**Dual pathway model of conspiracy beliefs:
Interactions between epistemic and socio-existential needs and resources**

Running head: Dual pathway model of conspiracy beliefs

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Abstract

Conspiracy beliefs are epistemically suspect beliefs that can have detrimental consequences. Despite its importance, conspiracy belief research currently lacks a unified, comprehensive framework. Here we explain conspiracy beliefs through separate but highly interconnected clusters of low levels of epistemic resources (comprehensive, accessible information) combined with high levels of epistemic need (a context of uncertainty) and low levels of socio-existential resources (trust) combined with high levels of socio-existential needs (a context of perceived threat). Taking COVID-19 conspiracy beliefs as a case study, we demonstrate that the dual pathway model is able to efficaciously explain the antecedents and consequences of these beliefs. We encourage future conspiracy research to take both the epistemic and socio-existential pathways into account, as well as their interactions.

Keywords: conspiracy belief, conspiracy theories, needs, motivation, trust

The dual pathway model: Epistemic and socio-existential needs and resources

Humans are social animals, which need information about their environment to survive – they are ‘information agents’ in social environments (Baumeister et al., 2018). Dual-inheritance theories suggest that in gathering information from their environment, humans crucially rely on their own senses and cognitive capacities (which are genetically inherited), *and* learn from trusted others (culturally inherited; Boyd et al., 2011; Danchin et al., 2004). Such dual pathways incorporate that people are biased to learn and believe concepts based on content as well as context (cf. Gervais et al., 2019): what people learn and believe depends on both the *informational content*, which varies in terms of a number of factors, such as accessibility and memorability, and the *cultural-learning context*, which is shaped by trust in the information sources. There are also important interconnections: When one’s own information is insufficient, such as when one is in complex situations or situations with high levels of uncertainty, individuals look to others who are deemed trustworthy and authoritative (i.e., trustworthy on a personal and communal level) to gain further information (Boyd & Richerson, 1988). Likewise, when one feels threatened, individuals may look to trustworthy individuals to help resolve the threat, but also to provide information as to who else may be trusted.

In the contemporary world, there are several sources of information to which we can turn, see Figure 1. When our own learning (through sensory interaction and experience with the world) does not suffice, we may turn to others we deem trustworthy, such as those in similar groups as us (e.g., with the same political convictions). If their information is also insufficient, we may turn to experts - authorities on information. However, in contemporary society we are unlikely to have personal relationships with authorities, and as such information is conveyed from authorities to us via media (e.g., newspapers), and an individual may trust certain media over others (e.g., choosing a conservative newspaper over a more progressive one). An interaction between information and trust takes place here too: Every source of information also has the power to convince individuals who to trust, who is perceived to convey correct information. For example, the media can influence individuals about which authorities to trust, and authorities can influence media which messages to transmit.

Figure 1. Schematic picture of trust in sources of information.

With regards to conspiracy beliefs then, it does not suffice to establish that certain conspiracy theories are more evocative or intuitively compelling (informational content), or to pinpoint the individual differences in cognitive capacities to grasp the information (which are necessary but not sufficient conditions), as sustained belief in conspiracy theories also depends on the (cultural learning) context. For example, in social media and populist environments, where elites (mainstream authoritative institutes) are often explicitly noted as untrustworthy, authority is transferred to those who are perceived to be credible, personalistic, and bring about a positive appraisal of oneself (Gergen, 1971). Thus, conspiracy theories play into heuristics evolved long ago (Anderson, 2019) and use them to their advantage. Therefore, individual differences or predispositions that affect learning context, or trust in information sources, are equally important to consider when investigating antecedents, or why conspiracy theories take root, see Figure 2.

Figure 2. People learn and believe things on the basis of information content and learning context, and certain antecedents (e.g., individual differences) create predispositions with regards to which information content and learning contexts are engaged with.

