SMOKE AND MIRRORS: WHEN DOES INDIFFERENCE TO TRUTH BECOME SOCIALLY ACCEPTABLE?

by

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DECLARATION

I, Robynne Catherine Schwartz (student number: 59305770), declare that "**SMOKE AND MIRRORS: WHEN DOES INDIFFERENCE TO TRUTH BECOME SOCIALLY ACCEPTABLE?"** is my own work, and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references. I further declare that I have not previously submitted this work, or part of it, for examination at UNISA for another qualification or at any other higher education institution.

Name: Robynne Catherine Schwartz

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ABSTRACT

The current research project aimed to gain a deeper understanding of the social phenomenon of bullshit. Across three studies (Study 1: N = 133; Study 2: N = 266; Study 3: N = 255), we examined the extent to which individuals are receptive to and engage with various forms of bullshit information, including pseudo-profound information (Studies 1 to 3) and fake news (Studies 2 and 3). More specifically, using a cross-sectional survey design, we explored *whether* and *how* the perceived normativity of providing an opinion (Studies 1 to 3), the social context (Study 3), and scepticism toward an "objective" truth (Studies 1 to 3) influence bullshit receptivity and engagement. Our results indicate, first, that receptivity to misinformation is heterogeneous in nature in that persuasive bullshitting was positively related to fake news receptivity, but not to pseudo-profound statements. Secondly, the conceptualisation of the obligation to provide an opinion from a social norm perspective influenced the extent to which individuals share misinformation. Finally, rejection of an "objective" truth was to some extent related to the receptivity of various forms of misinformation, such that conspiracy ideation was associated with receptivity to both pseudo-profound statements and fake news, but not with engagement with misinformation sharing. The scope and implications of our results are discussed in detail.

Keywords: persuasive bullshit, evasive bullshit, bullshit receptivity, fake news receptivity, personal normative obligation, descriptive normative obligation, anti-science attitudes, conspiracy ideation

"One of the most salient features of our culture is that there is so much bullshit. Everyone knows this. Each of us contributes his share." Harry Frankfurt (1986/ 2005, p. 1)

INTRODUCTION

To be minimally functional, society must recognise the importance of honesty and clarity in reporting facts (Frankfurt, 2010, p. 16), as the latter allows for making well-informed judgments and decisions. However, it appears that the respect for truth is increasingly disappearing as the social phenomenon of *bullshit* has become commonplace within the very fabric of societies. Facts become "alternative facts", misinformation and subjective opinions replace evidence, or the existence of "objective" truth is questioned at all (Frankfurt, 1986/2005; Fukuyama, 2018; Petrocelli, 2018, 2020). Some bullshit is harmless and might result in embarrassment for the bullshitter, while other bullshit is abhorrent and might lead to undesirable outcomes. For instance, the claim to be able to hit a moving object with a spear from a distance of more than 100 meters is harmless, and it might result in eye-rolling (at least in those who know that the official men's world record for javelin throwing stands currently at 98.48 meters, see Atwal, 2024). Other bullshit, however, can be dangerous as it may lead "to false beliefs and destructive decisions" (Petrocelli, 2021, p. 18), which may harm health and life. For instance, the claim by one of the former Health Ministers of South Africa, Ms Mantombazana E Tshabalala-Msimang, that HIV/Aids can be cured by eating garlic, lemon, and beetroot was (and still is) dangerous, and many have lost their lives as a result (Davis & Tshabalala, 2017). Because bullshit cannot only be benign but also harmful to individuals, communities, and societies, it is essential to extend our understanding of what motivates people to disregard the truth and be receptive to bullshit information. More specifically, the present research aimed to examine how receptivity to various forms of bullshit information can influence the extent to which individuals engage in behaviour that disregards *what and how*

things really are. Furthermore, we aimed to understand from a social norm perspective *whether* and *how* the obligation to provide an opinion, which is considered one of the essential antecedents of bullshit (Frankfurt, 1986/2005; Petrocelli, 2018), affects individuals' proclivity to be not only receptive to bullshit information but also to engage in bullshitting behaviour. Lastly, we aimed to identify whether the rejection of "objective" truth leads to increased bullshit receptivity and engagement.

Why so nonchalant about the facts?

Bullshit, which was first theoretically conceptualised by the philosopher Harry Frankfurt (1986/2005) in his seminal work *On Bullshit*, is broadly understood as communication with little to no regard for the truth and no concern for how things really are. More specifically, bullshitting is defined as intentional or unintentional communication that is indifferent toward the truth, evidentiary support, empirical knowledge or established semantic, logical, and systemic to impress, persuade, or otherwise mislead others (Cohen, 2002; Frankfurt, 1986/ 2005; Littrell et al., 2021; Littrell & Fugelsang, 2021; Pennycook et al., 2015; Petrocelli, 2018; 2020; Petrocelli, 2021; Reisch, 2006). While the former part of the definition refers to the *content* of communicated information, the latter focuses on the motivational aspect of bullshit. From a communication perspective, any message can be understood as the performance of a speech act that *has meaning* and *means something* (Searle, 2014, p. 6), which aligns with the proposed relationship between the notions of *meaning* and *intention* (Grice, 1969). Thus, the meaning of a bullshit message has no reference to the truth as it is defined as communicating with indifference toward truth or falsity (Frankfurt, 1986/2005, p. 34) with the intention to actively "misrepresent what and who they are" (Frankfurt, 1985/2005, p. 54). To put it differently, bullshit is communicated to deceive an audience by exhibiting little care for the truth value of their statements (Fredal, 2011, p. 245).

Frankfurt (1986/2005) described the lack of concern for truth or falsity in communicating as the essence of bullshit. This indifference toward the truth distinguishes bullshitting from lying (Frankfurt, 1986/2005; Petrocelli, 2018). Lies, by nature, are untrue and require some knowledge about the truth, but for bullshit, the truth is entirely irrelevant (Ilic & Damnjanovic, 2021, p. 1; Frankfurt, 1986/2005). Consequently, one of the critical distinctions between bullshitters and liars is their motivation to engage in these behaviours in the first place (Petrocelli, 2021). Even though both bullshitters and liars *appear* to have a genuine concern for the truth, only liars are concerned with the truth. Liars will actively attempt to distract others' attention away from the facts, whereas bullshitters have no genuine concern for evidence supporting what they believe to be true (Frankfurt, 1986/ 2005; Petrocelli, 2018). In fact, bullshitters may very well be telling the truth, but they would not know this, as they do not care about the truth.

Although bullshit is generally frowned upon within society, evidence suggests that when compared to lying, bullshit is often regarded as the lesser of two evils, a phenomenon also known as *the insidious bullshit hypothesis* (Frankfurt, 1986/ 2005; Petrocelli et al., 2023). Bullshit can be more insidious than lying, especially in cases in which bullshitters are found to be highly influential (Petrocelli et al., 2023). For instance, when bullshit is produced by a source of high authority or power, like political leaders, or the source is an ingroup member, individuals are less likely to critically assess these non-profound statements, especially in situations in which the statement aligns with the individual's motives and beliefs (Petrocelli et al., 2023). Moreover, when individuals discover they have been lied to, they know the information they have received is untrue. However, when bullshit is detected, it may be difficult for the perceiver to judge whether the information is actually true or false (Petrocelli et al., 2023).

It is the insidious nature of bullshit that allows it to permeate numerous domains of society, including politics, business, jobs, finance, academia, and everyday interactions. For instance, bullshit is considered to be almost a prerequisite in politics as it is often used as a tool among politicians to gain favor among prospective voters by exaggerating the possible benefits of voting for said party, as well as presenting a less-than-truthful portrayal of their political counterparts by spreading misinformation (Gibbons, 2024). Likewise, bullshit has become part of businesses whereby "the striking features of a lot of organisations is that many of their discourses […] are bullshit" (Spicer, 2013, p. 664). However, business and organisational bullshit goes beyond a few employees simply engaging in the bullshit game around the boardroom table, as it intertwines with the very organisation itself (Spicer, 2013). Various organisations actively promote, for instance, the circulation and endorsement of bullshit to better their bottom lines (Spicer, 2013), which is evident within marketing campaigns and advertisements (e.g., see wine descriptions, Petrocelli, 2021, pp. 27-32). Moreover, bullshit permeates from the top down, whereby both management and employees alike will actively engage in bullshitting behaviours with the intention of "getting ahead, getting away, getting along, and getting around" (Kiazad et al., 2024, p. 27).

Likewise, the number of so-called bullshit jobs and initiatives increased, mainly in managerial, administrative, sales, and service sectors (Graeber, 2013; 2019; see also Husain, 2025). These jobs, which individuals spend most of their working lives in, are perceived as irrelevant even by those who hold them, according to Graeber (2013, 2019). Also, bullshit is prominent in financial institutions, which already use communication styles that a layperson might consider challenging to comprehend (Kienzler et al., 2022). The language used within financial institutions is often heavily laden with jargon and opaque statements, leaving consumers with more questions than answers regarding the products and services these institutions offer. While some may view such information on financial services and products

as merely nonsensical, others might perceive it as profound and meaningful (Kienzler et al., 2022). For instance, Kienzler and colleagues (2022) showed that older individuals, compared to younger individuals, could detect and distinguish pseudo-profound financial statements from profound financial statements (i.e., younger individuals were more susceptible to financial bullshit; see Kienzler et al., 2022). Further, females demonstrated lower susceptibility to financial bullshit than males, and individuals from lower-income groups were less likely to fall prey to financial bullshit than individuals from higher-income groups (Kienzler et al., 2022). However, the latter was a relatively weak statistical relationship, likely due to the large sample size (e.g., $r = -.07$, $p = .02$, $N = 1058$; see Kienzler et al., 2022, p. 5). It was further established that individuals' receptivity to financial bullshit was significantly and positively related to numeracy, cognitive reflection, and objective financial knowledge (Kienzler et al., 2022). More specifically, individuals with higher numerical abilities engage more in cognitive reflection, apply more objective financial knowledge, and are, therefore, less likely to become victims of financial bullshit (Kienzler et al., 2022).

A disregard for the truth is even evident among academics and researchers, despite the fact that many universities proudly include the pursuit of *Veritas* in their mission. Also known as *scholarly bullshit*, "pointless and unnecessary" scholarly contributions are increasingly produced, which contribute little to no advancement of scientific knowledge (Kirchherr, 2023, p. 168). Based on the proposed typology of scholarly bullshit, which includes among others boring research questions (i.e., research questions previously answered), recycled research (i.e., scholarship that stamps the latest academic buzzwords from otherwise sound research), and activist rants (i.e., scholarship based on claims instead of empirically grounded arguments), Kirchherr (2023) provocatory argues that about 50% of the publications in interdisciplinary, sustainability, and transition journals may be categorised as "scholarly bullshit". Scholarly bullshit is not a new phenomenon, as demonstrated in 1996 by Alan Sokal (see Sokal, 2000;

2010), also known as the *Sokal Affair* and as demonstrated between 2017 and 2018 by Peter Boghossian, James Lindsay, and Helen Pluckrose (see Pluckrose et al., 2021), also known as the *Grievance Studies Affair* (or "Sokal Squared"). During both incidents, nonsensical articles, which means papers written using postmodern or critical theory jargon and absurd claims (such as "quantum gravity supports progressive social ideas" in the case of Sokal, or "dogs' behaviour at parks could offer insights into rape culture" in the case of Boghossian, Lindsay, and Pluckrose) were submitted to academic journals and accepted.

Bullshit, however, is not only present in domains such as politics, business, jobs, finance, and academia but also in interpersonal interactions. More specifically, bullshit is a social behaviour that may fulfil various developmental, psycho-social, and relational functions. For instance, bullshitting plays a vital role in children's socialisation, helping them develop critical skills to navigate social environments and interactions (Mears, 2002). Bullshitting may also serve as a tool for self-exploration, allowing individuals to experiment with various social identities and assess how they feel about such identities and how others might react to them (Mears, 2002). Likewise, bullshit may present itself in the form of 'bull sessions,' in which individuals are allowed to express their "feelings surrounding sensitive issues" (Allen et al., 2012, p. 15). Additionally, bull sessions provide opportunities for individuals to pass the time. For instance, in early studies on bullshitting conducted among hitchhikers, it was found that individuals create elaborate stories to pass the time and establish rapport with others (Mukerji, 1978, cited in Mears, 2002). Lastly, bullshitting also allows individuals to diffuse tension during interpersonal interactions by incorporating lighthearted humor (Mears, 2002).

The *who* and *why* questions of bullshit

Despite a relatively fair amount of theoretical knowledge relating to bullshit, empirical research studies were scarce until recently (Cavojova & Brezina, 2021; Cavojova et al., 2025; Kiazad et al., 2024; Kienzler et al., 2022; Littrell et al., 2021; Pennycook et al., 2015; Pennycook & Rand, 2020; Petrocelli, 2018, 2021; Petrocelli et al., 2023; Petrocelli et al., 2024; Petrocelli et al., 2025). Studies on the social phenomenon of bullshit can be distinguished into two main research areas: the propensity to produce bullshit and the propensity to fall for bullshit. While the former research tradition focuses on *why people produce bullshit*, the latter focuses on *who* and *why people are receptive to bullshit* questions and statements. Concerning the propensity to produce bullshit, two motivations are distinguished: persuasive and evasive motivations to bullshit (Littrell et al., 2021).

Persuasive bullshitting serves to persuade, impress, or fit in with others by exaggerating or embellishing one's knowledge, attitudes, competencies, skills, or ideas through the use of language to promote an imprecise impression (Cavojova & Brezina, 2021; Littrell et al., 2021). For instance, individuals will often engage in persuasive bullshitting in job interviews to appear more knowledgeable and competent than they are. In contrast, evasive bullshitting serves to avoid any negative social costs for oneself or others by providing strategic responses that circumvent true feelings, thoughts, and attitudes (Cavojova & Brezina, 2021; Littrell et al., 2021). For instance, politicians often engage in evasive bullshitting during interviews with journalists by strategically responding to questions with irrelevant truths or strategic ambiguity to avoid answering questions that may lead to losing votes or appearing to have engaged in any less than scrupulous behaviour (Littrell et al., 2021).

The distinction between persuasive and evasive bullshitting has been empirically verified as two distinct types of bullshit motivation that vary in their relationships with different psychological factors (Cavojova & Brezina, 2021; Littrell et al., 2021). For instance, persuasive

bullshitting (while controlling for evasive bullshitting) has been found to correlate positively with overclaiming and negatively with honesty, sincerity, and impression management (Cavajova & Brezina, 2021; Littrell et al., 2021). On the other hand, evasive bullshitting (while controlling for persuasive bullshitting) was found to be only significantly and negatively related to sincerity (Littrell et al., 2021). Moreover, it was found that both types of bullshit motivation were positively related to lie acceptability and relational lying, and that antisocial lying was only positively related to persuasive but not evasive bullshitting (Littrell et al., 2021). The former findings suggest that bullshitters do not perceive bullshitting or lying as morally questionable behaviours, while the latter suggest that evasive bullshitting is more likely to be utilised when attempting to avoid social unpleasantness and social harm (Littrell et al., 2021).

The motivation to bullshit is related to bullshit receptivity, which refers to an individual's tendency to ascribe profundity, truthfulness, or accuracy to information that is relatively vague, obscure, meaningless, or otherwise misleading (Evans et al., 2020; Pennycook et al., 2015; Pennycook & Rand, 2020; Littrell et al., 2021). Individuals who are bullshit receptive are more likely to overclaim their knowledge (Pennycook & Rand, 2020; Littrell et al., 2021), detect patterns in patternless images (Walker et al., 2019, as cited in Littrell et al., 2021), utilise a less analytic cognitive style (Evans et al., 2020; Pennycook et al., 2015), have less cognitive ability and insight (Littrell et al., 2021), and endorse conspiracy theories (Pennycook et al., 2020, as cited in Littrell et al., 2021). More importantly, research has indicated that the more receptive an individual is to bullshit, the higher the possibility of said individual sharing bullshit information with others (Cavojova et al., 2019; Littrell et al., 2021).

