpretation as malicious personality facets, literature has been summarizing narcissism along with psychopathy and Machiavellianism as the Dark Triad (Paulhus & Williams, 2002). Accordingly, SNS researchers have started to take psychopathy and Machiavellianism into consideration when examining the dispositional underpinnings of problematic online behavior. In a paper by Goodboy and Martin (2015), all three factors of the Dark Triad were found to contribute to cyber-aggression. However, other studies have revealed that psychopathy—a trait characterized by impulsivity and remorselessness—might uniquely predict cyberbullying behavior (Pabian, De Backer, & Vandebosch, 2015), overshadowing the effects of the other two Dark Triad traits. On a similar note, people high in Machiavellianism—defined as a cunning and cynical form of self-interest—might be more inclined to engage in trolling activities (Craker & March, 2016). Following these results, we also hypothesize a direct influence on users' intention to comment uncivilly by SNS users' psychopathy and Machiavellianism.

**H2b:** Psychopathy positively predicts intentions to comment in an uncivil manner.

**H2c:** Machiavellianism positively predicts intentions to comment in an uncivil manner.

**Impulsivity and sensation seeking.** Two other personality traits that have frequently emerged in SNS research are impulsivity and sensation seeking. Although both concepts

entail a tendency to act in a risky and inconsiderate manner, impulsivity focuses more on a lack of self-control and forethought (Daruna & Barnes, 1993), whereas sensation seeking refers to conscious decisions for unusual, intense, and possibly dangerous experiences (Zuckerman, Eysenck, & Eysenck, 1978). In the context of social media, both traits have been shown to predict excessive use (Roberts & Pirog, 2013), which further connects to cyber-addiction (Mehroof & Griffiths, 2010) and increased feelings of loneliness (Savci & Aysan, 2016). Furthermore, previous research indicated that people scoring high in sensation seeking tend to upload more provocative content, resulting in more negative feedback from other users (Koutamanis, Vossen, & Valkenburg, 2015). Apart from these findings, little evidence has emerged for the influence of both traits on acts of cyber-aggression. However, the conceptual nature of impulsivity and sensation seeking promises a clear connection to uncivil online behavior, just as empirical results support their connection to aggressive tendencies in various contexts (Wilson & Scarpa, 2011). We thus assume positive relationships between both traits and participants' intentions to comment in an uncivil manner.

**H3a:** Sensation seeking positively predicts intentions to comment in an uncivil manner.

**H3b:** Impulsivity positively predicts intentions to comment in an uncivil manner.

## Method

### Participants

We conducted an online survey which was distributed via university mailing lists and social networking groups that are focused on psychological studies and consist of university students and employees, as well as other users with general interest in psychology. This form of recruitment was informed both by the closeness to the research topic (as we were interested in collecting data from internet-savvy participants and active users of social media), as well as reasons of study economy. By this means, we recruited a convenient sample of 256 participants with a mean age of 24.38 years ($SD$ = 5.57, range: 15–60 years) including 190

women and 66 men. The study sample consisted mainly of university students (*n* = 212, 82.8% of the sample) and university employees (*n* = 28, 10.9% of the sample). At the time of the study, each participant had an active Facebook profile with an average of 271.70 Facebook friends (*SD* = 236.15). Participants also stated that they spent 183.69 minutes per day (*SD* = 159.59) using the Internet, of which 76.77 minutes per day (*SD* = 175.78) were attributed exclusively to Facebook.

**Procedure and material**

Participants received an invitation mail with a web link to an online survey, information about the purpose of the study (more precisely, that it is on reactions to Facebook comments and that the survey will contain questions about participants' personality), and a declaration of consent. The survey was divided into three parts. Firstly, we presented several short-scales concerning personality dispositions, participants' Internet and Facebook usage, as well as single-item measures of their interest and their level of expertise in four different news subjects (i.e., politics, sport, social issues, and terrorism). These news subjects were chosen as they all can be considered typical topics that contain uncivil comments (Coe et al., 2014). Subsequently, we displayed an array of twelve anonymized screenshots (three for each news subject), which represented provoking Facebook comments from popular news magazines as stimulus material (e.g., "Turkey doesn't even want to be in the EU. Don't fool yourselves pretending that they are standing outside the door begging. By the way, there has always been Guantanamo and the death penalty in the US and nobody cares about that." or "why don't radical Muslims simply stay or go back to Muslim countries and leave us alone, to live tolerantly in peace. why? I despise them with deep hatred and deep sorrow"). Although all comments referred to a significant current event, we additionally provided few contextual information for each screenshot (e.g., for the first comment: "German administration declares death penalty the red line for Turkey's EU accession talks"; for the second comment: "50 fatalities after attack on a LGBT night club in Florida"). Participants were instructed to read

the comments carefully and imagine their response in a real situation. Following this, we asked them to rate the respective comment regarding its provocation level and then specify their intended reaction via different items. To prevent against social desirability, we reassured participants that personalized data were saved separately from their answers. After the stimulus presentation, basic sociodemographic information (age, biological sex, and current work) was assessed. The survey took about 25 minutes.

