



# Individual differences in perceiving disinformation sharing as opinion leadership: Effects of dark triad traits, need for uniqueness, and green identity

Elaine Wallace<sup>a,\*</sup>, Isabel Buil<sup>b</sup>

<sup>a</sup> School of Business, Maynooth University, Maynooth, Ireland

<sup>b</sup> Faculty of Economics and Business, University of Zaragoza, Zaragoza, Spain

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## ABSTRACT

Disinformation about climate change is spreading on social media. When influencers (those with large followings on social media) post disinformation, other users may amplify it through liking or sharing. This paper examines individual differences in perceiving influencers as opinion leaders when they post climate change disinformation. In an online study with 313 US Instagram users, we explored the role of dark triad traits, need for uniqueness (NFU), and green identity. We also explored the impact of AI (virtual) and human influencers and the apparent consensus of others with the disinformation post. We found that dark triad traits and NFU were positively associated with perceptions of opinion leadership when influencers post disinformation. Green identity was negatively associated with these perceptions. Perceived opinion leadership was similar for AI and human influencers. Finally, those who perceived opinion leadership were likely to amplify the message through word of mouth and engagement (likes or shares).

## 1. Introduction

Given social media's ubiquity, the growth of disinformation online is concerning. Disinformation is "false information that is purposely spread to deceive people" (Lazer et al., 2018, p. 2), prevalent in contexts including politics (Buchanan & Kempley, 2021) and climate change (Gori, 2023). On social media, influencers are users who have built a number of followers (Leung et al., 2022). These influencers can be human or AI (virtual) influencers, that is, computer-generated characters who have a social media presence (Muniz et al., 2023). Both human and AI (virtual) influencers have large followings on social media (Delbaere et al., 2021). They can be regarded as digital 'opinion leaders' when they have social influence on their followers (Leung et al., 2022). Influencers who are perceived as opinion leaders can shape the views and preferences of social media users. This raises concerns about opinion leaders' potential to intentionally disseminate disinformation, misleading users who may have 'blind faith' in them (Bahar & Hasan, 2024).

Although prior research has investigated individual traits that leave people susceptible to disinformation (Moravec et al., 2020), little is known about individual traits that may lead users to perceive

influencers who post disinformation as opinion leaders. As perceptions of opinion leadership may influence users to accept or disseminate disinformation (Bahar & Hasan, 2024), understanding more about these traits is critical. From a theoretical perspective, while extant literature identifies traits of opinion leaders (e.g., He & Jin, 2024), less is known about the traits of users who perceive influencers as opinion leaders, when those influencers share disinformation. From an applied perspective, identifying these traits could inform interventions to protect individuals who are more susceptible to harmful influencers and mitigate the spread of disinformation on social media.

This study considers disinformation by social media influencers and investigates individual trait antecedents of individual's perceptions of opinion leadership. Extant research considers that deceitful opinion leadership influences users and changes the norms of conversation on social media (Guldemond et al., 2022). Research often focuses on the opinion leader's shady behaviour (Schyns et al., 2019). We investigate traits informing the user's perception of opinion leadership when influencers post disinformation. Specifically, we explore dark triad traits (Paulhus & Williams, 2002) and need for uniqueness (Tian et al., 2001). We also explore whether influencer type (AI or human), and level of apparent consensus, affect perceptions of opinion leadership. Moreover,

\* Corresponding author.

E-mail addresses: [elaine.wallace@mu.ie](mailto:elaine.wallace@mu.ie) (E. Wallace), [ibuil@unizar.es](mailto:ibuil@unizar.es) (I. Buil).

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we investigate whether perception of opinion leadership affects intention to share and engage with disinformation.

While extant research explores political disinformation, we investigate differences in individuals' response to disinformation about climate change. Disinformation about climate change is on the rise, creating public misinterpretation of the risks, and delaying collective action (Gori, 2023). Prior literature argues in favour of fostering a 'green identity' in supporting pro-environmental behaviours (Schwartz et al., 2020; Whitmarsh & O'Neill, 2010). In the political context, some political identities are disproportionately inclined to accept disinformation (Nyhan & Reifler, 2010). In this study, we explore whether users with a green identity would be less likely to perceive those who spread disinformation about climate change as opinion leaders. Research findings will help develop interventions to prevent individuals from i) perceiving 'opinion leaders' among influencers who spread disinformation, and ii) amplifying disinformation by engaging with or sharing it.