The spread of bullshit information may occur intentionally or unintentionally. In some cases, the initial misleading information that is transmitted intentionally may result in the receiver falling for said bullshit and may be unintentionally shared with others (Littrell et al., 2021). Although producing bullshit and falling for bullshit represent two distinct concepts, they

are psychologically related as persuasive bullshitting positively predicts bullshit receptivity (Littrell et al., 2021). In contrast, bullshit receptivity is negatively predicted by evasive bullshitting (Littrell et al., 2021). Differently put, individuals who engage more in persuasive bullshit are more likely to be receptive to bullshit information than those who engage in evasive bullshitting. Based on these findings, it was hypothesised that:

Hypothesis 1: Engaging in persuasive bullshit is positively related to bullshit receptivity.

Both the propensity to produce and fall for bullshit have been found to vary between individuals. For instance, Machiavellianism as a personality trait is associated with increased bullshitting behaviour (Blotner & Bergold, 2023). Machiavellianism is distinguished into two dimensions: the Machiavellianism approach and the Machiavellianism avoidance. The former refers to manipulation and the gain of resources, which corresponds with persuasive bullshitting (Blotner & Bergold, 2023). On the other hand, Machiavellianism avoidance refers to preventing any social harm or unpleasantness, which corresponds with evasive bullshitting (Blotner & Bergold, 2023). Both dimensions of Machiavellianism are positively and significantly – although weakly – related to both persuasive and evasive bullshitting ($.39 \leq r_s \geq .15$, $p_s < .001$; see Blotner & Bergold, 2023, p. 475).

However, inter-individual differences are not the only factor found to influence bullshitting frequencies and receptivity. Inter-group differences have been found to have an equally important and motivating role in bullshitting behaviours. For instance, women engage more frequently in evasive bullshitting than men, and men are more likely to engage in persuasive bullshitting than women (Cavojova & Brezina, 2021). A possible explanation for these gender differences is that women engage in fewer self-ingratiating self-presentation tactics than men, and also attempt to prevent causing any social harm to themselves or others

(Cavojova & Brezina, 2021). Age, too, affects bullshit production and receptivity. For instance, teenage boys have been found to engage more frequently in bullshitting than adult men, and teenagers are more receptive to bullshit (Jerrim et al., 2019). Moreover, individuals' perceived social status has been found to influence the bullshit receptivity of teenagers, as well as the extent to which they engage in bullshitting behaviours (Jerrim et al., 2019). For instance, 75% of teenage bullshitters stated that their social situation at school is ideal compared to 64% of non-bullshitters who felt there was still much to be desired regarding their social status (Jerrim et al., 2019). The relationship between bullshitters and perceived popularity led researchers to conclude that social status (e.g., popularity) plays a vital role in the overall production of bullshit (Jerrim et al., 2019). Moreover, it is suggested that social status influences an individual's receptivity to bullshit. This phenomenon can be observed in various domains where an ingroup member may spread misinformation, and due to the high status of the individual (e.g., prototypicality), the information may not be critically questioned but instead accepted as truth (Petrocelli, 2022). As the latter examples imply, in addition to the interindividual and intergroup differences, the propensity to produce and to be receptive to bullshit is also influenced by situational factors.

The situational antecedents of bullshit

The known situational antecedents of bullshitting are the obligation to provide an opinion, the ease of passing, and the level of knowledge on a topic (Frankfurt, 1986/2005; Petrocelli, 2018). Individuals are more likely to engage in bullshitting behaviours when they feel obligated to have or provide an informed opinion on a topic that is more extensive than their current knowledge base (Frankfurt, 1986/ 2005; Petrocelli, 2018). Frankfurt (1986/2005, p. 63) stated, "bullshit is unavoidable whenever circumstances require someone to talk without knowing what he is talking about." Therefore, it is assumed and empirically supported that the

propensity to engage in bullshitting behaviour increases when social expectations to provide an informed opinion are relatively high (Petrocelli, 2018). More specifically, results suggest an interaction between the obligation to provide an opinion and the ease to pass affect an individual's propensity to engage in bullshitting (Petrocelli, 2018), which means that individuals are more likely to engage in bullshitting behaviour in situations where they are obligated to provide an opinion and perceive that their opinion will receive a social pass of acceptance.

It is further proposed that bullshitting behaviour will be attenuated when an individual's knowledge base increases (Petrocelli, 2018). For instance, individuals who feel they are experts in one domain may feel (and are often expected) to hold expert knowledge in other domains (e.g., also termed *Nobelitis*, see Diamandis, 2013), which may lead to an increased propensity to engage in bullshitting behaviour. Likewise, some individuals are also more than willing to demonstrate that they possess knowledge, even about topics in which they have minimal knowledge, which often leads to over-claiming and over-explanation rather than providing substantiated evidence (e.g., the Dunning-Kruger effect, see Littrell & Fugelsang, 2021; see also Brem & Rips, 2000; Paulhus et al., 2003).

Despite the groundbreaking empirical research on the phenomenon of bullshit, research has, for the most part, focused its attention on interindividual and situational factors, such as antecedents and social status (e.g., Petrocelli, 2018). Neither the effect of antecedents nor social status occurs in a social vacuum but is determined by the social context. To capture the role of social context, the present research study aims to conceptualise the obligation to provide an opinion, which has been theorised and empirically shown to represent one of the essential antecedents, from a social norm perspective.

Social norms: Everyone else is doing it, right?

Social norms can be described as cultural phenomena that prescribe and proscribe individuals' behaviour (Hechter & Opp, 2001) and thus are "an essential factor in human social behaviour" (Gavrilets, 2020, p. 1). Social norms are typically learned during early childhood from parents, educational systems, religious practices, friends, and acquaintances, as well as through various media sources (Gavrilets, 2020). Adherence to norms is typically reinforced by praising those who follow them and punishing those who violate them. Social norms vary across different social groups and have varying effects on individuals within these groups (Gavrilets, 2020).

Two types of social norms are commonly distinguished: descriptive and injunctive (Reno et al., 1993). Descriptive social norms typically involve perceptions of which behaviours are common and considered appropriate in particular social situations (Reno et al., 1993; Gavrilets, 2020). For instance, recycling campaigns often employ descriptive norms to encourage community participation in recycling. In contrast, injunctive social norms describe how individuals *ought* to behave even if it goes against their immediate interests. Injunctive norms are based on moral principles of right and wrong, as well as what is generally approved or disapproved of within a specific group or culture (Reno et al., 1993; Gavrilets, 2020). For instance, lying is viewed as a violation of injunctive norms, such as honesty, which is often punished when the transgression occurs.

Social norms determine what is perceived as normative (i.e., what is considered *normal*) and, therefore, guide and change people's behaviour in positive ways, like to behave pro-environmentally (Collado et al., 2017), to make healthy lifestyle choices (Higgs et al., 2019) and medical-related choices (Graupensperger et al., 2021), to reduce substance abuse (Perkins, 2002), and to support gender equality (Cislaghi et al., 2020). For instance, research among university students has shown that descriptive and injunctive norms influenced the uptake of

the COVID-19 vaccine compared to the influenza vaccine (Graupensperger et al., 2021). More specifically, Graupensperger and colleagues (2021) established that students were more likely to opt for the COVID-19 vaccine (91.64%) in comparison to the influenza vaccine (76.04%) when it was perceived as being taken by most other peers (e.g., descriptive norm), but only under the condition that the COVID-19 vaccine was presented as more important than the influenza vaccine (e.g., injunctive norm).

However, just as social norms can encourage positive behaviours, they can also encourage negative behaviours such as substance abuse (Dempsey et al, 2016), binge drinking (Sher, et al., 2001), and gender-based violence (Piedalue et al., 2020). For example, research has shown that perceived peer norms place substantial social pressure on young adults to engage in substance abuse (Dempsey et al., 2016; Neighbors et al., 2008). Likewise, a study conducted among European university students on cannabis use established that the descriptive norms among peers were associated with personal cannabis use (Dempsey et al., 2016). More specifically, this research showed that the majority of young adults believed that their peers had permissive attitudes toward cannabis use, as well as that peers more frequently engaged in the use of cannabis than themselves (Dempsey et al., 2016).

Another unwanted behaviour that may be encouraged by normative behaviour is lying. Children are instilled with the notion that "honesty is the best policy" from an early age, but simultaneously, they are also taught that it is sometimes acceptable to tell a "white lie" to prevent social harm to themselves or others (i.e., prosocial lying). For instance, a child may claim that they love the drawing their friend made of them, even if they do not like it at all, to prevent hurting their friend's feelings. Children's truth-telling behaviour was found to be influenced more by descriptive norms (i.e., what the majority of the group reported) than by injunctive norms (i.e., the right thing to do) (Alempaki et al., 2021). For instance, when children were provided with information that other children approve of honest behaviour, they lied

significantly less (Alempaki et al., 2021). Moreover, lying behaviour significantly decreased in older children, indicating that as children age, they are more likely to engage in normative behaviours (Alempaki et al., 2021).

However, children are not the only ones who engage in prosocial lying to prevent social harm. For example, a nurse may spare a patient's feelings when inquiring about their appearance after a debilitating accident (De Paulo & Jordan, 1982, as cited in Talwar & Crossman, 2011, p. 141). As lying can be motivated individually (e.g., prosocial and antisocial lying), it is also influenced by social norms. Evidence suggests that social affiliations are strongly related to prosocial and antisocial lying (Mann et al., 2014). More specifically, research on the transmission of lying through social networks revealed that individuals who spent an increasing amount of time together demonstrated more antisocial lying tendencies, especially in conditions where antisocial lying is accepted (Mann et al., 2014). In other words, groups that accept antisocial lying as normative are more likely to readily adopt antisocial lying tendencies. As research has shown about the impact of social norms on lying among group members (De Paulo & Jordan, 1982; Talwar & Crossman, 2011; Mann et al., 2014; Dimant & Gesche, 2023), it is fair to assume that social norms can have an equally important influence on the production of and receptivity to bullshit information.

Bullshitting from a social norm perspective

As Frankfurt (1986/2005, p. 63) argued, bullshit "is unavoidable whenever […] a person's obligations or opportunities to speak about some topic exceed his knowledge of the facts relevant to that topic. This discrepancy is common in public life, where people are frequently impelled – whether by their own propensities or by the demand of others – to speak extensively about matters of which they are to some degree ignorant". As mentioned elsewhere, previous research conceptualised *the obligation to provide an opinion* as a situational

antecedent and found that when participants felt obligated to provide an opinion, the overall proportion of bullshitting was significantly higher than when participants did not feel obligated to provide an opinion (Petrocelli, 2018).

The obligation to provide an opinion can also be conceptualised from a social norm perspective. In line with Frankfurt's argument about the obligation to provide an opinion (1986/ 2005, pp. 63-65; Petrocelli, 2018), one could argue that if a society as a whole expects individuals to hold, as well as express opinions on almost everything, then it would be reasonable to assume that groups can have the same expectations of its members (i.e., as an injunctive norm) and that group members express opinions on almost everything (i.e., as a descriptive norm). Because social norms are group-specific, their behaviour-guiding effects on a person depend on whether they cognitively group themselves as similar (i.e., interchangeable) with ingroup members in contrast to outgroup members (i.e., self-categorisation; Tajfel & Turner, 1979; Turner et al., 1987), and whether belonging to a particular psychological group has "some emotional and value significance" (i.e., social identity; Tajfel & Billic, 1974, p. 72; see also Turner et al., 2008). The more a person identifies with a social group, the more they identify with the social norms, values, and beliefs that define this group and the more they internalise these social norms, values, and beliefs through the process of depersonalisation (Turner et al., 1987), which in turn influence their attitudes and behaviour (Reinholds et al., 2013; Turner et al., 2008). Consequently, it is insufficient to perceive the obligation to provide an opinion as normative because "others" express their opinions on almost everything. The "others" need to be cognitively grouped as ingroup members in contrast to outgroup members (i.e., self-categorisation; Tajfel & Turner, 1979; Turner et al., 1987) in order for social norms to guide and shape individuals' behaviour. Therefore, we propose that perceiving the obligation to provide an opinion as a social norm increases the propensity to produce and be receptive to

bullshit information in those who strongly identify with the respective group that shares this social norm. Consequently, we hypothesise that:

Hypothesis 2: Normative obligation to provide an opinion increases both bullshit receptivity and engagement.

Frankfurt (1986/2005, pp. 64-65) also argues that the "contemporary proliferation of bullshit […] has deeper sources, in various forms of scepticism which deny that we can have any reliable access to an objective reality, and which therefore reject the possibility of knowing how things truly are". This reasoning suggests that bullshitting is not only likely because it is normative but also because it is legitimised through, for instance, scepticism towards modern science and the acceptance of unfounded beliefs, such as conspiracy theories. Both science scepticism and acceptance of unfounded beliefs (e.g., Frankfurt speaks about "antirealist" doctrines, see 1986/2005, pp. 64-65) undermine the endeavour to determine what is true and what is false, which, according to Frankfurt (1986/2005, pp. 64-65), leads the "retreat from the discipline required by dedication to the ideal of correctness to a quite different sort of discipline, which is imposed by pursuit of an alternative ideal of sincerity." To put it differently, value is given to "raw feeling and emotion over cold empirical analysis" (Fukuyama, 2018, p. 113).

Wavering Faith in Objective Truth

According to Fukuyama (2022), the scepticism towards modern sciences is often based on Michael Foucault's argument that "the language of natural science was used to mask the exercise of power" (p. 89) and that the scientific method "encodes the power and interests of hidden elites" (p. 96). Without claiming that Foucault's critique might not have been justified, perceiving the social world exclusively from a power struggle perspective like between "corrupt elites" and "noble people," or between the "privileged" and the "oppressed," or

between “perpetrators” and “victims” or from an anti-science perspective is related to beliefs in unsubstantiated (epistemic) claims (e.g., conspiracy theories, Fukuyama, 2018). We would argue the same about the propensity to produce and be receptive to bullshit. More specifically, recent research has shown that perceiving the social world as “corrupt elites” versus “noble people” (as populist attitudes) is robustly associated with a conspiracy mentality and receptivity to bullshit statements and supernatural beliefs (van Prooijen et al., 2022). Likewise, Pennycook and colleagues (2015) demonstrated that ontological confusion and epistemically suspect beliefs (i.e., unfounded beliefs) influence individuals’ receptivity (i.e., the inclination to accept non-profound information as something profound) and sensitivity (i.e., the ability to discern non-profound information from genuinely meaningful content) to bullshit information. More specifically, research showed a positive and significant relationship between individuals’ ontological confusions and epistemically suspect beliefs and bullshit receptivity, as well as established that individuals who fell for bullshit information were most likely to hold paranormal and religious beliefs, have conspiracy ideations, and believe in alternative medicine and healing practices (Pennycook et al., 2015). For instance, the belief in conspiracy theories to comprehend distressing events that may otherwise be too difficult to make sense of is related to being more receptive to bullshit information (Bale, 2007; Van Prooijen et al., 2018). According to Van Prooijen and Van Dijk (2014), ultimately, in attempting to make sense of tragic and/or momentous societal events, individuals may inadvertently endorse the proliferation and promulgation of bullshit. Moreover, bullshit receptivity is negatively related to numeracy and verbal intelligence (Pennycook et al., 2015) and positively related to illusory pattern perceptions (Van Prooijen et al., 2018). For instance, individuals’ pattern perceptions of randomly generated coin toss patterns were significantly correlated with both conspiracy ideation and supernatural beliefs ($N = 264$, $.44 < r_s > .22$, $p_s < .001$; Van Prooijen et al., 2018, p. 323). Furthermore, conspiracy theories may lead to an increase in anti-science attitudes.

Anti-science attitudes and the spread of “alternative” facts have become endemic in modern society. Recent research has sought to understand why individuals and communities have become sceptical of scientific information, identifying four key principles that explain why individuals adopt an anti-science approach (Philipp-Muller et al., 2022). First, individuals are likely to reject scientific information from a source that is not deemed credible (Philipp-Muller et al., 2022). For instance, Pfizer initially purported that the COVID-19 vaccine had 95% efficacy. However, this number specifically referred to the prevention of symptomatic COVID-19 rather than the overall protection against transmission. Although the vaccine was still highly effective, Pfizer's overall lack of clarity led to mistrust and scepticism among the general public (e.g., Pfizer, 2020). Secondly, the message’s recipient belongs to a group that holds anti-science attitudes (Philipp-Muller et al., 2022). For instance, individuals belonging to a group that has a deep grounding in orthodox religion may reject Darwin’s theory of evolution, but rather believe in divine intervention (e.g., Gauchat, 2008). Thirdly, individuals are likely to reject scientific information if the scientific message contradicts the individual’s own attitudes and beliefs (Philipp-Muller et al., 2022). For instance, someone who believes in alternative healing practices will most likely reject medical research for curing a chest infection with penicillin. Lastly, there are inconsistencies between the scientific message and the recipients' epistemic style (Philipp-Muller et al., 2022). For instance, when individuals struggle to grasp scientific principles because they do not align with their cognitive style.