**Measures**

Being one of the most well-established models in personality psychology, numerous measures of the Big Five personality traits exist in the literature. Aiming at a sufficiently short but reliable scale, we decided for a 21-item short version proposed by Rammstedt and John (BFI-21; 2005). Therein, participants had to state how well several statements concerning agreeableness (four items; e.g., “I see myself as someone who is generally trusting”), conscientiousness (four items; e.g., “I see myself as someone who does a thorough job”), neuroticism (four items; e.g., “I see myself as someone who gets nervous easily”), extraversion (four items; e.g., “I see myself as someone who is outgoing, sociable”), and openness to experience (five items; e.g., “I see myself as someone who has an active imagination”) describe their personality on a 5-point Likert scale (1 = disagree strongly; 5 = agree strongly). We then calculated separate indices for each sub-dimension.

The Dark Triad personality traits were measured via a 12-item scale by Jonason and Webster (2010) named the Dirty Dozen. Using four items for each sub-dimension, participants were asked to rate their agreement with statements such as “I tend to manipulate others to get my way” (for Machiavellianism), “I tend to lack remorse” (for psychopathy), or “I tend to want others to admire me” (for narcissism). To prevent floor effects in a non-clinical sample and to be able to detect smaller differences between participants, we applied a 9-point Likert scale for these items (1 = disagree strongly; 9 = agree strongly). For statistical analyses, we calculated averaged indices for each sub-dimension.

Participants' impulsivity was assessed using a 15-item short version of the Barratt Impulsiveness Scale (BIS-15; Meule, Vögele, & Kübler, 2011). The scale consists of three subscales with five items each: Non-planning impulsiveness, which is associated with a lack of foresight, attentional impulsiveness, which refers to inferior abilities to concentrate properly, and motor impulsiveness, which can be characterized by an acting-before-thinking mentality. For each of these sub-dimensions, participants had to state on a 4-point Likert scale (1 = rarely/never; 4 = almost always/always) how often they show certain behaviors (e.g., "I do things without thinking" or "I am future oriented"). Again, to allow statistical analyses, we calculated three indices.

Additionally, we employed the 8-item Brief Sensation Seeking Scale (BSSS; Stephenson, Velez, Chalela, Ramirez, & Hoyle, 2007), which consists of four two-item sub-dimensions (experience seeking, thrill and adventure seeking, disinhibition, and boredom susceptibility). Participants specified their agreement with several statements such as "I like to do frightening things" or "I like new and exciting experiences, even if I have to break the rules" on a 5-point Likert scale (1 = disagree strongly; 5 = agree strongly). Corresponding to the given factor structure, four separate indices were calculated.

Regarding the stimulus material, participants were instructed to consider their intended response to several online comments. First, they had to specify how provocative they perceived each presented comment using a 7-point Likert scale (1 = not at all provocative; 7 = highly provocative) followed by an additional item concerning the probability of a response within the ongoing Facebook discussion (1 = I would never respond; 7 = I would definitely respond). Hereafter, we asked participants for their intended response. The measure for these responses were deduced from a coding system for uncivil comments in political online forums proposed by Papacharissi (2004) and Rowe (2015) who identified several uncivil commenting behaviors, such as casting aspersions, using hyperboles, pejoratives, and stereotypes or accusing others of lies. Both coding systems then served as a reference for selecting a

considerable small number of adjectives that were supposed to cover a multitude of different uncivil commenting behaviors. Following this procedure, we formulated antonyms resulting in five semantic differentials with a decent style of reasoning on one side and an uncivil style on the other: objective–emotional, constructive–destructive, subject-driven–overarching, nuanced–blatant, and conciliating–provocative. Participants specified their intended response to each comment on 7-point Likert scales with the adjective pairs at the endpoints. Since one pair of adjectives (subject-driven–overarching) correlated weakly with the scale, this item was excluded. Additionally, exploratory factor analyses using varimax rotation provided evidence for a single factor for incivility with mainly good to excellent loadings for objective–emotional (.63–.83), constructive–destructive (.76–.89), nuanced–blatant (.58–.77), and conciliating–provocative (.60–.77) and mostly poor loadings for subject-driven–overarching (.27–.60) across all stimuli. Therefore, we created indices out of the remaining four pairs for each of the twelve stimulus comments (see Table 1).

Lastly, we assessed participants' Facebook usage by the Facebook Intensity Scale (FBI; Ellison, Steinfield, & Lampe, 2007). The scale consists of seven items, two of which ("About how many total Facebook friends do you have" and "In the past week, on average, approximately how many minutes per day have you spent on Facebook") were presented in an open format and coded following the original guidelines. For the remaining five items, participants stated their agreement on a 5-point Likert scale (1 = disagree strongly; 5 = agree strongly). In addition to that, participants estimated the time they spent using the Internet on a typical weekday as well as on a typical weekend day, which was then calculated to a single measure of their weekly Internet use.