### 1.1. Disinformation on social media – influence and opinion leadership

Disinformation thrives on social media platforms and has potential harmful consequences (Colliander, 2019). Individual traits have been investigated in relation to the acceptance and spread of disinformation. For example, those with lower cognitive reflection may accept or share fake information (Pennycook et al., 2021). Buchanan and Kempley (2021) found that psychopathy and cognitive-perceptual schizotypy were associated with sharing of fake political news. Conversely, more conscientious individuals may be less likely to share disinformation (Buchanan, 2020).

Traits may also affect individuals' perceptions about the person posting on social media and perceived opinion leadership. Traditionally, opinion leaders are "individuals [...] likely to influence other persons in their immediate environment" (Katz & Lazarsfeld, 1955, p. 3). Offline, opinion leaders have higher status, but on social media, they can be perceived among any users that exert significant influence on others and can play the role of agenda generator or news disseminator (Park, 2013). They may also deliberately spread disinformation (Dubois et al., 2020). It is therefore helpful to investigate traits that may lead followers to perceive social media influencers as opinion leaders.

Extant research suggests that followers do not make distinctions between AI or human influencers (Sands et al., 2022). Further studies indicate that apparent consensus to disinformation suggests 'social proof' (Roethke et al., 2020), affecting individuals' responses. Therefore, we also investigate influencer type (human vs. AI), and perceived consensus as antecedents of perceived opinion leadership when influencers post disinformation. Finally, as engaging with posts or sharing through word of mouth (WOM) amplifies disinformation (Buchanan & Kempley, 2021), we explore whether perceived opinion leadership influences engagement and WOM. Our hypotheses are outlined below.

### 1.2. Individual differences in perceiving opinion leadership

#### 1.2.1. Dark triad traits

Dark triad traits include Machiavellianism, narcissism, and psychopathy (Paulhus & Williams, 2002). Machiavellianism describes cold, manipulative individuals inclined to abuse or neglect others for gain; narcissism describes grandiose, entitled, dominant personalities that aggressively preserve self-image; and psychopathy features high impulsivity and thrill seeking, combined with low anxiety and low empathy (Triberti et al., 2021).

These traits are associated with online trolling (Buckels et al., 2014) and greater social media use (Rosen et al., 2013). Further, narcissism is associated with an inability to detect fake news (Escolà-Gascón et al., 2023). Therefore, dark triad traits merit investigation in relation to disinformation on social media.

Dark triad traits are linked to riskier behaviours (Jonason & Lavertu, 2017) and have been found to weaken the effect of scepticism on

acceptance of conspiracy theories (Ahadzadeh et al., 2023). For example, Machiavellianism has been associated with conspiracist ideation (March & Springer, 2019). Narcissism can also account for self-promoting behaviours on Instagram (Moon et al., 2016), and Furnham et al. (2013, p. 199) highlight dark triad traits "share a common core of callous manipulation". We suggest those who are higher in dark triad traits perceive opinion leadership when influencers post disinformation, to be deceptive, disruptive or gain attention. Thus, we hypothesise that dark triad traits are associated with perceiving opinion leadership when disinformation is posted by an influencer (H1).

#### 1.2.2. Need for uniqueness

Need for uniqueness (NFU) is "an individual's pursuit of differentness relative to others that is achieved through the acquisition, utilisation and disposition of consumer goods for the purpose of developing and enhancing one's social identity" (Tian et al., 2001, p. 50). NFU is driven by counter-conformity motivation, whereby individuals behave in a way that they believe demonstrates noncongruence with norms (Tian et al., 2001). NFU attracts people to conspiracy theories (Sternisko et al., 2020). Recently, Buchanan et al. (2024) argued that sharing of disinformation may be a form of self-expression. Building on the idea of non-conformity, central to NFU, we suggest those with higher NFU may seek self-expression by standing out and would perceive opinion leaders among those influencers who post disinformation (H2).