Research on science scepticism and anti-science attitudes has also demonstrated that conspiracy ideation plays an important role in the spread of misinformation (see Hornsey et al., 2018; Rutjens et al., 2018). For instance, there is an abundance of conspiracy theories about science, such as that 5G networks were the cause of the COVID-19 pandemic, climate change is a hoax, or environmental toxins are secretly deployed to reduce population size. The effects of anti-scientific attitudes on the spread of bullshit information may have catastrophic

consequences for individuals and society as a whole. We can deduce that the more individuals are ontologically confused (i.e., holding epistemically unfounded beliefs and engaging in conspiracy ideation), the more prone they are to engage with bullshit information. We, therefore, propose as our third hypothesis:

Hypothesis 3: Anti-science attitudes are positively related to both bullshit receptivity and engagement.

The current research

Three studies were conducted to test the proposed hypotheses. Study 1 ($N = 133$) aimed to explore whether bullshit receptivity is positively related to engagement in persuasive bullshitting (Hypothesis 1), whether normative obligation to provide an opinion increases bullshit receptivity and engagement in persuasive and evasive bullshitting (Hypothesis 2), and whether anti-science attitudes are positively related to bullshit receptivity and engagement in persuasive and evasive bullshitting (Hypothesis 3). Study 1 operationalised bullshit receptivity as receptivity to *pseudo-profound information* statements, and the normative obligation to provide an opinion as participants' *personal* normative obligation. Lastly, anti-science attitudes were operationalised through *negative attitudes toward science* and a *lack of scientific knowledge*.

Study 2 ($N = 266$) addressed the methodological limitations identified in Study 1 concerning the Bullshitting Frequency Scale (Littrell et al., 2021) and the Bullshit Receptivity Scale (Pennycook et al., 2015). Additionally, Study 2 aimed at improving the operationalisation of various concepts, including bullshit receptivity by also assessing *fake news* receptivity (Hypothesis 1), the normative obligation to provide an opinion by also assessing obligation from a *social norm perspective* (Hypothesis 2), and anti-science attitudes by also assessing *conspiracy ideations* (Hypothesis 3).

Study 3 ($N = 255$), again, aimed to address any methodological limitations identified in the previous studies. More specifically, the limitations concerning the Fake News and Anti-Science Attitude scales were addressed. Additionally, Study 3 aimed to refine the assessment of the descriptive normative obligation to provide an opinion by accounting for different *social contexts*.

In all three studies, participants were conveniently sampled from a pool of psychology students at a South African University and invited to participate in one of the three studies.

Prior to the commencement of the studies, ethical approval was obtained from the College of Human Sciences Research Ethics Committee of the university (Reference number: 59305770_CREC_CHS_2022). Permission to involve psychology students as research participants was granted by the Research Permission Subcommittee of the University's Senate, Research, Innovation, Postgraduate Degrees and Commercialisation Committee (Reference number: 2022_RPC_026).

All three studies were conducted using the online research platform *Qualtrics*. Potential participants received an email inviting them to participate in the respective research study. The email included a link that directed them to the introduction page. On this introduction page, participants were informed about the purpose of the respective study, the approximate time required for participation, the voluntary nature of participation, and that they had the option to withdraw from the study at any stage. Participants' anonymity was assured. Participants were then asked to either consent to or decline participation in the study. If the participants provided consent, they were directed to the subsequent pages containing the measurements. If the participant chose not to provide consent, withdrew from the study, and completed the study, they were directed to a page thanking them and then exited the study.

Study 1

The aim of Study 1 was to explore whether bullshit receptivity is positively related to engagement in persuasive bullshitting (Hypothesis 1), whether normative obligation to provide an opinion increases bullshit receptivity and engagement in persuasive and evasive bullshitting (Hypothesis 2), and whether anti-science attitudes are positively related to bullshit receptivity and engagement (Hypothesis 3). The hypotheses were explored in a cross-sectional survey using convenience sampling.

Participants

Participants consisted of psychology students currently enrolled at a university in South Africa. A total of 133 participants completed the bullshit receptivity measure. The age of participants ranged from 18 to 52 years (M_{age} = 30.03; *SD* = 8.53). The majority of participants indicated being female (*n* = 105), followed by males (*n* = 12) and non-binary/third gender (*n* = 3). The majority of participants indicated to be Black (*n* = 63), followed by participants who indicated to be White (*n* = 35), Coloured (*n* = 11), Indian/Asian (*n* = 9), and Other (*n* = 2). An *a priori* power analysis using G*Power 3.1 (Faul et al., 2009) indicated that a total sample size of *92* participants was required to detect a medium effect size (f^2 = 0.15) in a hierarchical regression with *five* predictors entered across three steps, assuming α = .05 and 80% power.

Procedure

Potential participants were emailed a link that provided access to the survey via the *Qualtrics* online platform. Participants were then directed to the information page. Participants were informed that the study aimed to investigate individuals' propensity to share information. After reading the information page, participants were asked to either consent to or decline participation in the study. Participants who did not provide consent were thanked for their time, and the study ended. Participants who consented to participate in the study were then directed

to the study's measurements. Participants were asked to complete measurements for persuasive and evasive bullshit engagement, bullshit receptivity, the obligation to provide an opinion, anti-science attitudes, scientific knowledge, and, finally, to provide information about their demographics by indicating their age, race, and gender. It should be noted that the words *bullshit* and *bullshitting* were not included in any of the information shared with participants, nor in any measures to prevent any response bias.

Measurements

Bullshit engagement was assessed using the 12-item Bullshitting Frequency Scale, which was developed to identify persuasive and evasive bullshitting in everyday situations (Littrell et al., 2021). *Persuasive bullshitting* was assessed by items, like "In my daily life, I embellish, exaggerate, or otherwise stretch the truth: When I want to impress the people I am talking to," and *evasive bullshitting* was assessed by items, like "In my daily life, I embellish, exaggerate, or otherwise stretch the truth: When I need to bluff my way out of a conversation or situation". In previous research, the two scales demonstrated acceptable internal consistency with Cronbach's alphas of .92 and .81, respectively (Littrell et al., 2021, p. 14). In the current study, the persuasive and evasive bullshitting scales demonstrated good internal consistency, with Cronbach's alpha values of .86 and .73, respectively. The answer format was a 5-point Likert scale ranging from 1 (*never*) to 5 (*all the time*).

Bullshit receptivity was operationalised as pseudo-profound information receptivity and assessed using the Bullshit Receptivity Scale, which is made up of ten pseudo-profound statements (i.e., items) that consist of buzzwords that are syntactically sound, but ultimately meaningless (e.g., "The future explains irrational facts," see Pennycook et al., 2015). Participants were asked to rate the profundity of each statement on a 5-point Likert scale, ranging from 1 (*not at all profound*) to 5 (*very profound*). According to Pennycook and

colleagues (2015), the Bullshit Receptivity Scale was found to demonstrate a good internal consistency (α = .82). In Study 1, the scale was found to have a suitable internal consistency with a Cronbach's alpha value of .83.

Normative obligation to provide an opinion was operationalised as *personally experienced social norm* (subsequently called *personal normative obligation*) through the following two items that were derived from Frankfurt's (1986/2005) definition of obligation to provide an opinion, and thus, developed for the present study: "To what degree do you feel obliged to discuss topics that exceed your factual knowledge that is relevant to these topics" and "To what degree do you feel obliged by demand of others to discuss topics that exceed your factual knowledge that is relevant to these topics". Participants were requested to answer these two items using a 5-point answer format ranging from 1 (*not obligated at all*) to 5 (*totally obligated*). The two items strongly correlated with each other, as indicated by Pearson's correlation coefficient of .55 ($p < 0.01$).

Anti-science attitudes were operationalised as negative science attitudes and (lack of) scientific knowledge. *Negative science attitudes* were measured using the Science Attitudes scale (Hayes & Tariq, 2000), which consists of three items: "We believe too much in science and not enough in feelings and faith"; "Any change humans cause in nature—no matter how scientific—is likely to make things worse"; and "Overall, science does more harm than good". The answer format used was a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). According to Hayes and Tariq (2000), the Science Attitudes scale demonstrated a rather low internal consistency of α = .63. In the current study, the scale reached a similar low Cronbach's alpha value of .63. However, all corrected total-item correlations were larger than .4. Higher scores on this measure indicated that participants had negative attitudes towards science. *Lack of scientific knowledge* was measured using the Scientific

Literacy scale (Kahan et al., 2012). The scale consisted of 15 scientific statements, and participants were instructed to indicate whether each was true or false. Scores were calculated by adding up the participants' correctly answered statements. The scores could range from 15 (indicating extensive scientific knowledge) to 0 (indicating no scientific knowledge at all).

Lastly, participants were asked to provide demographic information, including age, gender, and race. Participants were requested to indicate their age in years, their gender by selecting 'male', 'female', 'non-binary/third gender', or 'prefer not to say', and their racial group by indicating 'Black', 'White', 'Indian/Asian', 'Coloured', or 'other'.

Results

Preliminary analysis

The means, standard deviations, and intercorrelations between the principal variables are reported in Table 1. Bullshit receptivity and anti-science attitudes showed no statistically significant relationships with any of the constructs assessed in Study 1. However, persuasive bullshitting moderately positively and statistically significantly correlated with *personal normative obligation* to provide an opinion, and vice versa. Evasive bullshitting was moderately positively and statistically significantly correlated with persuasive bullshit.

Table 1

Means, standard deviations, and intercorrelations of principal variables, Study 1

	M	*SD*	1	2	3	4	5	6
1. Persuasive BS	2.33	0.81	-					
2. Evasive BS	2.93	0.85	.42***	-				
3. BS Receptivity	3.60	0.72	.04	.02	-			
4. Pers. Norm. Obligation	2.70	1.06	.28**	-.06	.09	-		
5. Neg-Sci Attitudes	2.97	0.94	.06	-.03	.00	.16	-	
6. Sci Knowledge	7.57	3.14	-.10	.03	.03	-.11	-.22*	-

Note. **p* < .05, ***p* <. 01, ****p* < .001. Persuasive BS = Persuasive Bullshitting; Evasive BS = Evasive Bullshitting; BS Receptivity = Bullshit Receptivity; Pers. Norm. Obligation = Personal Normative Obligation to Provide an Opinion; Neg.-Sci Attitudes = Negative-Science Attitudes; Sci Knowledge = Scientific Knowledge

Table 2

Hierarchical Regression Analyses testing Hypotheses 1 to 3, Study 1

Analysis A		**DV: Bullshit Receptivity**					
	Predictors	*B*	*SE*	*β*	*t*	*p*	*95% CI*
Model 1	*Constant*	3.618	0.260		13.910	<.001	[3.103; 4.133]
Adj. R^2 = -.014	Persuasive Bullshitting	0.036	0.089	.040	0.400	.690	[-0.141, 0.213]
	Evasive Bullshitting	-0.038	0.082	-.040	-0.439	.680	[-0.210; 0.133]
Model 2	*Constant*	3.489	0.303		11.517	<.001	[2.880; 4.089]
Adj.R^2 = -.017	Persuasive Bullshitting	0.011	0.094	.012	0.115	.909	[-0.176; 0.198]
	Evasive Bullshitting	-0.024	0.088	-.028	-0.277	.782	[-0.199; 0.150]
	Pers. Norm. Obligation	0.056	0.067	.080	0.831	.408	[-0.077; 0.188]
Model 3	*Constant*	3.382	0.420		8.053	< .001	[2.550; 4.214]
Adj. R^2 = -.033	Persuasive Bullshitting	0.014	0.096	.016	0.151	.880	[-0.175; 0.204]
	Evasive Bullshitting	-0.027	0.089	-.031	0.819	.765	[-0.031; 0.150]
	Pers. Norm. Obligation	0.056	0.069	.080	0.819	.414	[-0.080; 0.192]
	Negative Science Attitudes	0.010	0.074	.013	0.140	.889	[-0.136; 0.157]

	Scientific Knowledge	0.010	0.022	.041	0.437	.663	[-0.034; 0.053]
Analysis B		**DV: Persuasive Bullshitting**					
	Predictors	*B*	*SE*	*β*	*t*	*p*	*95% CI*
Model 1	*Constant*	1.011	0.416		2.433	.016	[0.188; 1.834]
Adj. R^2 = .166	Evasive Bullshitting	0.410	0.080	.424	5.144	<.001	[0.252; 0.568]
	Bullshit Receptivity	0.037	0.092	.033	0.400	.690	[-0.146; 0.220]
Model 2	*Constant*	0.474	0.422		1.122	.264	[-0.362; 1.310]
Adj. R^2 = .243	Evasive Bullshitting	0.423	0.076	.437	5.567	<.001	[0.273; 0.574]
	Bullshit Receptivity	0.010	0.088	.009	0.115	.909	[-0.164; 0.185]
	Pers. Norm. Obligation	0.225	0.062	.288	3.653	<.001	[0.103; 0.347]
Model 3	*Constant*	0.597	0.500		1.195	.235	[-0.393; 1.587]
Adj. R^2 = .238	Evasive Bullshitting	0.425	0.076	.439	5.572	<.001	[0.274; 0.576]
	Bullshit Receptivity	0.013	0.089	.012	0.151	.880	[-0.162; 0.189]
	Pers. Norm. Obligation	0.215	0.063	.276	3.413	<.001	[0.090; 0.340]
	Negative Science Attitudes	0.015	0.071	.018	0.216	.830	[-0.126; 0.157]
	Scientific Knowledge	-0.021	0.021	-.081	-1.006	.317	[-0.063; 0.021]

Analysis C		DV: Evasive Bullshitting					
	Predictors	*B*	*SE*	*β*	*t*	*p*	*95% CI*
Model 1	*Constant*	2.050	0.398		5.148	<.001	[1.262; 2.839]
Adj. R^2 = .166	Persuasive Bullshitting	0.473	0.085	.424	5.144	<.001	[0.269; 0.606]
	Bullshit Receptivity	-0.042	0.095	-.036	-0.439	<.001	[-0.230; 0.147]
Model 2	*Constant*	2.252	0.405		5.556	.264	[1.449; 3.054]
Adj. R^2 = .188	Persuasive Bullshitting	0.485	0.087	.469	5.567	<.001	[0.312; 0.657]
	Bullshit Receptivity	-0.026	0.094	-.023	-0.277	.782	[-0.213; 0.161]
	Pers. Norm. Obligation	-0.140	0.068	-.173	-2.043	.043	[-0.275; 0.004]
Model 3	*Constant*	2.141	0.502		4.260	<.001	[1.146; 3.136]
Adj. R^2 = .178	Persuasive Bullshitting	0.490	0.088	.474	5.572	<.001	[0.316; 0.664]
	Bullshit Receptivity	-0.028	0.095	-.025	-0.300	.765	[-0.217; 0.160]
	Pers. Norm. Obligation	-0.134	0.070	-.166	-1.920	.057	[-0.273; 0.004]
	Negative Science Attitudes	-0.008	0.077	-.009	-0.101	.920	[-0.159; 0.144]
	Scientific Knowledge	0.015	0.023	.057	0.677	.499	[-0.030; 0.060]

Hypotheses testing

The three hypotheses that bullshit receptivity is positively related to engagement in persuasive bullshitting (Hypothesis 1), that normative obligation to provide an opinion increases bullshit receptivity and engagement in persuasive and evasive bullshitting (Hypothesis 2), and that anti-science attitudes are positively related to bullshit receptivity and engagement (Hypothesis 3) were tested using hierarchical (also known as repeated) multiple regression analysis. More specifically, we conducted three separate hierarchical multiple regression analyses with bullshit receptivity (Analysis A), persuasive bullshitting (Analysis B), and evasive bullshitting (Analysis C) as dependent variables, respectively. In the first hierarchical multiple regression analysis (Analysis A), we regressed bullshit receptivity on three blocks (Models) of predictor variables: Model 1 included the predictor variable of persuasive bullshitting (while controlling for evasive bullshitting), Model 2 included normative obligation, and Model 3 included anti-science attitudes measured as negative science attitudes and (lack of) scientific knowledge. In the first hierarchical multiple regression analysis (Analysis B), we regressed persuasive bullshitting on three blocks (Models) of predictor variables: Model 1 included the predictor variable evasive bullshitting (while controlling for bullshit receptivity), while Models 2 and 3 included the same variables as in Analysis A. In the third hierarchical multiple regression analysis (Analysis C), we regressed evasive bullshitting on three blocks (Models) of predictor variables: Model 1 included the predictor variable persuasive bullshitting (while controlling for bullshit receptivity). Again, Models 2 and 3 included the same variables as the previous two analyses.