## Results

Descriptive information, zero-order correlations, as well as internal reliability scores of all variables, are shown in Table 2 and 3. We conducted four multilevel regression analyses to examine the prediction of uncivil commenting intentions by the Big Five personality traits

(H1a–e), Dark Triad traits (H2a–c), sensation seeking (H3a), and impulsivity (H3b). Therein, we defined the twelve given screenshots as repeated level 1 variable (covariance type: diagonal) and individual participants as level 2 variable (covariance type: variance components). Within each of these analyses, three separate models were calculated: (1) a baseline model including only the fixed and the random intercept and (2) a predictor model with the respective personality dimensions as fixed effect predictors and (3) a controlled predictor model with perceived provocation level and Facebook usage as additional covariates. To avoid multicollinearity issues, predictor variables were mean-centered beforehand. Additionally, we checked for unintentional reporting errors via *statcheck* (Epskamp & Nuijten, 2016).

**Big Five personality traits**

Comparing the both calculated models, both the predictor model using the Big Five dimensions (AIC = 9144.51) and the controlled predictor model (AIC = 8810.66) revealed a better model fit than the baseline model (AIC = 9147.24). Participants' uncivil commenting intentions were significantly predicted only by openness to experience ($F(1,253.87) = 4.50$, $p = .04$) and agreeableness ($F(1,253.87) = 4.91$, $p = .03$). However, extraversion ($F(1, 253.87) = 2.08$, $p = .15$) conscientiousness ($F(1, 253.87) = 2.59$, $p = .11$), and neuroticism ($F(1, 253.87) < 0.01$, $p = .96$) showed no significant prediction. Estimate coefficients are shown in Table 4. Both openness to experience ($b = -0.18$ [-.35, -.01]) and agreeableness ($b = -0.17$ [-.32, -.02]) negatively predicted intentions to respond uncivilly, meaning that participants with high scores on these personality dimensions tend to react in a more civil way. Only negligible changes in prediction were detected after controlling for perceived provocation and Facebook usage, which both turned out to be significant positive predictors (perceived provocation: $F(1,2815.87) = 371.90$, $p < .01$, $b = 0.30$ [.27, .34]; Facebook usage: $F(1,254.12) = 4.49$, $p = .04$, $b = 0.15$ [.01, .29]). Consequently, our data provides support for hypotheses 1b and 1c, but not for 1a, 1d, and 1e.

**Dark Triad traits**

Again, both the predictor model with the Dark Triad as predictors (AIC = 9144.51) as well as the controlled predictor model (AIC = 8812.89) showed a better model fit than the baseline model (AIC = 9147.24). Interestingly, none of the Dark Triad were found to be significant (Machiavellianism: $F(1,253.65) = 0.74$, $p = .39$; psychopathy: $F(1,253.65) = 2.78$, $p = .10$; narcissism: $F(1,253.65) = 0.21$, $p = .89$). These null results were not reasonably altered after controlling for perceived provocation and Facebook usage (see Table 5). However, perceived provocation significantly predicted participants' intentions to comment uncivilly in a positive direction ($F(1,2817.34) = 369.99$, $p < .01$, $b = 0.30$ [.27, .34]). Based on these results, we have to reject the second set of hypotheses.

**Sensation seeking**

Although our hypothesis treated sensation seeking as a unidimensional construct, we followed the dimensional structure of the applied measure of sensation seeking containing four subdimensions (experience seeking, thrill and adventure seeking, disinhibition, and boredom susceptibility) to achieve a more differentiated result. Both the established predictor model (AIC = 9146.15) and the controlled predictor model (AIC = 8813.38) achieved a superior model fit compared to the baseline model (AIC = 9147.24). Among the sensation seeking dimensions, only experience seeking ($F(1,253.77) = 4.35$, $p = .04$) and boredom susceptibility ($F(1,253.77) = 6.28$, $p = .01$) were found to be significant predictors of uncivil commenting intentions, while thrill and adventure seeking ($F(1,253.77) = 0.01$, $p = .93$) and disinhibition ($F(1,253.77) < 0.01$, $p = .97$) were not. Coefficients' estimates are shown in Table 6. Interestingly, estimates revealed opposing effects with experience seeking emerging as a negative predictor ($b = -0.13$ [-.26, -.01]) and boredom susceptibility as a positive predictor ($b = 0.19$ [.04, .34]) of uncivil commenting intentions. Thus, participants who typically avoid exciting experiences, as well as those who quickly get bored are more inclined to comment uncivilly. Again, we found no changes in prediction when controlling for

perceived provocation and Facebook usage, the former of which turned out to be a significant positive predictor in itself ($F(1,2817.58) = 370.90$, $p < .01$, $b = 0.30$ [.27, .34]). Taken together, these results only provide partial support for hypothesis 3a.