#### 1.2.3. Green identity

Green identity is a pro-environmental self-identity (Whitmarsh & O'Neill, 2010). Self-identity differentiates individuals from others; climate change scepticism and sceptics' identity construction is associated with distrust of judgements of climatology (Sarathchandra, Hattiner, & Grindal, 2021). Conversely, green identity positively influences some pro-environmental responses (Whitmarsh & O'Neill, 2010). We suggest that individuals with a strong green identity will adopt an 'us against them' (Green et al., 2002) about those who post disinformation about climate change. We posit green identity will be negatively associated with perceptions of opinion leadership regarding influencers who post climate change disinformation (H3).

### 1.3. Human versus AI influencers, and apparent consensus

AI influencers - computer-generated influencers with a social media presence (Muniz et al., 2023) - are growing in number and popularity. They can establish opinion leadership, with individuals as open to follow AI influencers as human influencers (Sands et al., 2022). We posit that AI influencers are as effective as human influencers in creating perceptions of opinion leadership, when they post disinformation (H4).

Moreover, individuals seeking to interact with like-minded people create 'identity-bubbles' online; where shared identities amplify information bias (Kaakinen et al., 2020). Further, when individuals cannot distinguish between what is real and what is fake, consensus is a salient cue to evaluate information (Yousif et al., 2019), as consensus provides 'social proof' that messages are credible (Buchanan, 2020). We posit that perceived opinion leadership is stronger when disinformation achieves greater apparent consensus (i.e., more agreement), than lower apparent consensus (i.e., more disagreement) (H5).

### 1.4. Perceptions of opinion leadership: amplification outcomes

When opinion leaders post disinformation, users' subsequent liking or sharing of that false information can amplify its reach (Buchanan & Kempley, 2021). Amplification can occur through users' engaging with posts, or through WOM. Therefore, we investigate whether perceptions of opinion leadership are associated with WOM about the disinformation (H6) and engagement with it (e.g., Liking it) (H7).

In sum, we investigate individual differences in perceptions of opinion leadership when influencers post disinformation, hypothesising

that dark triad traits (H1) and NFU (H2) are positively associated with these perceptions, while green identity (H3) is negatively associated. We contend individuals will not distinguish between AI and human influencers (H4) in perceiving opinion leadership, but they will be influenced by apparent consensus (H5). Finally, we investigate whether perceived opinion leadership increases disinformation amplification through followers' WOM (H6) and engagement (H7).

Fig. 1 presents the conceptual model.

## 2. Method

### 2.1. Participants and procedure

We conducted a study with US-based Instagram users. We employed a between-subjects experimental design, in which we presented a climate change disinformation post. We did not reveal that the post was false. We measured individual traits, and manipulated the influencer type (AI vs. human) and apparent consensus to the influencer's post (conformity vs. disconformity). The supplementary file contains more information about the procedure.

Participants were recruited using Prolific in October 2023, directed to an online survey hosted by Qualtrics, and randomly assigned to one of the four scenarios. Only Prolific users with an approval rating of at least 80 % and holders of an active Instagram account accessed in the previous month, aged 18 years or older, were allowed to take part in the study. Participants were paid £2.25 for completing the survey. In total, 346 participants in the United States completed the questionnaire. 5 respondents failed the attention check and 28 respondents did not correctly identify the manipulations checks related to influencer type or apparent consensus. These participants were discarded, leaving a final sample of 313. Most participants (61.8 %) were female. Ages ranged from 18 to 71 years (M = 36.84; SD = 12.11).

### 2.2. Measures

Well-established scales were used. Scale items (Table A.1) and descriptive statistics and correlations (Table A.2) are provided in the Supplementary Materials. 7-point scales were employed.

#### 2.2.1. Dark triad

The dark triad was measured using the Dirty Dozen scale (Jonason & Webster, 2010). This scale includes 12 items, 4 for each trait:

Machiavellianism, psychopathy, and narcissism.