Testing the three hypotheses predicting bullshit receptivity (Analysis A) from persuasive bullshitting (Hypothesis 1: *Model* 1), normative obligation to provide an opinion (Hypothesis 2: *Model* 2), and anti-science attitudes (Hypothesis 3: *Model* 3), revealed that none of the three models reached statistical significance, $F(2, 121) = 0.13$, $p = .883$, $F(3, 120) =$

0.31, p = .816, and $F(5, 118) = 0.22$, p = .952, respectively (see Table 2 under Analysis A DV: Bullshit receptivity). Thus, bullshit receptivity is neither influenced by persuasive bullshitting (Hypothesis 1), normative obligation to provide an opinion (Hypothesis 2), nor by anti-science attitudes, and science knowledge (Hypothesis 3).

Testing that normative obligation to provide an opinion increases persuasive bullshitting (while controlling for bullshit receptivity and evasive bullshitting) (Analysis B, Hypothesis 2: *Model 2*), and that anti-science attitudes are positively related to persuasive bullshitting (while controlling for bullshit receptivity, evasive bullshitting and personal normative obligation) (Analysis B, Hypothesis 3: *Model 3*), it was found that both Model 2 and Model 3 (see Table 2 under Analysis B, DV: Persuasive bullshitting) reached statistical significance, $F(3, 120) = 14.19$, $p < .001$, and $F(5, 118) = 8.70$, $p < .001$, respectively. However, as outlined in Table 2 (under Analysis B, DV: Persuasive bullshitting), only Model 2, which included personal normative obligation, explained additional variance by 8.3%[1] in persuasive bullshitting, $\Delta R^2 = .082$, *F-Change*$(1, 120) = 13.34$, $p < .001$, but not Model 3, including anti-science attitudes measured as negative science attitudes and (lack of) scientific knowledge, *F-change*$(2, 118) = 0.60$, p = .551. Thus, the results provide support for Hypothesis 2, which states that the normative obligation to provide an opinion increases the likelihood of persuasive bullshitting.

Lastly, we tested Hypotheses 2 and 3 again that normative obligation to provide an opinion also increases evasive bullshitting (while controlling for bullshit receptivity and persuasive bullshitting) (Analysis C, Hypothesis 2: *Model 2*), and that anti-science attitudes are positively related to evasive bullshitting (while controlling for bullshit receptivity, evasive

[1] Reports on the additionally explained variance are based on the *adjusted* R^2, which informs about how much variance in the dependent variable is explained, adjusted for the number of predictor variables included in the model. Consequently, the reported additional explained variance (based on the *adjusted* R^2) may differ from the reported $\Delta R,^{2,}$ which is based on the unadjusted (raw) amount of variance explained.

bullshitting and personal normative obligation) (Analysis C, Hypothesis 3: *Model 3*), respectively. The results revealed that both Model 2 and Model 3 reached statistical significance, $F(3, 120) = 6.11$, $p < .001$, and $F(5, 118) = 4.46$, $p < .001$, respectively. Again, as outlined in Table 2 (under Analysis C, DV: Evasive bullshitting), only Model 2, which included personal normative obligation, explained additional variance by 2.2% in evasive bullshitting, $\Delta R^2 = .028$, *F-Change*$(1, 120) = 4.18$, $p < .001$, but not Model 3, including anti-science attitudes as negative science attitudes and (lack of) scientific knowledge, *F-change*$(2, 118) = 0.26$, $p = .772$. Thus, the results also provide support for the hypothesis that the normative obligation to provide an opinion is related to evasive bullshitting, albeit negatively.

In summary, Study 1 found no empirical support for Hypothesis 1, which posits that bullshit receptivity is positively related to engagement in persuasive bullshitting, and Hypothesis 3, which suggests that anti-science attitudes are negatively related to bullshit receptivity or persuasive and evasive bullshitting. However, we found evidence that, although personal normative obligation to provide an opinion was not related to bullshit receptivity, it was *positively* related to persuasive bullshitting and *negatively* to evasive bullshitting.

Discussion

The overall aim of Study 1 was to explore whether bullshit receptivity is positively related to engagement in persuasive bullshitting (Hypothesis 1), whether normative obligation to provide an opinion increases bullshit receptivity and engagement in persuasive and evasive bullshitting (Hypothesis 2), and whether anti-science attitudes positively relate to bullshit receptivity and persuasive and evasive bullshitting (Hypothesis 3). The results of Study 1 did not support that persuasive bullshitting is positively related to bullshit receptivity (Hypothesis 1) and that anti-science attitudes are positively related to bullshit receptivity and engagement in persuasive and evasive bullshitting (Hypothesis 3). The results concerning the role of

normative obligation to provide an opinion for bullshit receptivity and engagement in persuasive and evasive bullshitting (Hypothesis 2) were ambiguous. Although we did not find evidence that personal normative obligation to provide an opinion affects receptivity to bullshit information, we found that it increased persuasive bullshitting and decreased evasive bullshitting (Hypothesis 2). These results align with Petrocelli's (2018) previous findings, confirming that the obligation to provide an opinion is positively related to persuasive bullshitting. However, our present study neither replicated the findings that increased engagement in persuasive bullshitting (Littrell et al., 2021) and that personal normative obligation to provide an opinion leads to an increase in bullshit receptivity (Petrocelli, 2022), nor that anti-science attitudes led to bullshit receptivity or engagement in persuasive and evasive bullshitting (Hornsey et al., 2018; Rutjens et al., 2018; 2021).

The possible reason that anti-science attitudes did not have an effect on both persuasive and evasive bullshitting and bullshit receptivity might be attributable to methodological limitations because the negative science attitudes measure demonstrated a fairly low internal consistency and the scientific knowledge measure might have been unreliable, as we could not control whether participants reported their true knowledge or knowledge they confirmed before answering the questions, therefore the measure was removed for the subsequent studies. Consequently, Study 2 assessed participants' anti-scientific attitudes not only as negative science attitudes but also as conspiracy ideation (Pennycook et al., 2015). The latter was informed by research showing that individuals may engage in conspiracy ideation rather than science to make sense of distressing events that are too difficult to comprehend, ultimately leading them to be more receptive to bullshit information (Bale, 2007; Van Prooijen, 2018).

Furthermore, we decided to also improve the operationalisation of the other concepts. For instance, although persuasive and evasive bullshitting and bullshit receptivity were

measured using existing measurements (Littrell et al., 2021; Pennycook, 2015), these scales assess, for instance, persuasive and evasive bullshitting as daily activity (e.g., "In my daily life, I embellish, exaggerate, or otherwise stretch the truth: […]"), which might have caused some ambiguity in our participants who were psychology students and whose first language is not English. Thus, Study 2 used improved statements when introducing the persuasive and evasive bullshitting items and framed them from the standpoint of psychology students. For instance, the item "In my daily life, I embellish, exaggerate, or otherwise stretch the truth just a little" was revised and simplified as follows: "In my life as a psychology student, I stretch the truth just a little". Stressing the context of psychology students in Study 2 also allowed for extending the operationalisation of normative obligation to capture not only the personal normative obligation to provide an opinion but also the perception of the obligation as a descriptive social norm, and to control for ingroup identification. Additionally, since previous research established that individuals who are more receptive to pseudo-profound bullshit information are more likely to be receptive to and share fake news (Pennycook & Rand, 2020; Littrell et al., 2021), we extended the operationalisation of bullshit receptivity in Study 2 by assessing both participants' receptivity to pseudo-profound information and fake news.

Study 2

Study 2 retested our three hypotheses again that persuasive bullshitting is positively related to bullshit receptivity (Hypothesis 1), that normative obligation to provide an opinion increases bullshit receptivity and engagement (Hypothesis 2), and anti-science attitudes are positively related to bullshit receptivity and engagement (Hypothesis 3), while making the participants' contexts of being psychology students salient. As in Study 1, the hypotheses were tested using a cross-sectional survey design with convenient sampling.

Participants

Participants were psychology students from the same South African university as in Study 1 but differed from those who participated in Study 1. A total of 266 participants completed the bullshit receptivity measure. Participants' ages ranged from 19 to 61 years (M_{age} = 31.44; *SD* = 8.99). The majority of participants indicated being female (*n* = 184), followed by males (*n* = 24) and non-binary/third gender (*n* = 2). Four participants did not indicate their gender. The majority of participants indicated to be Black (*n* = 116), followed by participants who indicated to be White (*n* = 48), Coloured (*n* = 26), Indian/Asian (*n* = 21), and Other (*n* = 3). Before data collection, we again conducted an *a priori* power analysis using G*Power 3.1 (Faul et al., 2009). To detect a medium effect size ($f^2 = 0.15$) in a hierarchical regression with *eight* predictors entered across three steps, and assuming $\alpha = .05$ and 80% power, required a sample size of at least 109 participants.

Procedure

The procedure for Study 2 was identical to that of Study 1. Participants who consented to participate in the study were directed to the following measurements: the bullshitting frequency, bullshit receptivity, ingroup identification, obligation to provide an opinion,

normative obligation, anti-science attitudes, conspiracy ideations, fake news susceptibility, and lastly, participants were requested to provide information concerning their demographics by indicating their age, race, and gender. Again, it should be noted that the words *bullshit* and *bullshitting* were not included in any of the information shared with participants, nor in any measures to prevent any response bias.

Measurements

Persuasive and evasive bullshit engagement was assessed differently from Study 1, as the 12-item Bullshitting Frequency Scale (Littrell et al., 2021) was adapted to be more relevant to psychology students and simplified for those whose first language is not English. The items for *persuasive bullshit* and *evasive bullshit* read as follow "In my life as a psychology student, I stretch the truth just a little when I want to impress the person or people I am talking to" and "In my life as a psychology student, I stretch the truth just a little when a direct answer would hurt another person's feelings", respectively (see Supplemental Material, Table S1). Both the persuasive and evasive bullshit sub-scales reached acceptable internal consistencies with Cronbach's alphas of .87 and .73, respectively. The answer format was a 5-point Likert scale ranging from 1 (*never*) to 5 (*all the time*).

Bullshit receptivity was operationalised as *receptivity to pseudo-profound information* as measured by the Bullshit Receptivity Scale (Pennycook et al., 2015) (subsequently called *bullshit receptivity*), and as *fake news receptivity*. Due to methodological limitations identified for Study 1, ten profound statements, such as "In order to become prosperous, a person must initially work very hard, so he or she has to sacrifice a lot of leisure time", were included in the Bullshit Receptivity Scale. These statements were deemed contextually relevant to the participants (see Supplemental Material, Table S2) and not considered in further analysis. Participants were requested to rate how profound they found each statement on a 5-point Likert

scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). In the current study, the Bullshit Receptivity Scale demonstrated suitable internal consistency, with a Cronbach's alpha value of .77. *Fake news receptivity* was assessed by providing ten news headlines relevant to the study context of South Africa (see Supplemental Material, Table S3). Five of the news headlines were factually correct, and five headlines were completely untrue (fake news). The true headlines state: "Sandton student arrested for horrific rape and murder of Joburg teacher", "Eskom, Transnet crisis damaging economy", "Mbeki wants elections to be held in August", "Ramaphosa urges men, young boys to spearhead fight against GBV", and "Elon Musk to meet Israeli president, Gaza hostage families". The fake headlines state: "SABC Announces Introduction of Car Radio Licenses for Enhanced Broadcasting Services", "South African Health Products Regulatory Authority Grants Approval for Ivermectin Usage in COVID-19 Treatment", "Qatar is threatening to create a global gas shortage in support of Palestine", "Internet shutdowns and social media monitoring are increasingly being used by African governments", and "Jacob Zuma to receive Presidential pardon". Participants were asked to rate the accuracy of each statement on a 4-point Likert scale, ranging from 1 (*not at all accurate*) to 4 (*very accurate*). The fake news items: "Jacob Zuma to receive Presidential pardon" and "Internet shutdowns and social media monitoring are increasingly being used by African governments" were removed as these items showed a very low corrected item-total correlation. The three remaining fake news statements showed a low but still acceptable Cronbach's alpha of .65, given that all corrected item-total correlations were above .4.

Ingroup identification with psychology students was assessed using selected items of the Group Identification scale by Leach and colleagues (2008). The following six items were used: "I feel a bond with psychology students", "I feel solidarity with psychology students", "I feel committed to psychology students", "I am glad to be a psychology student", "I think psychology students gave a lot to be proud of", and "Being a psychology student gives me a

good feeling". Participants were requested to record their responses on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The scale demonstrated acceptable internal consistency with a Cronbach's alpha value of .85.

Normative obligation to provide an opinion was operationalised twofold. Firstly, like in Study 1, we operationalised normative obligation as personally experienced social norm (subsequently called *personal normative obligation*) by rephrasing the items used in Study 1 and by adding two additional items: "How often do you feel obliged as a psychology student to discuss topics that exceed your factual knowledge that is relevant to these topics", "To what degree do you feel pressured by other psychology students to discuss topics that exceed your factual knowledge that is relevant to these topics", "To what degree do you feel forced by other psychology students to discuss topics that exceed your factual knowledge that is relevant to these topics", and "To what degree do you feel you must discuss topics that exceed your factual knowledge that is relevant to these topics". Participants were asked to respond to these four items using a 5-point scale, ranging from 1 (*never*) to 5 (*always*). The four items demonstrated an acceptable internal consistency with a Cronbach's alpha value of .78. Secondly, we aimed at capturing normative obligation to provide an opinion as a descriptive social norm (subsequently called *descriptive normative obligation*) by presenting participants with the following four items: "In your opinion, what percentage of psychology students ranging from 0% (nobody) to 100% (everybody) feel obliged to discuss topics that exceed their factual knowledge that is relevant to these topics", "In your opinion, what percentage of psychology students ranging from 0% (nobody) to 100% (everybody) feel pressured to discuss topics that exceed their factual knowledge that is relevant to these topics", "In your opinion, what percentage of psychology students ranging from 0% (nobody) to 100% (everybody) feel forced to discuss topics that exceed their factual knowledge that is relevant to these topics", and "In your opinion, what percentage of psychology students ranging from 0% (nobody) to 100%

(everybody) feel they must discuss topics that exceed their factual knowledge that is relevant to these topics". The four items demonstrated good internal consistency, with a Cronbach's alpha value of .89.

Anti-science attitudes were operationalised as *negative science attitudes* (α = .63, with all corrected total-item correlations larger than .3) using the same measure as in Study 1, and as *conspiracy ideation*. *Conspiracy ideation* was assessed using the General Conspiracy Beliefs scale (Brotherton, 2013), which consists of 15 items (e.g., "The government is involved in the murder of innocent citizens and/or well-known public figures and keeps this a secret"). The answer format was a 5-point Likert scale ranging from 1 (*definitely not true*) to 5 (*definitely true*). According to Brotherton (2013), the scale demonstrated excellent internal consistency in the past (α = .95). In Study 2, the scale achieved a similar level of internal consistency, with a Cronbach's alpha value of .90.

Lastly, participants were asked to provide demographic information using the same questions as in Study 1.

Results

Preliminary Analysis

The means, standard deviations, and intercorrelations between the principal variables are reported in Table 3. Similar to Study 1, no statistically significant relationships were found between bullshit receptivity and persuasive or evasive bullshitting. As expected, bullshit receptivity was, however, positively and moderately correlated with fake news receptivity. Moreover, it was also found to be moderately related to ingroup identification, personal normative obligation to provide an opinion, conspiracy ideation, and weakly related to descriptive normative obligation to provide an opinion and negative science attitudes. In

contrast, persuasive bullshitting was positively moderately correlated to personal and descriptive normative obligation, while weakly related to receptivity to fake news, ingroup identification, negative science attitudes, and conspiracy ideation. As in Study 1, evasive bullshitting correlated strongly and positively with persuasive bullshitting and, different from Study 1, positively, although rather weakly, with negative science attitudes.