**Impulsivity**

Similar to sensation seeking, participants' impulsiveness was divided into three subdimensions (non-planning, attentional, and motoric) which were entered separately into the analysis. Similar to the other models, the prediction model (AIC = 9141.83) as well as the controlled prediction model (AIC = 8810.47) demonstrated a better model fit than the baseline model (AIC = 9147.24). The results showed that only attentional impulsiveness ($F(1,253.51) = 6.93$, $p = .01$) significantly predict participants' uncivil commenting attentions in a statistically positive direction ($b = 0.30$ [.08, .53]). By contrast, neither non-planning impulsiveness ($F(1, 253.51) = 1.25$, $p = .27$) nor motoric impulsiveness ($F(1, 253.51) = 0.01$, $p = .91$) emerge as significant predictor. Thus, participants who are restless and have difficulties to concentrate on a certain subject thus considered to reply more uncivilly to provocative comments of others. These results hold true even after controlling for perceived provocation and participants' Facebook usage (see Table 7). Therefore, our data provide partial support for hypothesis 3b.

**Comprehensive model**

In order to prevent against spurious predictions, we additionally calculated a comprehensive model that contained all personality variables as well as perceived provocation levels and Facebook usage simultaneously. While the controlled prediction model (AIC = 8810.55) showed a better fit than the baseline model (AIC = 9147.24), the prediction model demonstrated no superior fit (AIC = 9147.60) due to the integration of multiple weak predictors. The results of the controlled prediction model are partially in line with our findings using separate regression analyses with openness to experience as a negative predictor ($F(1,253.55) = 4.11$, $p = .04$, $b = -0.17$ [-.33, -.005]) and attentional

impulsiveness as a positive predictor ($F(1,253.55) = 5.25$, $p = .02$, $b = 0.30$ [.04, .56]) for uncivil commenting intentions. After controlling for Facebook usage and perceived provocation, both openness to experience ($F(1,254.05) = 6.36$, $p = .01$, $b = -0.20$ [-.36, -.04]) and attentional impulsiveness ($F(1,253.82) = 4.87$, $p = .03$, $b = 0.27$ [.03, .52]) remained significant predictors along with boredom susceptibility which emerged as an additional positive predictor ($F(1,254.15) = 5.24$, $p = .02$, $b = 0.17$ [.02, .32]). Furthermore, perceived provocation was again revealed positively predicting uncivil commenting intentions ($F(1,2815.89) = 378.71$, $p < .01$, $b = 0.31$ [.28, .34]). Out of the significant predictors that were found in separate regression analyses, agreeableness ($F(1,253.55) = 1.21$, $p = .27$) and experience seeking ($F(1,253.55) = 1.79$, $p = .18$) turned out statistically irrelevant.

## Discussion

While previous research primarily focused on severe forms of online harassment such as cyberhate, cyberbullying, or trolling, more subtle forms of cyber-aggression have not received particular attention. Thus, the present study examined participants' intention to comment in an uncivil manner that typically hinders a productive public discussion, but is nonetheless commonplace in online communication. Specifically, we looked into dispositional determinants for uncivil reactions to controversial postings made by unknown others—considering that public discussions between strangers present a particularly prevalent interaction scenario on popular platforms such as Twitter, YouTube, and Facebook.

Regarding the Big Five personality dimensions, we found that individuals low on agreeableness as well as persons low on openness to experience consider uncivil responses as an appropriate reaction to provocative statements. Unexpectedly, no effects were found for neuroticism, extraversion, and conscientiousness, whereby the latter at least emerged as a marginally significant predictor that affected incivility in the supposed direction (i.e., individuals with higher conscientiousness intended less uncivil replies). The significant results are in line with previous research on both traits in general (Ozer & Benet-Martinez,

2006) as well as their impact on online behavior (Amichai-Hamburger & Vinitzky, 2010). However, since the effect of agreeableness disappeared after controlling for other personality traits, this finding should be interpreted with utmost. Concerning openness for experience, previous literature indicates that open-mindedness acts as a defense mechanism by raising context awareness, which counteracts impulsive reactions following provocation (Kashdan et al., 2013). Accordingly, conscienceless persons might perceive an uncivil comment as an opportunity to act viciously, whereas people who are low in openness rather react to an insult of their honest beliefs. These distinct psychological mechanisms also imply that close-minded SNS users might be targeted as trolling victims since their responsiveness ensures the desired humiliation (Bishop, 2013). Thus, future research should consider individuals' motivation to respond in an uncivil way as well as trait inferences made by other users (Levordashka & Utz, 2017) to investigate the dynamics of online discussions.