In mapping dual-inheritance theories onto the conspiracy literature, this model therefore incorporates – and extends – previous suggestions that conspiracy beliefs satisfy important psychological needs. Previous research concluded that conspiracy beliefs feed *epistemic* needs (the need for knowledge and clarity), *existential* needs (the need to feel safe, secure, and in control), and *social* needs (the need to feel like one belongs) (Douglas et al., 2017). Here we concur that these motives are central to conspiracy beliefs but propose that, in our model, the social motive exists within existential motive when it comes to conspiracy beliefs. In a conspiracy context existential and social needs are merged, because conspiracy contexts involve theories explaining complex events with unclear causes, but ones that specifically involve social factors (e.g., powerful actors or outgroups), which distinguishes it from just misinformation. Conspiracy theories aim to satisfy the human existential need for safety, for an environment without (or low levels of) threat, but they aim to do so specifically in a social context. By merging the existential and social needs into socio-existential needs, this model efficaciously explains how and why in conspiracy belief contexts the need to feel safe consistently co-occurs with the need to belong, and maps more directly onto the rich evolution literature (Boyd et al., 2011; Danchin et al., 2004).

Moreover, we distinguish between epistemic resources (i.e., information) and socio-existential resources (i.e., trust). While it stands to reason that epistemic resources are used to meet epistemic needs, and socio-existential resources to meet socio-existential needs, there are important interaction, see Table 1. Driven by epistemic needs, individuals aim to reduce uncertainty. *Content* antecedents lead individuals to take on certain *information*. *Context* antecedents lead individuals to

take on information from certain *trusted sources*. Driven by socio-existential needs, individuals aim to reduce *threat*. On an information level, this means attempting to explain *what* the threat is - e.g., *unknown causes*. On a trust level, this means explaining *who* is involved in the threat (e.g., who is/are the perpetrator(s), who is to be distrusted) and *who* has one's back (e.g., who is an ingroup member, who is to be trusted).

Table 1

Interactions between epistemic and socio-existential motives and resources

	Epistemic resources (information)	Socio-existential resources (trust)
Epistemic motives (reduce uncertainty)	What do I believe? Believable information (content antecedents)	Who do I believe? Trustworthy information sources (context antecedents)
Socio-existential motives (reduce threat)	What is/are the cause(s) of the threat? What are solutions to the threat?	Who caused the threat? Who is with me against the threat?

Though conspiracy theories are information, there may be different goals to endorsing and sharing conspiracy theories. If we analyse conspiracy beliefs as theories aimed at satisfying traditional epistemic goals (i.e., what is justified, true knowledge), that is as aimed towards discovering and sharing the truth, then it is confusing that conspiracy theories are typically unfalsifiable - every evidence against it can become part of the conspiracy theory ('epistemic black holes'; Boudry, 2020). Moreover, if the goal of conspiracy theories is to satisfy epistemic and socio-existential motives, then obtaining the truth is just one way of doing that, and one that is thwarted in the context of low epistemic and socio-existential motives. However, if we understand conspiracy theories from epistemic value pluralism, then it becomes clear that conspiracy theories satisfy other epistemic goals such as generality, simplicity, explanatory power and applicability (Baumberger, 2014): in response to changing social and political circumstances, conspiracy theories may become more plausible, acceptable, and pertinent instead (Byford, 2011).

In addition, socio-existential motives dictate that endorsing or sharing information does not just have the aim to gain truthful information, but also to signal social values, such as group identity, in an attempt to maintain one's reputation (demonstrating oneself to be worthy of trust) or to bond with others in a group (demonstrating one considers others to be worthy of trust). It may also contain social information as to who is not trustworthy (e.g., those alleged to be behind the threat), thus creating in-groups and out-groups. Narratives can have strong social effects, and the socio-existential motives are an important part of what drives conspiracy belief.

Summarising, we propose that conspiracy theories are attempts of individuals with low epistemic and socio-existential resources, in a context of high(er) perceived uncertainty and threat, to fulfil epistemic and socio-existential needs, and define them as follows¹: A conspiracy theory is a theory explaining an event that is complex and social or political, and which is perceived to involve unclear causes and powerful actors, and which presents threat and uncertainty, especially for individuals with low levels of epistemic (information) and socio-existential (trust) resources, who are motivated to satisfy their epistemic and socio-existential needs (i.e., attempting to reduce uncertainty and threat respectively), and do so influenced by content and context antecedents - see Figure 3.