#### 2.2.2. Need for uniqueness

NFU was measured drawing on the shortened version of the scale (7 items) from Bian and Forsythe (2012). The dimensions are creative choice counter-conformity (3 items), unpopular choice counter-conformity (2 items), and similarity avoidance counter-conformity (2 items).

#### 2.2.3. Green identity

Green Identity was measured using used 2 items, from Whitmarsh and O'Neill (2010).

#### 2.2.4. Perceived opinion leadership

Perceived opinion leadership was measured using items adapted from Casaló et al. (2020).

#### 2.2.5. WOM

Word of Mouth (WOM) about the disinformation message was measured in line with Venkatesh et al. (2003), adapted to reflect the intention to offer WOM.

#### 2.2.6. Engagement with the post

Engagement with the post was measured following Wies et al. (2023). Participants were asked to consider the post and to identify the likelihood of Liking it, commenting positively about it, and sharing it.

### 2.3. Data analysis

Analysis was conducted using partial least squares structural equation modeling (PLS-SEM), with SmartPLS 3.0. PLS-SEM facilitates accounting for measurement error, which makes this method superior to multiple regression with sum or mean scores of a set of observed variables. PLS-SEM is also suitable due to the predictive-explanatory nature of the study and the size of the sample (Hair et al., 2017).

## 3. Results

### 3.1. Measurement model

NFU (Bian & Forsythe, 2012) and dark triad traits (Jonason & Webster, 2010) were conceptualized as second-order reflective

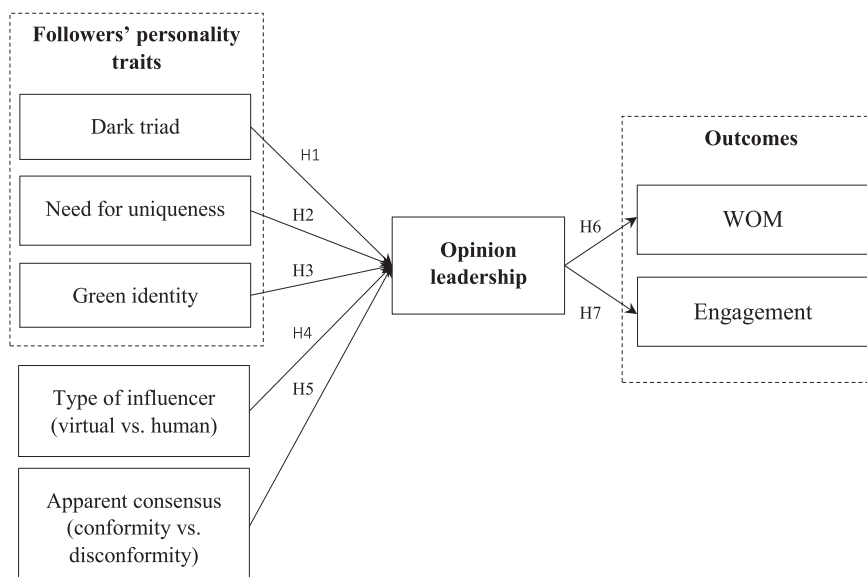


Fig. 1. Conceptual model.

constructs. Prior research supported a second-order hierarchical model (e.g., [Bian & Forsythe, 2012](#); [Jonason & Webster, 2010](#); [Postigo et al., 2024](#)). In addition, when the goal of the study is to predict broadly defined behaviours (as it is our case), higher-order constructs might prove valuable ([Hair et al., 2017](#)). This approach also allows us to provide a more parsimonious explanation of the influence of the analysed traits without diluting the focus across the separate dimensions and reduce the number of relationships in the structural model, making the PLS path model more parsimonious and easier to understand ([Hair et al., 2017](#)).

The first-order dimensions were first assessed. Following [Hair et al. \(2017\)](#), items with loadings below the threshold of 0.7 were excluded when their deletion improved the construct's validity and reliability without compromising the content validity of the scale. This resulted in the elimination of two items from the opinion leadership scale and one item from the psychopathy dimension. After these deletions, individual reliability was confirmed as all factor loadings were above 0.7 - with only one item loading slightly below (0.69) - and statistically significant (Table A.3, Supplementary Materials). Internal consistency reliability was confirmed as the composite reliability for all constructs was greater than 0.7 ([Hair et al., 2017](#)). Convergent validity was assessed through the average variance extracted (AVE) values, which were above 0.5 ([Hair et al., 2017](#)). Discriminant validity was supported since the HTMT values were below the threshold of 0.90, and the bootstrap confidence interval did not contain the value 1 ([Hair et al., 2017](#)) (Table A.4, Supplementary Materials).