Table 3

Means, standard deviations, and intercorrelations of principal variables, Study 2

	M	*SD*	1	2	3	4	5	6	7	8	9
1. Persuasive BS	2.16	0.83	-								
2. Evasive BS	2.75	0.82	.48***	-							
3. BS Receptivity	3.67	0.58	.07	-.12	-						
4. FN Receptivity	2.50	0.59	.17**	-.03	.36***	-					
5. Ingroup ID	4.20	0.72	.13*	-.04	.31***	.17**	-				
6. Pers. Norm. Obligation	2.81	0.96	.34***	.04	.37***	.41***	.37***	-			
7. Desc. Norm. Obligation	53.41	21.65	.29***	.08	.17**	.30***	.31***	.66***	-		
8. Neg-Sci Attitudes	3.09	0.89	.13*	.16*	.17**	.32***	.14*	.25***	.19**	-	
9. Conspiracy	3.35	0.70	.13*	-.08	.31***	.46***	.07	.28***	.24***	.39***	-

Note. *$p < .05$, **$p <. 01$, ***$p < .001$. Persuasive BS = Persuasive Bullshitting; Evasive BS = Evasive Bullshitting; PPI Receptivity = Pseudo-Profound Information Receptivity; FN Receptivity =- Fake News Receptivity, Ingroup ID = Ingroup Identification with psychology students; Pers. Norm Obligation = Personal Normative Obligation to provide an opinion; Desc. Norm. Obligation = Descriptive Normative Obligation to provide an opinion; Neg-Sci Attitudes = Negative Science Attitudes; Conspiracy = Conspiracy Ideation

Table 4

Hierarchical Regression Analyses testing Hypotheses 1 to 3, Study 2

Analysis A		**DV: Bullshit Receptivity**					
	Predictors	*B*	*SE*	*β*	*t*	*p*	*95% CI*
Model 1	*Constant*	3.115	0.184		16.912	< .001	[2.752; 3.478]
Adj. R^2 = .135	Persuasive Bullshitting	0.074	0.052	.104	1.410	.160	[-0.029; 0.177]
	Evasive Bullshitting	-0.103	0.051	-.146	-2.009	0.46	[-0.204; -0.002]
	Fake News Receptivity	0.280	0.053	.339	5.259	< .001	[0.175; 0.386]
Model 2	*Constant*	2.308	0.263		8.788	< .001	[1.790; 2.825]
Adj. R^2 = .232	Persuasive Bullshitting	0.001	0.053	.002	0.027	.979	[-0.102; 0.105]
	Evasive Bullshitting	-0.060	0.049	-.085	-1.231	.220	[-0.157; 0.036]
	Fake News Receptivity	0.208	0.054	.252	3.855	< .001	[0.102; 0.315]
	Pers. Norm. Obligation	0.186	0.052	.307	3.570	< .001	[0.083; 0.289]
	Desc. Norm. Obligation	-0.005	0.002	-.186	-2.336	.020	[-0.009; -0.001]
	Ingroup ID	0.183	0.053	.223	3.473	< .001	[0.079; 0.287]
Model 3	*Constant*	1.891	0.294		6.430	< .001	[1.311; 2.471]

Adj. R^2 = .256	Persuasive Bullshitting	-0.006	0.052	-.009	-0.123	.903	[-0.109; 0.096]
	Evasive Bullshitting	-0.046	0.049	-.065	-0.934	.352	[-0.144; 0.051]
	Fake News Receptivity	0.141	0.058	.170	2.425	.016	[0.026; 0.255]
	Pers. Norm. Obligation	0.178	0.052	.293	3.444	< .001	[0.076; 0.279]
	Desc. Norm. Obligation	-0.006	0.002	-.204	-2.598	.010	[-0.010; -0.001]
	Ingroup ID	0.192	0.052	.233	3.668	< .001	[0.089; 0.295]-
	Negative Science Attitudes	0.007	0.045	.011	0.167	.868	[-0.081; 0.096]
	Conspiracy	0.164	0.060	.195	2.759	.006	[0.047; 0.282]

Analysis B		**DV: Fake News Receptivity**					
	Predictors	*B*	*SE*	*β*	*t*	*p*	*95% CI*
Model 1	*Constant*	0.817	0.334		2.448	.015	[0.159; 1.475]
Adj. R^2 = .142	Persuasive Bullshitting	0.153	0.062	.178	2.445	.015	[0.030; 0.276]
	Evasive Bullshitting	-0.071	0.062	-.084	-1.149	.252	[-0.194; 0.051]
	Bullshit Receptivity	0.406	0.077	.336	0.336	<.001	[0.254; 0.559]
Model 2	*Constant*	0.790	0.373		2.115	.036	[0.054; 1.525]
Adj. R^2 = .205	Persuasive Bullshitting	0.050	0.065	.058	0.773	.440	[-0.078; 0.177]

	Evasive Bullshitting	-0.044	0.060	-.052	-0.732	.465	[-0.163; 0.075]
	Bullshit Receptivity	0.315	0.082	.260	3.855	<.001	[0.154; 0.476]
	Pers. Norm. Obligation	0.173	0.065	.236	2.657	.008	[0.045; 0.301]
	Desc. Norm. Obligation	0.003	0.003	.106	1.293	.197	[-0.002; 0.009]
	Ingroup ID	-0.037	0.067	-.038	-0.561	.575	[-0.169; 0.094]
Model 3	*Constant*	0.042	0.377		0.112	.911	[-0.702; 0.786]
Adj. R^2 = .299	Persuasive Bullshitting	0.032	0.061	.037	0.518	.605	[-0.088; 0.152]
	Evasive Bullshitting	-0.031	0.058	-.036	-0.532	.595	[-0.145; 0.084]
	Bullshit Receptivity	0.194	0.080	.160	2.425	.016	[0.036; 0.351]
	Pers. Norm. Obligation	0.143	0.061	.195	2.330	.021	[0.022; 0.264]
	Desc. Norm. Obligation	0.002	0.003	.049	0.637	.525	[-0.003; 0.007]
	Ingroup ID	-0.009	0.063	-.009	-0.143	.886	[-0.134; 0.116]
	Negative Science Attitudes	0.085	0.052	.105	1.632	.104	[-0.018; 0.189]
	Conspiracy	0.297	0.068	.291	4.256	<.001	[0.162; 0.431]

Analysis C	**DV: Persuasive Bullshitting**					
Predictors	*B*	*SE*	*β*	*t*	*p*	*95% CI*

Model 1	*Constant*	-0.108	0.365		-0.297	.767	[-0.827; 0.611]
Adj. R^2 = .265	Evasive Bullshitting	0.495	0.058	.499	8.533	<.001	[0.380; 0.609]
	Bullshit Receptivity	0.124	0.088	.088	1.410	.160	[-0.049; 0.298]
	Fake News Receptivity	0.177	0.073	.152	2.445	.015	[0.034; 0.320]
Model 2	*Constant*	-0.271	0.399		-0.678	.499	[-1.058; 0.517]
Adj. R^2 = .340	Evasive Bullshitting	0.472	0.055	.475	8.530	<.001	[0.363; 0.580]
	Bullshit Receptivity	0.002	0.090	.002	0.027	.979	[-0.174; 0.179]
	Fake News Receptivity	0.056	0.073	.048	0.773	.440	[-0.087; 0.200]
	Pers. Norm. Obligation	0.236	0.068	.276	3.459	<.001	[0.101; 0.370]
	Desc. Norm. Obligation	0.002	0.003	.049	0.659	.511	[-0.004; 0.008]
	Ingroup ID	0.050	0.071	.043	0.707	.480	[-0.089; 0.189]
Model 3	*Constant*	-0.381	0.427		-0.894	.372	[-1.222; 0.459]
Adj. R^2 = .337	Evasive Bullshitting	0.482	0.057	.485	8.477	<.001	[0.370; 0.594]
	Bullshit Receptivity	-0.011	0.092	-.008	-0.123	.903	[-0.192; 0.169]
	Fake News Receptivity	0.040	0.078	.035	0.518	.605	[-0.113; 0.194]
	Pers. Norm. Obligation	0.237	0.068	.278	3.464	<.001	[0.102; 0.372]

	Desc. Norm. Obligation	0.002	0.003	.043	0.568	.571	[-0.004; 0.007]
	Ingroup ID	0.060	0.072	.052	0.833	.406	[-0.081; 0.201]
	Negative Science Attitudes	-0.034	0.060	-.036	-0.575	.566	[-0.152; 0.083]
	Conspiracy	0.074	0.080	.062	0.916	.361	[-0.085; 0.232]
Analysis D		**DV: Evasive Bullshitting**					
	Predictors	*B*	*SE*	*β*	*t*	*p*	*95% CI*
Model 1	*Constant*	2.530	0.328		7.702	<.001	[1.882; 3.177]
Adj. R^2 = .251	Persuasive Bullshitting	0.511	0.060	.508	8.533	<.001	[0.393; 0.630]
	Bullshit Receptivity	-0.179	0.089	-.126	-2.009	.046	[-0.355; -0.003]
	Fake News Receptivity	-0.086	0.075	-.073	-1.149	.252	[-0.232; 0.061]
Model 2	*Constant*	2.744	0.385		7.124	<.001	[1.985; 3.503]
Adj. R^2 = .253	Persuasive Bullshitting	0.542	0.064	.538	8.530	<.001	[0.417; 0.667]
	Bullshit Receptivity	-0.118	0.096	-.083	-1.231	.220	[-0.306; 0.071]
	Fake News Receptivity	-0.057	0.078	-.049	-0.732	.465	[-0.211; 0.097]
	Pers. Norm. Obligation	-0.074	0.075	-.086	-0.983	.327	[-0.221; 0.074]
	Desc. Norm. Obligation	0.000	0.003	.012	0.145	.885	[-0.006; 0.006]

	Ingroup ID	-0.093	0.076	-.080	-1.231	.220	[-0.242; 0.056]
Model 3	*Constant*	2.807	0.404		6.949	<.001	[2.011; 3.603]
Adj. R^2 = .282	Persuasive Bullshitting	0.529	0.062	.525	8.477	<.001	[0.406; 0.652]
	Bullshit Receptivity	-0.090	0.096	-.063	-0.934	.352	[-0.279; 0.099]
	Fake News Receptivity	-0.044	0.082	-.037	-0.532	.595	[-0.205; 0.118]
	Pers. Norm. Obligation	-0.083	0.074	-.097	-1.132	.259	[-0.228; 0.062]
	Desc. Norm. Obligation	0.001	0.003	.021	0.272	.786	[-0.005; 0.007]
	Ingroup ID	-0.120	0.075	-.103	-1.607	.110	[-0.267; 0.027]
	Negative Science Attitudes	0.180	0.061	.189	2.936	.004	[0.059; 0.301]
	Conspiracy	-0.182	0.083	-.153	-2.186	.030	[-0.347; -0.018]

Hypothesis Testing

To test the three hypotheses that bullshit receptivity is positively related to engagement in persuasive bullshitting (Hypothesis 1), that normative obligation to provide an opinion increases bullshit receptivity and engagement in persuasive and evasive bullshitting (Hypothesis 2), and that anti-science attitudes are positively related to bullshit receptivity and engagement (Hypothesis 3) were computed again hierarchical multiple regression analysis (see Table 4). More specifically, we computed four separate hierarchical multiple regression analyses with bullshit receptivity (Analysis A), receptivity to fake news (Analysis B), persuasive bullshitting (Analysis C), and evasive bullshitting (Analysis D) as dependent variables. In Analysis A, we regressed bullshit receptivity on three blocks (Models) of predictor variables: Model 1 included the predictor variable persuasive bullshitting (while controlling for evasive bullshitting and fake news receptivity), Model 2 included personal and descriptive normative obligations as well as ingroup identification, and Model 3 included negative science attitudes as negative science attitudes and conspiracy ideation. In the second hierarchical multiple regression analysis (Analysis B), we regressed fake news receptivity on three blocks (Models) of predictor variables: Model 1 included the predictor variable persuasive bullshitting (while controlling for evasive bullshitting and bullshit receptivity), while Models 2 and 3 included the same variables as Analysis A. We further regressed persuasive bullshitting (Analysis C) on three blocks (Models) of predictor variables: Model 1 included the predictor variable evasive bullshitting (while controlling for bullshit receptivity and fake news), and Models 2 and 3 included the same variables as in the previous analysis. Lastly, we regressed evasive bullshitting on three blocks (Models) of predictor variables (Analysis D): Model 1 included the predictor variable persuasive bullshitting (while controlling for bullshit receptivity and fake news). Again, Models 2 and 3 included the same variables as the previous three analyses.

Testing the three hypotheses predicting bullshit receptivity (Analysis A) from persuasive bullshitting (Hypothesis 1: *Model* 1), normative obligation to provide an opinion (Hypothesis 2: *Model* 2), and anti-science attitudes (Hypothesis 3: *Model* 3), revealed that all three models reached statistical significance, $F(3, 215) = 12.39$, $p < .001$, $F(6, 212) = 11.98$, $p < .001$, and $F(8, 210) = 10.37$, $p < .001$, respectively (see Table 4 under Analysis A, DV: bullshit receptivity). Model 1 explained 13.5% of the adjusted variance in bullshit receptivity, which, however, was not, as predicted in Hypothesis 1, related to engagement in persuasive bullshitting. Not surprisingly, fake news receptivity was positively related to bullshit receptivity. The inclusion of normative obligations to provide an opinion (Hypothesis 2: *Model 2*) added explained variance in bullshit receptivity of 10.6%, $\Delta R^2 = .106$, *F-Change*$(3, 212) = 10.01$, $p < .001$. As predicted, normative obligations to provide an opinion are related to bullshit receptivity, in that personal normative obligations positively and descriptive normative obligations negatively predicted bullshit receptivity. Lastly, anti-science attitudes (Hypothesis 3: *Model* 3) further added 3% of explained variance in bullshit receptivity, $\Delta R^2 = .030$, *F-Change*$(2, 210) = 4.41$, $p = .013$. In line with the predictions of Hypothesis 3, bullshit receptivity increases with conspiracy ideation.

In sum, Study 2 found empirical evidence that bullshit receptivity is positively related to personal normative obligation to provide an opinion (Hypothesis 2) and conspiracy ideation (Hypothesis 3). Rather unexpected was the result of the negative effect of descriptive normative obligations on bullshit receptivity. Like in Study 1, no empirical evidence was found to support the relationship between persuasive bullshitting and bullshit receptivity (Hypothesis 1).

Testing our three hypotheses to predict fake news receptivity (Analysis B) and assessing the effects of persuasive bullshitting (Hypothesis 1: *Model* 1), normative obligation to provide an opinion (Hypothesis 2: *Model* 2), and anti-science attitudes (Hypothesis 3: *Model*

3), revealed that all three models reached statistical significance, $F(3, 215) = 13.05$, $p < .001$, $F(6, 212) = 10.36$, $p < .001$, and $F(8, 210) = 12.65$, $p < .001$, respectively (see Table 4 under Analysis B, DV: Fake news receptivity). The first model, including the predictor variable persuasive bullshitting (while controlling for evasive bullshitting and bullshit receptivity), explained 14.2% adjusted variance in fake news receptivity. As predicted in Hypothesis 1, persuasive bullshitting is positively related to fake news bullshitting. The inclusion of normative obligation to provide an opinion (Hypothesis 2: *Model* 2) accounted for an additional 7.3% of explained variance in fake news receptivity, $\Delta R^2 = .073$, *F-Change*$(3, 212) = 6.65$, $p < .001$. In support of Hypothesis 2, personal obligation to provide an opinion positively predicted fake news receptivity. Lastly, the inclusion of anti-science attitudes (Hypothesis 3: Model 3) also added variance in fake news receptivity, $\Delta R^2 = .093$, *F-Change*$(2, 210) = 15.32$, $p < .001$. As predicted by Hypothesis 3, anti-science attitudes operationalised as conspiracy ideation are positively related to fake news receptivity.