Figure 3. The dual pathway model including an epistemic (top row) and socio-existential (bottom row) pathway representing social-psychological features of conspiracy events (pink boxes), how they are experienced (green boxes), and associated drives (yellow boxes) that steer (belief in) conspiracy theories.

The case of the COVID-19 pandemic

The COVID-19 pandemic is a hugely challenging time for many; not only do people have to deal with the possibility of catching a potentially debilitating and even lethal disease, they also have to deal with many unknowns about the future, whether about social, health, or economic consequences. Given the context of threat and uncertainty, the COVID-19 pandemic has unfortunately been a fertile ground for conspiracy theories. Conspiracy theories provide a way of coping with uncertainty (van Prooijen & Van Vugt, 2018) and threat, which is why conspiracy theories are likely to arise following societal

¹ Compare to other common definitions of conspiracy theories: “[A]ttempts to *explain the ultimate causes* of significant social and political events and circumstances with claims of *secret plots* by two or more *powerful actors*” (Douglas et al., 2019, p. 4; italics added) and “[P]roposed *explanation* of events that cites as a main causal factor a *small group of persons* (the conspirators) acting *in secret* for their *own benefit*, against the common good” (Uscinski et al., 2016, p. 2; italics added).

crises (van Prooijen & Douglas, 2017; van Prooijen & van Dijk, 2014). Not everyone endorses conspiracy beliefs, however.

One challenge in explaining conspiracy beliefs – in particular why they occur – is the diversity in theories and lack of an overarching framework (Goreis & Voracek, 2019). Here, we suggest that our dual pathway model is able to efficaciously explain the occurrence of COVID-19 conspiracy beliefs. Recapping the foregoing sections, this model posits that the antecedents and consequences of conspiracy theories may be explained through the convergence of low levels of, but a need for, *information* and high levels of, but a need for a reduction of, *uncertainty* (epistemic pathway), and low levels of, but a need for, *trust* and high levels of, but a need for a reduction of, *threat* (socio-existential pathway) (cf. Pierre, 2020), see Figure 4. This model also builds on previous theories of conspiracy beliefs (most notably Douglas et al., 2017), but importantly extends them. In this remaining part of this section, we summarise these findings broadly (for a review of COVID-19 conspiracy beliefs, see van Mulukom et al., 2020).

Figure 4. Schematic overview of separate but highly interconnected clusters of low levels of epistemic resources combined with high levels of epistemic need (lack of comprehensive, accessible information in a context of uncertainty) and low levels of socio-existential resources combined with high levels of socio-existential needs (lack of trust in a context of perceived threat)

Epistemic pathway. COVID-19 is still relatively unknown, in the sense that to date we still do not know the full effects of the disease, only gradually have come to know how it spreads, and still are dealing with possible variants evolving. During the pandemic an overwhelming amount of information has been released, which at times has been contradictory (e.g., whether or not wearing a mask helps prevent transmission of the virus) or retracted (e.g., on COVID-19 and hydroxychloroquine). This likely further fed into feelings of uncertainty and anxiety, especially in those with an intolerance of ambiguity (Alper et al., 2020; Larsen et al., 2020) and reduced open-minded thinking (Erceg et al., 2020; Stoica & Umbreş, 2020). For many people, learning in-depth medical information is unusual and they may pragmatically be hindered by lack of access to either formal education in the subject matter and/or sufficiently effective science communication outlets. Belief in COVID-19 conspiracy theories is associated with lower scientific (Čavojová et al., 2020) and analytical (Alper et al., 2020; Čavojová et al., 2020; Erceg et al., 2020; Fuhrer & Cova, 2020; Lazarevic et al., 2020; Sadeghiyeh et al., 2020; Stanley et al., 2020; Stoica & Umbreş, 2020; Teovanovic et al., 2020) reasoning, less correct knowledge and more false beliefs about COVID-19 (Čavojová et al., 2020), and other epistemically suspect beliefs (Bertin et al., 2020; Čavojová et al., 2020; Freeman et al., 2020; Georgiou et al., 2020; Miller, 2020a; Pavela Banai et al., 2020; Šrol et al., 2021). Knowledge associated with COVID-19 conspiracy beliefs has generally been gleaned from social media rather than more scientifically supported institutional websites, which are not considered trustworthy (Allington et al., 2020; Bridgman et al., 2020; Earnshaw et al., 2020; Freeman et al., 2020; Jiang et al., 2020; van Mulukom, 2020). As a result, simpler explanations and pseudoscientific health practice may be adopted instead of scientifically supported safeguarding behaviours (Allington et al., 2020; Bridgman et al., 2020; Earnshaw et al., 2020; Freeman et al., 2020; Jiang et al., 2020; van Mulukom, 2020).