Contrary to previous research, none of the Dark Triad traits significantly predicted our participants' intended response. By using the Dirty Dozen scale, we might have disregarded the multidimensional nature of both narcissism and psychopathy. Carpenter (2012) indicated that different types of narcissists show distinct behavioral patterns. While individuals with a narcissistic tendency to exploit others for their personal benefit indeed engage in antisocial activities, no such behaviors occur among those who possess a tendency towards grandiose exhibitionism. Similarly, clinical research also distinguishes between primary psychopathy, which is typically associated with interpersonal dominance, and secondary psychopathy, which is characterized by emotional instability and social hostility (Skeem, Johansson, Andershed, Kerr, & Louden, 2007). Both types of psychopathy might differ in the preference for uncivil commenting. Additionally, the hypothetical scenario of our study might have led to an overestimation of lighthearted people's tendency to respond rudely. Drawing from Theory of Planned Behavior (Ajzen, 1991), an individual's intention to act in a certain manner is often a rather weak determinant for actual behavior due to situational contingent

behavioral control. Since previous neurophysiological research emphasized the complementary role of inferior response inhibition in deviant personalities (Kim & Jung, 2014), participants with higher scores on the Dark Triad are more likely to put their statements into action compared to participants low on dark personality traits, who may overrate their willingness to act provocatively in an actual discussion. This interpretation notwithstanding, our results urge caution on a simplistic conception of the Dark Triad. Future research in this regard should also include a fourth 'dark' personality trait as recent findings suggest that individuals' level of everyday sadism more strongly predicts cyber-aggression than each of the Dark Triad components (Craker & March, 2016).

Our results concerning sensation seeking are twofold. In agreement with the trait's characterization, individuals who become bored more quickly are more likely to consider an uncivil response to a similarly uncivil comment. This finding extends previous research indicating that boredom intensifies passive browsing but not active forms of Facebook usage (Orosz, Tóth-Király, & Bőthe, 2016) by focusing on participants' intention to react in a specific manner. Seen from this perspective, our results suggest that people high on boredom susceptibility intend to mirror the given uncivil style of commenting instead of guiding the discussion to a more constructive climate. Furthermore, our data also allows for the interpretation that involvement in heated Facebook discussions might serve the purpose of personal entertainment. However, it is unclear whether this intended involvement is fueled by people's willingness to debate seriously about a given issue (Brandtzæg & Heim, 2009) or to mock other contributors (Dynel, 2016). Conversely, the experience seeking subdimension negatively predicted participants' intention to react uncivilly but turned out to be insignificant after controlling for other personality traits. Nevertheless, the effect of boredom susceptibility along with the weak prediction by thrill and adventure seeking, experience seeking, and disinhibition plead for a context-sensitive understanding of the influence of sensation seeking on people's online commenting intentions.

Although not all subdimensions of trait impulsivity were positively associated with participants' preference for uncivil commenting, the significant main effect of attentional impulsivity, as well as the marginally significant interaction effect of motoric impulsivity and perceived provocation, supported our assumptions. Thus, people who find it difficult to concentrate on a single object, are more likely to consider a rude response to an uncivil comment. When provoked, individuals who tend to act immediately without thinking through their actions, prefer an equally negative reaction. These results are in line with existing findings in offline contexts, which revealed a problematic link between impaired self-control and antisocial behaviors (Daruna & Barnes, 1993; DeLisi & Vaughn, 2014). Our data also support recent assumptions on the role of impulsivity as a key factor for the development of problematic media use (Orosz, Vallerand, Bőthe, Tóth-Király, & Paskuj, 2016). By providing a suitable environment to act impulsively, online discussions might stimulate impulsive people to live out their tendency as they do not have to restrain themselves.

Aside from these dispositional determinants, our regression model also indicated that people who use Facebook more excessively in their daily routine tend to consider more uncivil commenting in controversial discussions. On the one hand, this might simply occur due to a higher familiarity with the respective social network. People who spend much time on a certain platform usually have a clear understanding of its conventions, so that they feel more at ease with blunt contributions; unfamiliar users may consider it important to act politely since they are not aware of the site-specific tone. On the other hand, our results can be interpreted as desensitization resulting from constant reinforcement of destructive tendencies through the media's cultivated toxicity. Considering the ubiquity of insults, generalizations and other verbal extremes in Facebook discussions, people might quickly adapt their behavior to, or even mimic the provocative patterns of others. Again, as the prediction of Facebook usage was no longer significant after entering all assessed personality

traits into a comprehensive regression model, those conclusions should rather be seen as encouragement to clarify this issue in future research.

Several limitations restrict the implications of our findings. The homogeneity of the study sample, both in age and cultural background, makes it difficult to transfer the presented findings to a broader population. In this regard, it would be advisable to include a more diverse range of participants in future studies, as sociodemographic variables such as religion, language, or level of education might strongly influence people's communication style. Reflecting on our methods of measurement, some of our measures failed to achieve commonly known criteria for an acceptable internal reliability. Nevertheless, we decided to include those weak measures in our analyses as all affected subscales consisted only of a small number of items which might have caused their reliability problems. More importantly though, we have to note that the assessment of hypothetical behavior asks for a cautious interpretation. Although we repeatedly ensured participants that we cannot link their personal data with the experimental results, it is very difficult to avoid social desirability when asking for self-reports of uncivil behavior. Especially for the item "constructive—destructive," it can be expected that participants' answers were skewed towards the functional end of the continuum. Furthermore, estimating one’s own response with the help of relatively abstract attributes might overstrain even survey-experienced participants, thereby reducing validity and reliability of the measure. Additional pilot testing, e.g. via interviews or group discussions, could be helpful to overcome those problems in future studies. Moreover, while the Theory of Planned Behavior (Ajzen, 1991) emphasizes a strong prediction of people's behavior by their willingness to perform it, several studies highlight crucial differences between mentally conceived and actualized behavior. As such, a meta-analysis on the empirical gap between intentions and behavior (Sheeran, 2002) indicates that planned behavior might only explain a fraction of the variance in future actions. However, according to the same analysis, this link between intention and behavior may appear stronger if the focus