In sum, our three proposed hypotheses, that persuasive bullshitting (Hypothesis 1: *Model* 1), normative obligation to provide an opinion (Hypothesis 2: *Model* 2), and anti-science attitudes (Hypothesis 3: *Model* 3) affect bullshit receptivity when operationalised as fake news receptivity.

We further tested that normative obligation to provide an opinion (Analysis C) increases persuasive bullshitting (while controlling for bullshit receptivity, fake news receptivity, evasive bullshitting, and ingroup identification) (Hypothesis 2: *Model 2*), and anti-science attitudes are positively related to persuasive bullshitting (Hypothesis 3: *Model 3*). The results revealed statistically significant models, $F(6, 212) = 19.72$, $p < .001$, and $F(8, 210) = 14.83$, $p < .001$, respectively (see Table 4 under Analysis C, DV: persuasive bullshitting). Like in the previous study, only Model 2, which included personal and descriptive normative

obligations, explained additional variance by 8.4% in persuasive bullshitting, ΔR^2 = .084, *F-Change*(3, 212) = 9.19, $p < .001$, but not Model 3, including anti-science attitudes as negative science attitudes and conspiracy ideations, *F-change*(2, 210) = 0.47, $p = .627$. Thus, the results provide support for Hypothesis 2, which states that personal normative obligation to provide an opinion increases persuasive bullshitting.

The test of Hypotheses 2 and 3 that normative obligation to provide an opinion (Analysis D) also increases evasive bullshitting (while controlling for bullshit receptivity, fake news receptivity, persuasive bullshitting, and ingroup identification) (Hypothesis 2: Model 2), and that anti-science attitudes are positively related to evasive bullshitting (while controlling for bullshit receptivity, fake news receptivity, persuasive bullshitting, ingroup identification, and personal and descriptive normative obligation) (Hypothesis 3: Model 3), respectively (see Table 2 under Analysis D, DV: Evasive bullshitting) revealed that both Model 2 and Model 3 reached statistical significance again, $F(6, 212) = 13.31$, $p < .001$, and $F(8, 210) = 11.71$, $p < .001$, respectively. Only Model 3, which included anti-science attitudes (while controlling for bullshit receptivity, fake news receptivity, persuasive bullshitting, ingroup identification, and personal and descriptive normative obligation), explained additional variance by 3.5% in evasive bullshitting, ΔR^2 = .035, *F-change*(2, 210) = 5.29, $p < .001$, but not Model 2, including personal and descriptive normative obligation, *F-change*(3, 212) = 1.18, $p = .319$. The results show that, as predicted, negative science attitudes increase evasive bullshitting, while conspiracy ideation reduces evasive bullshitting.

In summary, the results of Study 2 provide empirical evidence supporting the hypotheses that engagement in persuasive bullshitting affects fake news receptivity (Hypothesis 1), that personal normative obligation to provide an opinion (Hypothesis 2), and conspiracy ideation (Hypothesis 3) affect bullshit receptivity and fake news receptivity. Moreover, our results also suggest that personal normative obligation to provide an opinion

indeed increases persuasive bullshitting (Hypothesis 2) and that negative science attitudes increase evasive bullshitting, while conspiracy ideation reduces evasive bullshitting (Hypothesis 3).

Discussion

Study 2, re-tested the three hypotheses that persuasive bullshitting is positively related to bullshit receptivity (Hypothesis 1), that normative obligation to provide an opinion increases bullshit receptivity and engagement (Hypothesis 2), and that anti-science attitudes are positively related to bullshit receptivity and engagement (Hypothesis 3), while extending the operationalisation of the concepts of bullshit receptivity, normative obligation to provide an opinion, and negative science attitudes.

The results of Study 2, similar to Study 1, found no empirical evidence in support of the assumption that persuasive bullshitting is positively related to bullshit receptivity (Hypothesis 1) when operationalised as pseudo-profound information (Littrell et al., 2021). However, we did find empirical evidence in support of Hypothesis 1 when bullshit receptivity was operationalised as fake news receptivity, which corresponds with findings by Littrell et al. (2021). Therefore, we can deduce that misinformation is multifaceted and that being receptive to one form of misinformation does not necessarily mean that individuals are receptive to all forms of misinformation.

Secondly, we found support for the assumption that the normative obligation to provide an opinion increases bullshit receptivity and engagement in persuasive bullshitting but not evasive bullshitting (Hypothesis 2) (Frankfurt, 1986/2005; Petrocelli, 2018, 2022) when operationalised through personal normative obligation. For instance, we found empirical evidence supporting that personal normative obligation to provide an opinion increased bullshit

receptivity and fake news receptivity and engagement in persuasive bullshitting, as in Study 1, but not evasive bullshitting, which replicates the findings presented by Petrocelli (2018, 2022). However, we were unable to demonstrate the relationship between descriptive normative obligation to provide an opinion and bullshit receptivity, fake news receptivity, or engagement in persuasive or evasive bullshitting. This could imply that descriptive normative obligation to provide an opinion, even though more than half of psychology students (53%) are perceived to feel obliged to provide an opinion on topics beyond their knowledge, might not be a relevant norm for psychology students as psychology students are encouraged to engage in critical thinking over accepting information as mere fact simply because that is the overall belief of the group. Moreover, assessing the descriptive normative obligation to provide an opinion in a context that requires the opinion to be backed by empirical evidence may not be the best context to assess whether the obligation to provide an opinion increases both receptivity to and engagement in bullshitting behaviours. Therefore, Study 3 aimed to improve the assessment of the effects of descriptive normative obligation by distinguishing between different social contexts. Consequently, participants were asked to select a social group with which they most strongly identify (e.g., psychology students, ethnicity, religion, political affiliation, and gender), and the items assessing both personal and descriptive normative obligations were adjusted to the respective group context.

Lastly, unlike Study 1, the present findings provide empirical support for the hypothesis that negative science attitudes are positively related to bullshit receptivity and engagement in persuasive and evasive bullshitting (Hypothesis 3). First, we found empirical support in that negative science attitudes positively only relate to evasive bullshitting (Hornsey et al., 2018; Rutjens et al., 2018; 2021), whereas conspiracist ideation positively relates to bullshit receptivity and fake news receptivity, and negatively to evasive bullshitting, but does not relate to persuasive bullshitting (Pennycook, 2015).

Study 2 provided us with a good overall indication of the factors predicting participants' bullshit receptivity and engagement in persuasive and evasive bullshitting. However, Study 2 was not without its limitations. Therefore, Study 3 aimed to address the methodological limitations associated with the fake news scale and the anti-science attitudes scale. Instead of using statement items to assess susceptibility to fake news, the items in Study 3 were presented as images resembling actual breaking news headlines, similar to the structure utilised by Littrell et al. (2021). Furthermore, the anti-science attitude scale, which consistently revealed low Cronbach's alphas across both Study 1 and Study 2, was replaced with the faith in sciences scale (Farais et al., 2013).

Study 3

In the third study, we aimed to reassess our hypotheses concerning the effects of engagement in persuasive bullshitting on bullshit receptivity (Hypothesis 1), obligation to provide an opinion (Hypothesis 2), and anti-science attitudes on bullshit receptivity and engagement in persuasive and evasive bullshitting (Hypothesis 3). Like Study 2, Study 3 aimed to overcome the methodological limitations (e.g., fake news scale and negative-science attitude scale). Additionally, Study 3 aimed to improve the operationalisation of descriptive normative obligation by considering the complexity of social contexts. The hypotheses were again explored in a cross-sectional survey using convenience sampling.

Participants

Participants were psychology students enrolled in a South African university, yet they differed from those who participated in Studies 1 and 2. A total of 255 participants completed the bullshit receptivity measure. Participants' ages ranged from 18 to 59 years (M_{age} = 28.95, *SD* = 9.25). The majority of participants identified as female (*n* = 171), followed by males (*n* = 30) and non-binary/third gender (*n* = 1). Five participants did not indicate their gender. Most participants indicated to be Black (*n* = 157), followed by participants who indicated to be White (*n* = 27), Coloured (*n* = 13), Indian/Asian (*n* = 9), and Other (*n* = 1). We applied the same criteria of α = .05 and 80% power as in Study 2, when estimating the sample size to detect a medium effect size (f^2 = 0.15) in a hierarchical regression with *eight* predictors entered across three steps. The required sample size was 109 participants.

Procedure

The overall procedure for Study 3 was identical to that of Studies 1 and 2. Participants who consented to participate in the study were directed to the following measurements: bullshitting frequency, bullshit receptivity, selection of group membership (psychology students, ethnicity, religion, political affiliation, and gender), ingroup identification, individual obligation to provide an opinion, normative obligation, faith in science, conspiracy ideations, fake news receptivity, and lastly, participants were requested to provide information concerning their demographics by indicating their age, race, and gender. Again, there was no mention of the words "bullshit" or "bullshitting" in the measures to prevent any response bias.

Measurements

Persuasive and evasive bullshit engagement was assessed using the original 12-item Bullshitting Frequency Scale (Littrell et al., 2021), as it was in Study 1. Both the *persuasive* and *evasive bullshit* sub-scales reached acceptable internal consistency with Cronbach's alphas of .83 and .75, respectively.

Bullshit receptivity was again operationalised as *receptivity to pseudo-profound information,* as measured in Study 2 (subsequently called *bullshit receptivity*) (Cronbach's alpha value of .75), and as *fake news receptivity* (subsequently called *fake news receptivity*). However, the assessment of fake news receptivity differs from Study 2, as in Study 3 images were used that resembled breaking news headlines (see Supplementary Material, Table S4), similar to the format employed by Littrell et al. (2021). Participants were presented with ten images displaying breaking news headlines relevant to the context of South Africa. Five of the news headlines were factually correct, and five headlines were untrue (fake news). The true headlines stated: "Medical aids are out under the NHI, even if it means the end of GNU", "South Africa's favorite teacher Wiliam Smith dies", "IFP whip Sanele Zondo put on special leave amid domestic gender-based violence allegations", "UK court rules Briton must face

Eskom case in SA, dismisses suicide risk", and "SuperSport fires back at McKenzie's claim about epic Bok-All Black clash to be shown on SABC". The fake headlines state: "Fikile Mbalula, Pravin Gordhan allegedly fell out over R17 billion Sanral contracts", "Alleged sheep gives birth to a human lamb", "Pretoria Chinese restaurants granted permission to sell dog meat", "All HIV positive people will be marked near their genitals", and "Australian breakdancer Raygun 'rigged' her way into the Olympics". Participants were asked to rate the accuracy of each statement on a 4-point Likert scale, ranging from 1 (*not at all accurate*) to 4 (*very accurate*). For the purpose of Study 3, only the fake news headlines were considered in the analysis. The items were then coded into a frequency table, whereby scores were summed across the five items to calculate a total fake news susceptibility score. Higher scores indicated greater susceptibility to fake news.

Group membership was assessed by presenting participants with a list of social groups (i.e., psychology students, ethnicity, religion, political affiliation, and gender) and asking them to select the social group that is most important to them right now.

Ingroup identification was assessed using selected items of the Group Identification scale by Leach and colleagues (2008). The following seven items were adjusted to the group, participants selected: "I feel a bond with [psychology students/ ethnicity/ religion]", "I feel solidarity with [psychology students/ ethnicity/ religion]", "I feel committed to [psychology students/ ethnicity/ religion]", "I am glad to be a [psychology students/ ethnicity/ religion]", "I think [psychology students/ ethnicity/ religion] have a lot to be proud of", "It is pleasant being a [psychology students/ ethnicity/ religion]", and "Being a [psychology students/ ethnicity/ religion] gives me a good feeling". Participants were requested to record their responses on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The scale demonstrated acceptable internal consistency in all group contexts ($\alpha_s > .80$).

Obligation to provide an opinion was, again, assessed as *a personal normative obligation and as a descriptive normative obligation. Personal normative obligation* was assessed in the same manner as in Study 2. The four items demonstrated acceptable internal consistency, with a Cronbach's alpha value of .73. Descriptive normative obligation was measured by rephrasing the four items used in Study 2 and modifying the answer format. More specifically, the reference to psychology students was replaced with "selected group" to provide a reference to the group that the participant selected as being most important to them. The items were as follows: "In your opinion, how often does the average member of your selected group feel obliged to discuss topics that exceed their factual knowledge that are relevant to these topics?", "In your opinion, how often does the average member of your selected group feel pressured to discuss topics that exceed their factual knowledge that is relevant to these topics?", "In your opinion, to what degree do members of your selected group feel forced to discuss topics that exceed your factual knowledge that is relevant to these topics?", and "In your opinion, to what degree do members of your selected group feel they must discuss topics that exceed your factual knowledge that is relevant to these topics?". Participants were asked to respond to these items using a 5-point scale, ranging from 1 (*never*) to 5 (*always*). The four items demonstrated a good overall internal consistency with a Cronbach's alpha value of .73 ($.55 \leq \alpha \leq .80$ over the different social contexts).

Anti-science attitudes were operationalised as *negative science attitudes* and *conspiracy ideation.* Different from the previous two studies, *negative science attitudes* were measured using the Faith in Science scale (Farias et al., 2013), which consists of 10 items (e.g., "Science provides us with a better understanding of the universe than does religion"). The answer format was a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). According to Farias et al. (2013), the scale demonstrated acceptable internal consistency with a Cronbach's alpha of .86. In Study 3, the scale achieved a similar level of internal consistency,

with a Cronbach's alpha of .87. It is important to note that the scale was reverse-scored to accurately reflect negative science attitudes. Likewise, *Conspiracy ideation* was assessed in the same manner as in Study 2. In Study 3, the scale demonstrated acceptable internal consistency (Cronbach's alpha = .87).

Lastly, participants were asked to provide the same demographic information as in the previous two studies.

Results and Discussion

Preliminary Analysis

Of the 255 participants, 103 selected psychology students as the social group most important to them right now, 21 selected ethnicity, 61 selected religion, 7 selected political affiliation, and 28 selected gender. Given the fact that our hierarchical regression analysis with eight predictor variables requires a sample size of at least 109 participants, we decided to report the means, standard deviations, and intercorrelations between the principal variables (Table 5) and to test our hypotheses with the overall sample (Table 6).

Again, as in Studies 1 and 2, Study 3 found no statistically significant relationship between bullshit receptivity and persuasive or evasive bullshitting. However, similar to findings in Study 1 and Study 2, bullshit receptivity was statistically significant and weakly positively correlated with ingroup identification, personal normative obligation, and descriptive normative obligation, and moderately correlated with anti-science attitudes and conspiracy ideation. Different from Study 2, we found no statistical relationship between bullshit receptivity and fake news receptivity. Persuasive bullshitting, similar to Studies 1 and 2, was found to be statistically significant and weakly related to negative science attitudes and fake news receptivity, and moderately positively related to personal normative obligation and

descriptive normative obligation. Evasive bullshitting, as in Studies 1 and 2, was found to correlate strongly and positively with persuasive bullshitting. However, unlike Study 2, evasive bullshitting correlated negatively, albeit weakly, with ingroup identification.