Following the assessment of the first-order constructs, we created the second-order constructs (Table A.5, Supplementary Materials). Item loading scores were above or close to the recommended value of 0.7. The composite reliability exceeded the threshold of 0.7 and the AVE values were all above 0.5, confirming the consistency reliability and the convergent validity of the constructs. Discriminant validity was also confirmed (Table A.6, Supplementary Materials).

### 3.2. Structural model

To test the hypotheses, a bootstrapping procedure with 5000 iterations of resampling was used. Age and gender were included as control variables. The model explains 14.2 % of opinion leadership variance, 50.4 % of WOM and 54.2 % of engagement. The Stone-Geisser test criterion ( $Q^2$ ) exceeded the threshold of 0 for all dependent variables, supporting the predictive relevance of the model. The standardised root mean square residual (SRMR) showed a value of 0.06, lower than the threshold of 0.08 ([Hu & Bentler, 1999](#)). Thus, the model has good fit.

The results (Table 1) revealed that perceived opinion leadership was positively affected by dark triad and NFU, supporting H1 and H2. The influence of green identity was negative, supporting H3. In relation to the type of influencer, we found a non-significant effect, suggesting

**Table 1**  
Structural model results.

Hypotheses	$\beta$	t-Value	p-Value	CI
H1. Dark triad → Opinion leadership	0.133	2.216	0.027	[0.012, 0.248]
H2. NFU → Opinion leadership	0.164	3.214	0.001	[0.055, 0.252]
H3. Green identity → Opinion leadership	-0.245	4.758	0.001	[-0.348, -0.147]
H4. Type of influencer (AI vs. HI) → Opinion leadership	-0.069	1.337	0.181	[-0.173, 0.031]
H5. Apparent consensus → Opinion leadership	0.031	0.568	0.570	[-0.081, 0.131]
H6. Opinion leadership → WOM	0.701	26.921	0.001	[0.642, 0.746]
H7. Opinion leadership → Engagement	0.719	24.152	0.001	[0.656, 0.773]

influencer type (AI/ human) does not influence perceived opinion leadership, supporting H4. When the disinformation message received apparent consensus (vs. disagreement) in comments from other followers, it did not influence perceptions of opinion leadership, leading us to reject H5. Finally, perceived opinion leadership was positively related to WOM and engagement, supporting H6 and H7.

Regarding the controls, only age was significant: older users tended to perceive the influencer as an opinion leader ( $\beta = 0.156$ ,  $p = 0.007$ ) and engage more ( $\beta = 0.096$ ,  $p = 0.017$ ).

## 4. Discussion

Findings indicate dark triad traits and NFU are associated with perceived opinion leadership when influencers post climate change disinformation. Further, perceived opinion leadership motivates followers to engage with disinformation messages and offer WOM about them. Conversely, a green identity 'buffers' individuals from disinformation; they are less likely to perceive influencers posting climate change disinformation as opinion leaders and, consequently, less likely to spread the disinformation.

Our findings that dark triad traits are related to perceived opinion leadership may be associated with an inability to detect fake news ([Escolà-Gascón et al., 2023](#)), or it may be more strategic ([Jones & Paulhus, 2011](#)), as those with dark triad traits seek to conspire with others ([Douglas & Sutton, 2011](#)), and exhibit conspiracist ideation ([March & Springer, 2019](#)). Those individuals may be drawn to perceive opinion leaders among influencers who post disinformation, because they perceive them as disruptive. This finding augments [Buchanan and Kempley's \(2021\)](#) work on instrumental motives for sharing disinformation, as we also show dark motives influence individuals' perceptions about opinion leaders.