rests on small, single actions instead of overarching goals—as is the case in the current study. It might, however, be useful to also assess participants' self-efficacy and volitional factors as well as self-directed attention in future studies, which might act as strong moderators or mediators of the intention-behavior relationship. Although we made sure to ask participants to imagine their response to the stimulus comments in the most realistic way before characterizing it with the provided semantic differentials, some participants might have confused our inquiry about their intentions with a measure of their attitudes towards the given topics. To disentangle these volitional components, future research should therefore assess participants' positions on several social issues beforehand. Lastly, since both ethical and privacy issues prevented us from exploring participants' real behavior in the field, we regard this as a necessary compromise. A possible alternative that we discussed in advance of this study was to have participants actually write their spontaneous comments; these comments could then be rated concerning their incivility by an objective group of coders. However, as this design would entail similar concerns about the representativeness of the data, present additional coding conflicts, and might be subject to even stronger social desirability restraints, we chose the current design as the most practicable approach.

## Conclusion

Unlike extreme acts of virtual aggression such as cyberhate or cyberbullying, the exploration of uncivil commenting styles in online discussions has not yet found its firm place in the field of SNS research. However, we argue that the ubiquity of provocative, dramatizing, and otherwise destructive comments in public debates on social media contribute to a toxic climate, which paves the way for noteworthy negative consequences. Indeed, the current study not only demonstrated connections between several personality traits and intentions to respond to an uncivil comment in an equally rude manner; it also indicates that increased SNS use leads to stronger tendencies for such reactions. Ultimately, it might be due to this emerging vicious circle of uncivil commenting that verbal aggression is considered to be

normal within SNS (Hmielowski et al., 2014). In light of this, we plead for stronger efforts in investigating seemingly mild occurrences of cyberhate to determine factors that might facilitate—or prevent—such activities. The link between toxic behavior and more toxic behavior might also underline the incessant necessity of moderation and administration efforts for professional providers of social networking services, acknowledging that repeated exposure to controversy might foster further escalation. Also, with social media and Internet etiquette becoming more and more relevant topics in the education of children, our findings inform the idea to sensitize young Internet users for the consequence of uncivil behavior, even when directed at anonymous others.

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Table 1. *Means, standard deviations, and Cronbach's alpha scores for all stimulus comments.*

| | *stimulus comment* | *perceived provocation* | *uncivil commenting* | α |
|---|---|---|---|---|
| **Politics** | Death penalty in Turkey | 3.61 (1.06) | 3.48 (1.23) | .78 |
| | Protests after failed military coup in Turkey | 3.55 (1.15) | 3.39 (1.28) | .83 |
| | Racial slurs from B. Johnson against Obama | 4.08 (1.08) | 3.81 (1.43) | .85 |
| **Sports** | Russia's potential exclusion from the Olympics | 3.92 (1.55) | 3.09 (1.10) | .75 |
| | Predictions for European soccer championship | 3.28 (1.32) | 3.54 (1.39) | .82 |
| | Lionel Messi's tax fraud | 2.54 (1.06) | 3.16 (1.13) | .80 |
| **Social Issues** | Army trains refugees for reconstruction in Syria | 3.88 (1.12) | 3.53 (1.36) | .80 |
| | Tightening of law against sexual abuse | 3.41 (1.18) | 3.40 (1.32) | .86 |
| | Minister argues with flawed statistic against refugees | 3.14 (1.18) | 3.23 (1.28) | .86 |
| **Terrorism** | Truck attack in Nice | 4.00 (1.17) | 3.64 (1.45) | .88 |
| | Assassination at a nightclub in Florida | 3.47 (1.33) | 3.58 (1.41) | .81 |
| | Attack with an ax in a German train | 3.73 (1.27) | 3.59 (1.33) | .82 |
| **overall** | | 3.55 (0.76) | 3.45 (0.95) | .92 |

*Note.* Variables were measured via a 7-Point Likert scale.