Table 5

Means, standard deviations, and intercorrelations of principal variables for the overall sample (N = 255), Study 3

	M	*SD*	1	2	3	4	5	6	7	8	9
1. Persuasive BS	2.43	0.79	-								
2. Evasive BS	2.82	0.87	.43***	-							
3. BS Receptivity	3.65	0.61	-.02	-.04	-						
4. FN Receptivity	1.85	1.11	.10	-.08	.09	-					
5. Ingroup ID	4.54	0.58	.05	-.15*	.18**	.16*	-				
6. Pers. Norm. Obligation	2.64	0.92	.26***	-.00	.18**	.24***	.16*	-			
7. Desc. Norm. Obligation	2.80	0.87	.27***	.11	.16*	.19**	.02	.76***	-		
8. Neg-Sci Attitudes	3.24	0.87	.14*	-.07	.24***	.14*	.22***	.23***	.24***	-	
9. Conspiracy	3.20	0.71	.01	-.06	.26***	.25***	-.02	.15*	.15*	.02	-

Note. *$p < .05$, **$p <. 01$, ***$p < .001$. Persuasive BS = Persuasive Bullshitting; Evasive BS = Evasive Bullshitting; PPI Receptivity = Pseudo-Profound Information Receptivity; FN Receptivity =- Fake News Receptivity, Ingroup ID = Ingroup Identification with psychology students; Pers. Norm Obligation = Personal Normative Obligation to provide an opinion; Desc. Norm. Obligation = Descriptive Normative Obligation to provide an opinion; Neg-Sci Attitudes = Negative Science Attitudes; Conspiracy = Conspiracy Ideation

Table 6

Regression Analyses testing Hypotheses 1 to 3, Study 3

Analysis A		**DV: Bullshit Receptivity**					
	Predictors	*B*	*SE*	*β*	*t*	*p*	*95% CI*
Model 1	*Constant*	3.617	0.180		20.078	< .001	[3.262; 3.972]
Adj. R^2= -.002	Persuasive Bullshitting	-0.024	0.060	-.030	-0.393	.694	[-0.143;0.095]
	Evasive Bullshitting	-0.005	0.054	-.008	-0.099	.921	[-0.111; 0.100]
	Fake News Receptivity	0.059	0.039	.106	1.526	.129	[-0.017; 0.135]
Model 2	*Constant*	2.540	0.386		6.580	<.001	[1.779; 3.301]
Adj. R^2 = .045	Persuasive Bullshitting	-0.079	0.062	-.100	-1.284	.201	[-0.200; 0.042]
	Evasive Bullshitting	0.022	0.054	.031	0.402	.688	[-0.084; 0.127]
	Fake News Receptivity	0.028	0.039	.050	0.721	.472	[-0.048; 0.104]
	Pers. Norm. Obligation	0.053	0.076	.078	0.695	.488	[-0.097; 0.202]
	Desc. Norm. Obligation	0.081	0.078	.114	1.038	.301	[-0.073; 0.236]
	Ingroup ID	0.182	0.073	.173	2.476	.014	[0.037; 0.326]
Model 3	*Constant*	1.560	0.418		3.729	<.001	[0.735; 2.385]

Adj. R^2 = .143	Persuasive Bullshitting	-0.092	0.059	-.116	-1.562	.120	[-0.208; 0.024]
	Evasive Bullshitting	0.052	.051	.074	1.019	.310	[-0.049; 0.153]
	Fake News Receptivity	-0.017	0.038	-.030	-0.436	.664	[-0.091; 0.058]
	Pers. Norm. Obligation	0.050	0.072	.073	0.690	.491	[-0.092; 0.191]
	Desc. Norm. Obligation	0.030	0.075	.042	0.404	.687	-0.118; 0.178]
	Ingroup ID	0.164	0.071	.156	2.309	.022	[0.024; 0.304]
	Negative Science Attitudes	0.154	0.049	.212	4.002	<.001	[0.058; 0.250]
	Conspiracy	0.233	0.058	.269	3.152	.002	[0.118; 0.348]

Analysis B		**DV: Fake News Receptivity**					
	Predictors	*B*	*SE*	*β*	*t*	*p*	*95% CI*
Model 1	*Constant*	1.132	0.545		2.079	.039	[0.059; 2.206]
Adj. R^2 = .021	Persuasive Bullshitting	0.224	0.107	.156	2.099	.037	[0.014; 0.435]
	Evasive Bullshitting	-0.164	0.095	-.129	-1.732	.085	[-0.351; 0.023]
	Bullshit Receptivity	0.187	0.123	.104	1.526	.129	[-0.055; 0.429]
Model 2	*Constant*	0.049	0.764		0.064	.949	[-1.457; 1.556]
Adj. R^2 = .051	Persuasive Bullshitting	0.118	0.111	.082	1.066	.288	[-0.100;0.337]

	Evasive Bullshitting	-0.110	0.096	-.087	-1.147	.253	[-0.300; 0.079]
	Bullshit Receptivity	0.090	0.125	.050	0.721	.472	[-0.157; 0.337]
	Pers. Norm. Obligation	0.195	0.136	.159	1.433	.153	[-0.073; 0.463]
	Desc. Norm. Obligation	0.038	0.142	.029	0.267	.789	[-0.241; 0.317]
	Ingroup ID	0.202	0.133	.107	1.515	.131	[-0.061; 0.465]
Model 3	*Constant*	*-1.015*	*0.795*		*-1.277*	*.203*	*[-2.583; 0.552]*
Adj. R^2 = .104	Persuasive Bullshitting	0.105	0.109	.073	0.962	.337	[-0.110; 0.320]
	Evasive Bullshitting	-0.068	0.095	-.053	-0.714	.476	[-0.254; 0.119]
	Bullshit Receptivity	-0.056	0.129	-.031	-0.436	.664	-0.311; 0.198]
	Pers. Norm. Obligation	0.179	0.132	.146	1.535	.177	[-0.082; 0.440]
	Desc. Norm. Obligation	-0.005	0.139	-.004	-0.035	.972	[-0.279; 0.269]
	Ingroup ID	0.232	0.132	.122	1.761	.080	[-0.028; 0.491]
	Negative Science Attitudes	0.081	0.092	.062	3.697	.382	[-0.101; 0.262]
	Conspiracy	0.399	0.108	.255	0.877	<.001	[0.186; 0.613]

Analysis C	**DV: Persuasive Bullshitting**					
Predictors	*B*	*SE*	*β*	*t*	*p*	*95% CI*

Model 1	*Constant*	1.316	0.341		3.861	<.001	[0.644; 1.987]
Adj. R^2 = .174	Evasive Bullshitting	0.372	0.056	.418	6.683	<.001	[0.262; 0.481]
	Bullshit Receptivity	-0.031	0.079	-.025	-0.393	.694	[-0.187; 0.125]
	Fake News Receptivity	0.092	0.044	.132	2.099	.037	[0.006; 0.179]
Model 2	*Constant*	0.576	0.477		1.187	.237	[-0.374; 1.507]
Adj. R^2 = .235	Evasive Bullshitting	0.371	0.055	.418	6.793	<.001	[0.264; 0.479]
	Bullshit Receptivity	-0.100	0.078	-.080	-1.284	.201	[-0.255; 0.054]
	Fake News Receptivity	-0.046	0.044	.067	1.066	.288	[-0.039; 0.132]
	Pers. Norm. Obligation	0.175	0.085	.205	2.069	.040	[0.008; 0.343]
	Desc. Norm. Obligation	0.060	0.089	.067	0.682	.496	[-0.114; 0.235]
	Ingroup ID	0.100	0.084	.075	1.191	.235	[-0.065; 0.265]
Model 3	*Constant*	0.493	0.511		0.966	.335	[-0.514; 1.500]
Adj. R^2 = .243	Evasive Bullshitting	0.377	0.055	.424	6.884	<.001	[0.269; 0.484]
	Bullshit Receptivity	-0.129	0.082	-.102	-1.562	.120	[-0.291; 0.034]
	Fake News Receptivity	0.043	0.045	.062	0.962	.337	[-0.045; 0.131]
	Pers. Norm. Obligation	0.177	0.084	.208	2.102	.037	[0.011; 0.343]

	Desc. Norm. Obligation	0.039	0.089	.043	0.437	.663	-0.137; 0.214]
	Ingroup ID	0.070	0.085	.053	0.825	.411	[-0.097; 0.237]
	Negative Science Attitudes	0.121	0.058	.133	-0.152	.039	[0.006; 0.236]
	Conspiracy	-0.011	0.072	-.010	2.075	.879	[-0.152; 0.130]
Analysis D		**DV: Evasive Bullshitting**					
	Predictors	*B*	*SE*	*β*	*t*	*p*	*95% CI*
Model 1	*Constant*	*1.868*	*0.377*		*4.958*	*<.001*	*[1.125; 2.611]*
Adj. R^2 = .168	Persuasive Bullshitting	.474	0.071	*.421*	6.683	<.001	[0.334; 0.614]
	Bullshit Receptivity	-0.009	0.089	-.006	-0.099	.921	[-0.185; 0.167]
	Fake News Receptivity	-0.086	0.050	-.110	-1.732	.085	[-0.184; 0.012]
Model 2	*Constant*	2.513	0.523		4.804	<.001	[1.482; 3.545]
Adj. R^2 = .199	Persuasive Bullshitting	0.493	0.073	.438	6.793	<.001	[0.350; 0.636]
	Bullshit Receptivity	0.036	0.090	.026	0.402	.688	[-0.142; 0.215]
	Fake News Receptivity	-0.058	0.050	-.073	-1.147	.253	[-0.156; 0.041]
	Pers. Norm. Obligation	-0.223	0.097	-.232	-2.291	.023	[-0.415; -0.031]
	Desc. Norm. Obligation	0.180	0.101	.177	1.772	.078	[-0.020; 0.380]

	Ingroup ID	-0.181	0.096	-.121	-1.882	.061	[-0.370; 0.009]
Model 3	*Constant*	2.801	0.556		5.034	<.001	[1.704; 3.898]
Adj. R^2 = .207	Persuasive Bullshitting	0.501	0.073	.445	6.884	<.001	[0.357; 0.644]
	Bullshit Receptivity	0.097	0.095	.068	1.019	.310	[-0.091; 0.285]
	Fake News Receptivity	-0.037	0.052	-.047	-0.714	.476	[-0.139; 0.065]
	Pers. Norm. Obligation	-0.222	0.097	-.231	-2.290	.023	[-0.413; -0.031]
	Desc. Norm. Obligation	0.203	0.102	.199	1.994	.047	[0.002; 0.403]
	Ingroup ID	-0.168	0.097	-.133	-1.726	.086	[-0.360; 0.024]
	Negative Science Attitudes	-0.113	0.068	-.111	-1.677	.095	[-0.247; 0.020]
	Conspiracy	-0.101	0.082	-.082	-1.233	.219	[-0.263; 0.061]

Hypothesis Testing

To test the three hypotheses that bullshit receptivity is positively related to engagement in persuasive bullshitting (Hypothesis 1), that normative obligation to provide an opinion increases bullshit receptivity and engagement in persuasive and evasive bullshitting (Hypothesis 2), and that anti-science attitudes are positively related to bullshit receptivity and engagement (Hypothesis 3) were again tested conducting four separate hierarchical multiple regression analyses (see Tables 6) with bullshit receptivity (Analysis A), receptivity to fake news (Analysis B), persuasive bullshitting (Analysis C) and evasive bullshitting (Analysis D) as dependent variables, and using the same three blocks (Models) including the same predictor variables as reported for Study 2 (see Table 6).

Testing again the three hypotheses predicting bullshit receptivity (Analysis A) from persuasive bullshitting (Hypothesis 1: *Model* 1), normative obligation to provide an opinion (Hypothesis 2: *Model* 2), and anti-science attitudes (Hypothesis 3: *Model* 3), revealed that only Models 2 and 3 reached statistical significance, $F(6, 206) = 2.65$, $p < .05$, and $F(8, 204) = 5.42$, $p < .001$, respectively but not Model 1, $F(3, 209) = 0.84$, $p = .474$ (see Table 6 under Analysis A, DV: Bullshit receptivity). Only the inclusion of normative obligations to provide an opinion (Hypothesis 2: Model 2) and anti-science attitudes (Hypothesis 3: Model 3) added explained variance in bullshit receptivity of 6%, $\Delta R^2 = .060$, *F-Change*$(3, 206) = 4.42$, $p = .005$, and 10.4%, $\Delta R^2 = .104$, *F-Change*$(2, 204) = 12.81$, $p < .001$ respectively. Neither persuasive bullshitting (Hypothesis 1) nor normative obligation to provide an opinion (Hypothesis 2) predicted statistically significantly bullshit receptivity. However, as predicted, anti-science attitudes operationalised as *negative science attitudes* and *conspiracy ideation* were positively related to bullshit receptivity. Thus, evidence was found only to support Hypothesis 3, which addressed the role of anti-science attitudes in predicting bullshit.

We also tested our three hypotheses to predict fake news receptivity (Analysis B) and assessed the effects of persuasive bullshitting (Hypothesis 1: *Model* 1), normative obligation to provide an opinion (Hypothesis 2: *Model* 2), and anti-science attitudes (Hypothesis 3: *Model* 3). The results revealed Models 2 and 3 reached statistical significance, $F(6, 206) = 2.91$, $p = .010$, and $F(8, 204) = 4.08$, $p < .001$, respectively, and Model 1 reached marginal statistical significance, $F(3, 209) = 2.55$, $p = .057$ (see Table 6 under Analysis B, DV: Fake news receptivity). Model 1, including the predictor variable persuasive bullshitting (while controlling for evasive bullshitting and bullshit receptivity), explained 2.1% adjusted variance in fake news receptivity. As predicted in Hypothesis 1, persuasive bullshitting is positively associated with receptivity to fake news. The inclusion of predictor variables, normative obligation to provide an opinion (Hypothesis 2: *Model* 2), added 4.3% of explained variance in fake news receptivity, $\Delta R^2 = .043$, *F-Change*$(3, 206) = 3.20$, $p < .05$. However, neither personal nor descriptive obligation to provide an opinion positively and statistically significantly predicted fake news receptivity. Lastly, the inclusion of anti-science attitudes (Hypothesis 3: *Model 3*) also added variance in fake news receptivity, $\Delta R^2 = .060$, *F-Change*$(2, 204) = 7.06$, $p = .001$. In line with Hypothesis 3, anti-science attitudes operationalised as conspiracy ideation are positively related to fake news receptivity.

In sum, Study 3 supported our hypotheses that persuasive bullshitting (Hypothesis 1: *Model* 1) and that anti-science attitudes (Hypothesis 3: *Model* 3) affect bullshit receptivity when operationalised as fake news receptivity. However, no evidence was found to support Hypothesis 2, which posits that a normative obligation to provide an opinion predicts bullshit receptivity.

We further tested that normative obligation to provide an opinion (Analysis C) increases persuasive bullshitting (Hypothesis 2: *Model 2*), and anti-science attitudes are

positively related to persuasive bullshitting (Hypothesis 3: *Model 3*). The results revealed statistically significant models, $F(6, 206) = 11.83$, $p < .001$, and $F(8, 204) = 9.53$, $p < .001$, respectively (see Table 6 under Analysis C, DV: persuasive bullshitting). Like in the previous studies, only Model 2, which included personal and descriptive normative obligations, explained additional variance by 7.1% in persuasive bullshitting, $\Delta R^2 = .071$, *F-Change*$(3, 206) = 6.55$, $p < .001$, but not Model 3, including anti-science attitudes as negative science attitudes and conspiracy ideations, *F-change*$(2, 204) = 2.20$, $p = .114$. The results provide support for Hypothesis 2 that (personal) normative obligation to provide an opinion indeed increases persuasive bullshitting.

The test of Hypotheses 2 (Model 2) and 3 (Model 3) to predict evasive bullshitting (see Table 2 under Analysis D, DV: Evasive bullshitting) revealed that both Model 2 and Model 3 reached statistical significance again, $F(6, 206) = 9.75$, $p < .001$, and $F(8, 204) = 7.90$, $p < .001$, respectively. Only Module 2, which included normative obligation to provide an opinion, explained additional variance by 4.1% in evasive bullshitting, $\Delta R^2 = .041$, *F-Change*$(3, 206) = 3.62$, $p < .001$, but not Model 3, including anti-science attitudes, *F-change*$(2, 204) = 2.05$, $p = .132$. The results show that personal normative obligations to provide an opinion decrease the tendency to engage in evasive bullshitting.

In conclusion, Study 3 re-assessed all three hypotheses on whether engagement in persuasive bullshitting positively predicts bullshit receptivity (Hypothesis 1), whether obligation to provide an opinion increases bullshit receptivity and persuasive and evasive bullshitting (Hypothesis 2), and whether anti-science attitudes positively relate to bullshit receptivity and engagement in persuasive and evasive bullshit (Hypothesis 3), while improving the operationalisation of descriptive normative obligation by considering the complexity of social contexts. Unfortunately, the latter could not be achieved due to the limited number of participants. Nevertheless, the findings of Study 3 provide additional empirical support that

engagement in persuasive bullshitting is related to fake news receptivity (Hypothesis 1) and that conspiracy ideation (Hypothesis 3) influences both bullshit receptivity and fake news receptivity. Moreover, the results again showed that personal normative obligation to provide an opinion indeed increases persuasive bullshitting (Hypothesis 2) but decreases evasive bullshitting, and that neither negative science attitudes nor conspiracy ideation are related to evasive bullshitting (Hypothesis 3).