Findings support our hypothesis that individuals with higher NFU would perceive opinion leaders when disinformation was posted. [Buchanan et al. \(2024\)](#) found that self-expression motives predicted consideration of sharing disinformation, and [Sternisko et al. \(2020\)](#) identified NFU as an epistemic motive in attracting people to conspiracy theories. Our findings suggest individuals with greater NFU may be drawn to perceive disinformation posters as opinion leaders, because the disinformation is non-conforming.

We also investigated whether a pro-environmental self-identity (green identity) would prevent individuals perceiving opinion leadership among influencers who post disinformation. Earlier we noted that fostering a 'green identity' can support pro-environmental purchases and behaviour ([Schwartz et al., 2020](#)). Findings suggest green identity is negatively associated with perceptions of opinion leadership, when influencers' disinformation is about climate change. Our results indicate that those with green identities may be disproportionately inclined not to accept disinformation (in line with [Nyhan & Reifler, 2010](#)), as they do not perceive disinformation posters as opinion leaders. This finding suggests an 'us against them', whereby having strong green identity protects individuals from disinformation spreaders, to preserve their in-group and avoid an outgroup (climate change deniers), supporting [Green et al. \(2002\)](#).

Interventions such as fostering a green identity may help to protect individuals following or being influenced by AI or humans that spread disinformation. Offline, labelling a product 'for green consumers' fosters green identity and motivates intention to engage in 'green' behaviour ([Schwartz et al., 2020](#)). We suggest wording such as 'this message is for green individuals' on social media posts, could help to foster green identity online.

Our findings also indicate that AI influencers are as effective as human influencers in motivating perceptions of opinion leadership. However, the relationship between apparent consensus and perception of opinion leadership was not significant. For matters related to climate change, individuals have strong beliefs, and may be less influenced by others' agreement or disagreement with disinformation posts.

Finally, findings show that perceptions of opinion leadership for climate change disinformation posts are associated with engagement and WOM. Sharing or ‘liking’ a post will display it to other users and can lead to disinformation spreading exponentially, amplifying it (Buchanan, 2020). We advocate for interventions that consider dark triad traits and NFU of individuals, to minimise the perceived opinion leadership of the posters. Individuals exhibiting these traits, for example through their social media posts, could be targeted with counter-messaging (Buchanan, 2020), to ‘dilute’ perceived opinion leaders’ messages.

#### 4.1. Limitations and future directions

This was a scenario-based study. We acknowledge that the use of text-based scenarios is less nuanced. However, we had concern that including visual imagery such as source attractiveness (Alboqami, 2023) or other imagery (Chan et al., 2023) could bias results. As our text was derived from a real-world example of fake news, we had assurance that the scenario was realistic.

A field experiment measuring individuals’ response to ‘real world’ disinformation would provide interesting results. However, there are ethical implications in exposing participants to real disinformation. As our scenario post was based on a real-world post, we had reassurance that readers would respond in the same way as in a field study.

We did not explore whether participants considered the message disinformation. Although we used a real-world disinformation post, it is possible that some participants hold anti climate-change views. Therefore, their perceptions of opinion leadership could be motivated by their personal views.

## 5. Conclusion

This study identified social media users’ dark triad traits and NFU as antecedents of perceived opinion leadership, when social media influencers spread disinformation. Green identity appears to ‘protect’ users against those perceptions. Perceptions of opinion leadership are not affected by AI versus human posters, or by consensus. However, they are associated with WOM and engagement with the post, which could amplify disinformation. Findings underlie the importance of considering these traits in interventions to limit the influence of disinformation posters, and dissemination of their messages, as well as interventions to foster individuals’ green identity.

### CRedit authorship contribution statement

**Elaine Wallace:** Writing – review & editing, Writing – original draft, Visualization, Validation, Resources, Project administration, Methodology, Investigation, Funding acquisition, Data curation, Conceptualization. **Isabel Buil:** Writing – review & editing, Writing – original draft, Visualization, Validation, Software, Resources, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization.

### Informed consent

Informed consent was obtained from all individual participants included in the study.

### Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

### Declaration of competing interest

None.

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### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.paid.2025.113105>.

### Data availability

Data will be made available on request.

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