Table 2. *Means, standard deviations, and Cronbach's alpha scores for all predictor variables.*

| *Variables* | *M* | *SD* | α |
|---|---|---|---|
| Facebook intensity | 2.47 | 0.80 | .79 |
| **Big Five** | | | |
| Agreeableness | 2.96 | 0.79 | .63 |
| Conscientiousness | 3.48 | 0.72 | .74 |
| Neuroticism | 3.16 | 0.90 | .79 |
| Extraversion | 3.34 | 0.95 | .85 |
| Openness to experience | 3.97 | 0.71 | .75 |
| **Dark Triad** | 3.56 | 1.41 | .88 |
| Machiavellianism | 3.25 | 1.77 | .85 |
| Psychopathy | 3.18 | 1.46 | .62 |
| Narcissism | 4.24 | 1.87 | .86 |
| **Impulsivity** | 2.14 | 0.41 | .81 |
| Non-planning impulsivity | 2.20 | 0.61 | .81 |
| Attentional impulsivity | 2.03 | 0.54 | .74 |
| Motor impulsivity | 2.20 | 0.53 | .68 |
| **Sensation seeking** | 2.99 | 0.79 | .80 |
| Experience seeking | 3.82 | 1.01 | .65 |
| Thrill & adventure seeking | 2.38 | 1.12 | .63 |
| Disinhibition | 2.78 | 1.07 | .60 |
| Boredom susceptibility | 2.96 | 0.96 | .50 |

*Notes.* Sensation Seeking was measured via a 4-Point Likert scale; Facebook intensity, Big Five personality traits, and Impulsivity were assessed using a 5-Point Likert scale; Dark Triad measure used a 9-Point Likert scale.

Table 3. Zero-order correlations for all predictor variables

| *variables* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Perceived provocation[a] | – | | | | | | | | | | | | | | | |
| 2. Facebook intensity | .03 | – | | | | | | | | | | | | | | |
| 3. Extraversion | .09 | .13 | – | | | | | | | | | | | | | |
| 4. Agreeableness | -.01 | -.07 | .19 | – | | | | | | | | | | | | |
| 5. Conscientiousness | .05 | .03 | .23 | .11 | – | | | | | | | | | | | |
| 6. Neuroticism | .06 | .06 | -.35 | -.15 | -.14 | – | | | | | | | | | | |
| 7. Openness to experience | .09 | .02 | .13 | .003 | .05 | .17 | – | | | | | | | | | |
| 8. Machiavellianism | -.03 | .30 | .02 | -.35 | -.20 | .09 | .08 | – | | | | | | | | |
| 9. Psychopathy | -.04 | .17 | -.17 | -.54 | -.24 | .03 | -.10 | .62 | – | | | | | | | |
| 10. Narcissism | -.003 | .33 | .07 | -.14 | -.09 | .17 | .10 | .62 | .35 | – | | | | | | |
| 11. Experience seeking | -.02 | .04 | .09 | .01 | -.07 | .01 | .13 | -.01 | -.15 | -.04 | – | | | | | |
| 12. Thrill & adventure seeking | -.05 | .04 | .18 | -.02 | -.18 | -.12 | .01 | .23 | .15 | .17 | .34 | – | | | | |
| 13. Disinhibition | -.04 | .13 | .19 | -.08 | -.22 | -.02 | .08 | .19 | .11 | .22 | .38 | .49 | – | | | |
| 14. Boredom Susceptibility | -.07 | .11 | .25 | -.03 | -.08 | .05 | .05 | .22 | .08 | .21 | .41 | .47 | .52 | – | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15. Non-planning impulsiveness | -.05 | .004 | -.02 | -.01 | -.54 | -.11 | -.11 | .04 | .09 | -.06 | .06 | .16 | .22 | .11 | – | |
| 16. Motoric impulsiveness | -.06 | .11 | .32 | -.02 | -.26 | -.12 | .03 | .14 | .05 | .11 | .10 | .30 | .32 | .28 | .38 | – |
| 17. Attentional impulsiveness | -.02 | .17 | -.14 | -.14 | -.41 | .31 | .09 | .22 | .21 | .20 | .14 | .16 | .22 | .32 | .29 | .28 |

*Note*: Perceived provocation is averaged over all stimuli.

Table 4. *Multilevel regression analysis including the Big Five personality dimensions.*

| | | *b (SE)* | 95% CI | *t* | *p* |
|---|---|---|---|---|---|
| *model 1* | intercept | 3.45 (0.06) | 3.33, 3.56 | 58.08 | < .01 |
| *model 2* | intercept | 3.45 (0.06) | 3.33, 3.56 | 59.54 | < .01 |
| | extraversion | 0.10 (0.07) | -0.04, 0.23 | 1.44 | .15 |
| | agreeableness | -0.17 (0.08) | -0.32, -0.02 | -2.22 | .03 |
| | conscientiousness | -0.13 (0.08) | -0.30, 0.03 | -1.61 | .11 |
| | neuroticism | 0.004 (0.07) | -0.14, 0.14 | 0.05 | .96 |
| | openness to experience | -0.18 (0.08) | -0.35, -0.01 | -2.12 | .04 |
| *model 3* | intercept | 3.45 (0.06) | 3.34, 3.56 | 62.70 | < .01 |
| | extraversion | 0.03 (0.07) | -0.10, 0.16 | 0.49 | .63 |
| | agreeableness | -0.15 (0.07) | -0.29, -0.004 | -2.03 | .04 |
| | conscientiousness | -0.15 (0.08) | -0.30, 0.006 | -1.90 | .06 |
| | neuroticism | -0.05 (0.07) | -0.18, 0.08 | -0.73 | .47 |
| | openness to experience | -0.21 (0.08) | -0.37, -0.05 | -2.61 | .01 |
| | perceived provocation | 0.30 (0.02) | 0.27, 0.33 | 19.29 | < .01 |
| | Facebook usage | 0.15 (0.07) | 0.01, 0.29 | 2.12 | .04 |