General Discussion

The overall aim of the current research was twofold: first to establish from a social norm perspective *whether* and *how* the obligation to provide an opinion (Frankfurt, 1986/2005; Petrocelli, 2018) affects individuals' proclivity to be not only receptive to bullshit information but also to engage in bullshitting behaviour, and secondly, to understand how skepticism toward modern sciences and the rejection of "objective" truths can lead to increased bullshit receptivity and engagement in bullshitting. More specifically, we tested three hypotheses stating that bullshit receptivity is positively related to the engagement in persuasive bullshitting (Hypothesis 1), that the obligation to provide an opinion increases bullshit receptivity and engagement in persuasive and evasive bullshit (Hypothesis 2), and that anti-science attitudes are positively related to bullshit receptivity and engagement in persuasive and evasive bullshit (Hypothesis 3). Three studies were conducted to test the proposed hypotheses using cross-sectional survey designs.

Overall, Hypothesis 1, which proposed that bullshit receptivity is positively related to the engagement in persuasive bullshitting, could only be empirically supported if bullshit receptivity was operationalised as fake news, but not if it was operationalised as pseudo-profound information. For instance, Studies 1 to 3, which operationalised bullshit receptivity as receptivity to pseudo-profound information (Littrell et al., 2021), did not find any significant relationship between bullshit receptivity and engagement in persuasive bullshitting. However, Studies 2 and 3, which operationalised bullshit receptivity not only as receptivity to pseudo-profound information (Littrell et al., 2021, in this study referred to as "bullshit receptivity") but also as receptivity to fake news (in this study referred to as "Fake News Receptivity"), found empirical evidence supporting Hypothesis 1. In both Study 2 and Study 3, engagement in persuasive bullshitting significantly predicted receptivity to fake news. These findings, which

suggest that engagement in persuasive bullshitting is particularly predictive of receptivity to fake news, align with previous research (Littrell et al., 2021; Pennycook & Rand, 2020). The pattern in our studies, that our participants who tend to impress, or fit in with others by exaggerating or embellishing one's knowledge, attitudes, competencies, skills, or ideas (i.e., persuasively bullshit) are more receptive to fake news rather than pseudo-profound information statements, might be caused by the fact that the former is more readily accessible and tangible in day-to-day situations of our participants. The identified pattern in our studies, therefore, implies that people's proclivity to engage in bullshitting behaviour does not make them receptive to any bullshit information. Future research might focus on factors that might moderate these relationships, such as the salience of particular bullshit information to certain individuals within certain contexts.

The results concerning Hypothesis 2, which stated that the obligation to provide an opinion increases bullshit receptivity and engagement in persuasive and evasive bullshit, were also less straightforward. In two out of three studies, no evidence was found for the influence of the obligation to provide an opinion on bullshit receptivity, irrespective of whether it was operationalised as pseudo-profound information (i.e., "bullshit receptivity") or as receptivity to fake news (i.e., fake news receptivity). Only Study 2 provided some evidence on these relationships. Both bullshit receptivity and fake news receptivity were positively influenced by *personal norm* obligation to provide an opinion, which aligns with Petrocelli's (2018) findings that individuals who perceive an obligation to provide an opinion tend to engage more in overall bullshitting. Interestingly, receptivity to pseudo-profound information, but not receptivity to fake news, was negatively influenced by the *descriptive norm* of providing an opinion. These results suggest that whether individuals fall for pseudo-profound information or fake news is influenced by whether they *personally* feel obligated to provide an opinion, rather than by whether they perceive that the average ingroup member feels obligated to do so

(i.e., *descriptive norm*). Thus, it appears that personal norms play a more significant role in shaping indifference towards the truth than the social norms associated with being a psychology student. It is actually encouraging to note that the perceived normativity of expressing an opinion as a psychology student is not positively related to their indifference toward the truth. Actually, the opposite is true.

Lastly, we found empirical evidence supporting Hypothesis 3, which stated that anti-science attitudes are positively related to bullshit receptivity and to engagement in persuasive and evasive bullshit. More specifically, we found that conspiracy beliefs are particularly related to receptivity to bullshit and fake news (Studies 2 and 3). The effect of negative science attitudes was observed only for bullshit receptivity in Study 3, which employed a different assessment tool to measure negative science attitudes. These findings align with research presented by Pennycook and colleagues (2015), who found that conspiracy ideations positively and significantly predicted bullshit receptivity. In conclusion, the evidence suggesting that anti-science attitudes predict persuasive and evasive bullshitting was rather inconclusive (Hornsey et al., 2018; Rutjens et al., 2018; 2021). One could argue that individuals who hold anti-science attitudes stray from the laws of science. Therefore, implying that the further individuals deviate from scientific principles and enter the realm of conspiracy ideations, the more receptive they become not only to scientific misinformation but also to misinformation in general. However, that does not necessarily mean this will lead to increased engagement in bullshit.

The results of our three studies have implications for the ongoing research on bullshitting. Firstly, whether bullshit receptivity is positively related to engagement in persuasive bullshitting seems to depend on how bullshit receptivity is operationalised. In our studies, the relationship was only found when bullshit receptivity was operationalised as fake news, but not when operationalised as pseudo-profound statements. Given that our participants

were psychology students across all three studies, and that the role of engagement in persuasive bullshitting for bullshit receptivity was only found for fake news receptivity, it raises the question of what role social context might play. Future research might build on our observation and systematically study the interaction between different operationalisations of bullshit receptivity and social context. For instance, one could argue that *whether* individuals engage in persuasive bullshitting may be *independent* of the context in which they are (i.e., politics, academia, or finance); however, the bullshit information they share may depend on the context. Our results also imply the importance of understanding bullshit information in its heterogeneous nature. Pseudo-profound information or fake news are just two distinct examples of bullshit information. Other bullshit information exists, such as conspiracy narratives (e.g., "Secret cables controlling everything"), corporate jargon (e.g., "We optimise synergistic value chains for holistic innovation"), pseudo-scientific explanations (e.g., "Your brain's gamma waves manifest success"), AI-generated bullshit (e.g., fabricated citations or references), or statistical bullshit (e.g., "Claiming causality based on correlative data"). Considering the heterogeneous nature of bullshit information might also enhance understanding of the interplay between bullshit receptivity and engagement.

Secondly, our research also contributes to the debate about the essential antecedents in the promulgation and endorsement of bullshit (Petrocelli, 2018, 2022). Previous research by Petrocelli (2018) provided initial evidence that bullshitting behaviour is attenuated when an individual's knowledge base increases, when they anticipate receiving a social pass of acceptance on said bullshit, and when they perceive an obligation to provide an opinion. Although our studies did not provide conclusive results concerning the role of perceived obligation to provide an opinion as a predictor of bullshit receptivity and engagement, they suggest that the effects of personal and social obligations to provide an opinion both exist and differ. These results support, to a certain extent, our arguments for conceptualising the

obligation to provide an opinion from a social-norm perspective, which Frankfurt (1986/2005) posited as one of the essential antecedents in the promulgation and endorsement of bullshit. Our Study 2 results showed that the more our participants perceived psychology students as feeling obligated to discuss topics beyond their factual knowledge, the less receptive they were to pseudo-profound information. This result even suggests that expectations about ingroup behaviour (such as perceiving fellow psychology students as feeling obligated to discuss topics that exceed their factual knowledge) can, conversely, influence individual behaviour (such as being less receptive to pseudo-profound information). Although we were unable to demonstrate the role of social norms across all three studies, we believe that our findings may provide a first, albeit limited, contribution to research on the social norm aspects of bullshitting.

Lastly, our results also have important implications for the debate about the role of scientific knowledge and individuals' predisposition to accept and share epistemically suspect beliefs (i.e., unfounded beliefs) over scientific facts, and whether those beliefs are shared as "fact" and common knowledge within various groups. Previous research found that scepticism toward modern sciences (i.e., anti-science attitudes) and epistemically suspect beliefs (i.e., unfounded beliefs and conspiracy ideation) increases individuals' receptivity to and engagement in bullshit (Hornsey et al., 2018; Pennycook et al., 2015; Rutjens et al., 2018; van Prooijen et al., 2022). Although our results pertaining to negative science attitudes did not provide conclusive results in the prediction of receptivity to and engagement in bullshit, they do indicate that conspiracy ideation does relate to increased bullshit receptivity to both pseudo-profound statements and fake news receptivity across two studies (Studies 2 and 3), suggesting that conspiracy ideation is particularly indicative of receptivity to various forms of misinformation, but not engagement in the sharing of said misinformation. The aforementioned results reaffirm previous findings that individuals who hold conspiracy ideations are more likely to be drawn to information that aligns with their epistemic style (Philipp -Muller et al.,

2022), such as populist attitudes (Fukuyama, 2018; van Prooijen et al., 2022). These findings also align with research on the confirmation bias (Wason, 1960; Nickerson, 1998) and one of its subclasses, the myside bias (e.g., Stanovich et al., 2013). The myside bias describes the tendency to "evaluate evidence, generate evidence, and test hypotheses in a manner biased toward their own prior beliefs, opinions, and attitudes" (Stanovich et al., 2013, p. 261). The perspective of myside bias may be useful in extending our understanding of the interplay between beliefs/attitudes and engagement in the sharing of such misinformation. For instance, Cavojova and Brezina (2021) demonstrated that individuals high in persuasive bullshitting ("persuasive bullshitters"), after controlling for evasive bullshitting, reported not only having more knowledge about a topic but also exhibited more myside bias. Future research may consider this perspective.

As with any research, our studies have several limitations. Shortcomings were identified with regard to internal validity, measurement validity, and external validity. Firstly, our research lacks internal validity because the applied methodological design (i.e., cross-sectional survey) cannot establish a cause-and-effect relationship. To overcome this limitation, future research should apply experimental rather than correlational research designs. Furthermore, some relationships, like that between bullshit receptivity, persuasive and evasive bullshit engagement, and attitudes and beliefs, such as anti-science attitudes and conspiracy beliefs, might also be understood as reciprocal. Secondly, our three studies demonstrated the limitations of our measurements. Specifically, the measure of anti-science attitudes (Hayes & Tariq, 2000) consistently demonstrated low internal reliability across both Study 1 and Study 2. Additionally, the measure of personal and descriptive normative obligation to have an opinion was developed for the present research. Given that the measurements were not previously tested to ensure construct validity through demonstrating its strong correlation with measurements of related constructs, such as for instance "need for closure" (i.e., convergent

validity), its non-relationship with unrelated constructs, such as for instance “extraversion” (i.e., discriminant validity), and/or through the statistical testing of its dimensional structure (i.e., factorial validity). Any future research aiming to understand the role of the obligation to provide an opinion from a social norm perspective should overcome these measurement limitations by developing validated measures. Another limitation of our study is the lack of external validity. The samples across all three studies were generated using convenience sampling, which limits the generalisation of our results. Additionally, all three studies were conducted with Psychology students currently enrolled at a South African university, and most of our participants were female. As in other countries, female psychology students and psychologists outnumber their male counterparts in South Africa as well (Skinner & Louw, 2009. This trend, also reflected in our samples, limits the comparability of the research conditions originally presented by Littrell et al. (2021) and Pennycook et al. (2015), whose samples had a relatively even gender distribution. To overcome these limitations, future research should employ a multi-study and multi-sample approach, allowing results to be generated and replicated using different research procedures, measurement instruments, and participant populations (Tedeschi & Lindskold, 1976).

Despite the aforementioned limitations, the present research contributes to what has, until most recently, been a relatively small body of empirical research on the psychology of bullshitting. Most importantly, our results also imply that bullshit receptivity and engagement are seemingly independent of whether participants are from societies influenced by Western individualism or African collectivism. One could actually argue that the endorsement and promulgation of bullshit information, whether intentionally or unintentionally, might be even more prominent in societies such as South Africa, where supernatural beliefs are not only common but publicly used to guide political action and health. For instance, members of the African National Congress consulted a traditional healer before a critical by-election in

Limpopo, using spiritual insight to inform campaign strategies (Mabasa, 2024). Similarly, former Johannesburg council speaker Colleen Makhubele invited religious leaders to anoint city offices before electoral events, following "prophetic" guidance from a Nigerian prophet (Mbolekwa, 2023). These epistemological orientations are even more pronounced in South African Neo-Pentecostal churches, which have popularised dangerous rituals—such as consuming petrol, grass, or insecticides—under the promise of divine healing (Kgatle, 2017). Previous research has demonstrated that epistemically suspect beliefs (i.e., supernatural beliefs, conspiracy ideation) increase receptivity to misinformation (Hornsey et al., 2018; Pennycook et al., 2015; Rutjens et al., 2018; van Prooijen et al., 2022), and thus make societies such as South Africa a perfect setting for the flourishing of the social phenomenon of *bullshit* and its insidious nature to disguise indifference to truth as meaningful communication, thereby gradually eroding norms of epistemic responsibility (Frankfurt, 1986/2005; Fukuyama, 2018; Petrocelli, 2021).

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Supplemental Material

Table S1
Bullshitting Frequency Scale

In my life as a psychology student, I stretch the truth just a little:
1. *When I want to impress the person or people I'm talking to.*
2. *When I want others to see me as more intelligent or knowledgeable.*
3. *When I want to contribute to a conversation or discussion even though I'm not well-informed on the topic.*
4. *By pretending to know more about a topic than I actually do.*
5. *When I'm trying to fit in better or be more accepted by the person or people I'm interacting with.*
6. *When I know it will be easy to get away with it.*
7. *When I want the thing(s) I'm talking about to sound more interesting or exciting.*
8. *When I'm trying to persuade someone to change their mind or agree with what I'm saying.*
9. *When being fully honest would be harmful or embarrassing to me or someone else.*
10. *When a direct answer might get me in trouble.*
11. *When I don't want to tell someone what I really think.*
12. *When a direct answer would hurt another person's feelings.*

Table S2
Bullshit Receptivity Scale

1. *Hidden meaning transforms unparalleled abstract beauty.*
2. *Good health imparts reality to subtle creativity.*
3. *Wholeness quiets infinite phenomena.*
4. *The future explains irrational facts.*
5. *Imagination is inside exponential space-time events.*
6. *We are in the midst of a self-aware blossoming of being that will align us with the nexus itself.*
7. *Consciousness consists of frequencies of quantum energy. "Quantum" means an unveiling of the unrestricted.*
8. *Consciousness is the growth of coherence and of us.*
9. *We are in the midst of a high-frequency blossoming of interconnectedness that will give us access to the quantum soup itself.*
10. *Today, science tells us that the essence of nature is joy.*
11. *All endings are also beginnings. We just don't know it at the time.*
12. *A person who is happy is not happy because everything is right in his life, he is happy because his attitude towards everything in his life is right.*
13. *If you're walking down the right path and you're willing to keep walking, eventually you'll make progress.*
14. *We can never know what to want, because, living only one life, we can neither compare it with our previous lives nor perfect it in our lives to come.*
15. *How satisfying it is to leave a mark on a blank surface. To make a map of my movement - no matter how temporary.*
16. *You've got to jump off cliffs all the time and build your wings on the way down.*
17. *You cannot be truly humble, unless you truly believe that life can and will go on without you.*
18. *No man can be an exile if he remembers that all the world is one city.*
19. *The sadness which reigned everywhere was but an excuse for unfailing kindness.*
20. *In order to become prosperous, a person must initially work very hard, so he or she has to sacrifice a lot of leisure time.*

Table S3

Fake News Receptivity Scale

To the best of your knowledge, how accurate is the claim in the above headline?
1. *SABC Announces Introduction of Car Radio Licenses for Enhanced Broadcasting Services.*
2. *South African Health Products Regulatory Authority Grants Approval for Ivermectin Usage in COVID-19 Treatment*
3. *Qatar is threatening to create a global gas shortage in support of Palestine.*
4. *Internet shutdowns and social media monitoring are increasingly being used by African governments.*
5. *Jacob Zuma to receive Presidential pardon.*
6. *Sandton student arrested for horrific rape and murder of Joburg teacher.*
7. *Eskom, Transnet crisis damaging economy.*
8. *Mbeki wants elections to be held in August*
9. *Ramaphosa urges men, young boys to spearhead fight against GBV.*
10. *Elon Musk to meet Israeli president, Gaza hostage families.*

Table S4

Fake News Receptivity Scale

To the best of your knowledge, how accurate is the claim in the above headline?