Table 5. *Multilevel regression analysis including the Dark Triad traits.*

| | | *b (SE)* | 95% CI | *t* | *p* |
|---|---|---|---|---|---|
| *model 1* | intercept | 3.45 (0.06) | 3.33, 3.56 | 58.08 | < .01 |
| *model 2* | intercept | 3.45 (0.06) | 3.33, 3.56 | 59.23 | < .01 |
| | Machiavellianism | 0.04 (0.05) | -0.06, 0.14 | 0.86 | .39 |
| | psychopathy | 0.08 (0.05) | -0.02, 0.18 | 1.67 | .10 |
| | narcissism | 0.01 (0.04) | -0.07, 0.08 | 0.15 | .89 |
| *model 3* | intercept | 3.45 (0.06) | 3.34, 3.56 | 61.94 | < .01 |
| | Machiavellianism | 0.04 (0.05) | -0.05, 0.14 | 0.85 | .39 |
| | psychopathy | 0.09 (0.05) | -0.003, 0.19 | 1.91 | .06 |
| | narcissism | -0.01 (0.04) | -0.08, 0.07 | -0.19 | .85 |
| | perceived provocation | 0.30 (0.02) | 0.27, 0.33 | 19.24 | < .01 |
| | Facebook usage | 0.10 (0.07) | -0.04, 0.25 | 1.39 | .17 |

Table 6. *Multilevel regression analysis including sensation seeking.*

| | | *b (SE)* | 95% CI | *t* | *p* |
|---|---|---|---|---|---|
| *model 1* | intercept | 3.45 (0.06) | 3.33, 3.56 | 58.08 | < .01 |
| *model 2* | intercept | 3.45 (0.06) | 3.33, 3.56 | 59.13 | < .01 |
| | experience seeking | -0.13 (0.07) | -0.26, -0.01 | -2.06 | .04 |
| | thrill & adventure seeking | -0.01 (0.06) | -0.13, 0.12 | -0.09 | .93 |
| | disinhibition | 0.003 (0.07) | -0.13, 0.14 | 0.04 | .97 |
| | boredom susceptibility | 0.19 (0.08) | 0.04, 0.34 | 2.51 | .01 |
| *model 3* | intercept | 3.45 (0.06) | 3.34, 3.56 | 62.12 | < .01 |
| | experience seeking | -0.14 (0.06) | -0.26, -0.02 | -2.22 | .03 |
| | thrill & adventure seeking | 0.01 (0.06) | -0.11, 0.12 | 0.11 | .92 |
| | disinhibition | -0.01 (0.07) | -0.14, 0.12 | -0.14 | .89 |
| | boredom susceptibility | 0.21 (0.07) | 0.07, 0.35 | 2.88 | < .01 |
| | perceived provocation | 0.30 (0.02) | 0.27, 0.34 | 19.26 | < .01 |
| | Facebook usage | 0.13 (0.07) | -0.01, 0.27 | 1.89 | .06 |

Table 7. *Multilevel regression analysis including impulsivity.*

| | | *b (SE)* | 95% CI | *t* | *p* |
|---|---|---|---|---|---|
| *model 1* | intercept | 3.45 (0.06) | 3.33, 3.56 | 58.08 | < .01 |
| *model 2* | intercept | 3.45 (0.06) | 3.33, 3.56 | 59.41 | < .01 |
| | non-planning impulsiveness | 0.12 (0.11) | -0.09, 0.33 | 1.12 | .27 |
| | motoric impulsiveness | 0.01 (0.12) | -0.22, 0.25 | 0.11 | .91 |
| | attentional impulsiveness | 0.30 (0.12) | 0.08, 0.53 | 2.63 | .01 |
| *model 3* | intercept | 3.45 (0.06) | 3.34, 3.56 | 62.24 | < .01 |
| | non-planning impulsiveness | 0.15 (0.10) | -0.05, 0.35 | 1.45 | .15 |
| | motoric impulsiveness | 0.03 (0.12) | -0.19, 0.26 | 0.29 | .77 |
| | attentional impulsiveness | 0.27 (0.11) | 0.05, 0.49 | 2.46 | .02 |
| | perceived provocation | 0.30 (0.02) | 0.27, 0.33 | 19.24 | < .01 |
| | Facebook usage | 0.12 (0.07) | -0.02, 0.26 | 1.69 | .09 |