Socio-existential pathway. Belief in COVID-19 conspiracy beliefs is also predicted by personality traits associated with distrust and paranoia (Kay, 2020; Kowalski et al., 2020) as well as general distrust in people (Mandalaywala et al., 2020; Tabri et al., 2020) and authorities such as governments (Achimescu et al., 2020; Earnshaw et al., 2020), healthcare institutions and scientists (Freeman et al., 2020; van Mulukom, 2020), a type of anti-elitism (Eberl et al., 2020) which may be associated with people's socioeconomic status or minority status. These low levels of trust become a toxic mix in an environment of threat. For example, lower levels of income and psychological well-being mean that a high risk of infection, negative changes to one's (socioeconomic) status, or negative information are particularly threatening (Earnshaw et al., 2020; Freeman et al., 2020), especially when one feels (politically) powerless, helpless or without autonomy, such as members of groups with a low perceived status (e.g., certain minority groups)(Earnshaw et al., 2020; Freeman et al., 2020). However, threat may also be felt by majority groups, such as those scoring high for conservatism (Calvillo et al., 2020; Havey, 2020; Miller, 2020b; Romer & Jamieson, 2020; Uscinski et al., 2020),

political extremism, and collective narcissism (Hughes & Machan, 2021; Sternisko et al., 2020), and the effects are very similar: Attempts to counter or deal with this threat are aimed at regaining the feeling of safety and being in control again (even if these may well misfire; Taylor et al., 2020), while not depending on the distrusted authorities, which might lead to stockpiling of goods such as food and provisions (Bai, 2020; van Mulukom, 2020) but also weapons (Imhoff & Lamberty, 2020). Increases in in-group protection or defensiveness (such as a result of perceived threat) has been associated with vaccine conspiracy beliefs and has fuelled outgroup hostilities including prejudice (Mandalaywala et al., 2020; Tabri et al., 2020), discrimination, and violence (Jolley & Paterson, 2020; Oleksy et al., 2020), especially in cases where the outgroup is considered the instigator or agent behind the threat (Oleksy et al., 2020). Finally, when uncertainty and threat combine, it can lead to reduced vaccination intentions or even anti-vaccination attitudes (Čavojová et al., 2020; Pummerer et al., 2021; Teovanovic et al., 2020), possibly driven by fear (Carleton, 2016a, 2016b).

Discussion

We suggest that the dual pathway model is an efficacious way of integrating a large and complex array of COVID-19 conspiracy theory research findings. It incorporates previous conspiracy belief theories (Douglas et al., 2017; Pierre, 2020), and extends it based on the rich human evolution research of motivations. This allows the theory to comprehensively include apparently disparate conspiracy research findings, and to explain why they co-occur. It also fits with more recent theories, such as Nera et al. (2021)'s distinction between upward-challenging and down-ward challenging conspiracy theories, which target powerful vs. vulnerable individuals/groups: While many COVID-19 conspiracies are upward-challenging, thus often endorsed by groups that are traditionally less powerful or are societally marginalized (e.g., low socioeconomic status –including younger individuals–, racial minorities, women), there are also down-ward challenging COVID-19 conspiracy theories, like the ones shared by conservatives (including the conservative president at the time) in the United States who are not a minority group. This may efficiently be explained by the fact that both types of group feel a threat that they are acting against, driven by socio-existential motives.

We have suggested a model for understanding and categorizing conspiracy theories as well as their antecedents and consequences. For the sake of precision and demarcation, we only focused on COVID-19 conspiracy beliefs, meaning that other conspiracy theories as well as studies about misinformation and scepticism more broadly were included only where directly relevant (see De Coninck et al., 2021 for an important comparison). However, it should be noted that consistent exposure to misinformation may be associated with similar antecedents, and may lead to similar consequences as those resulting from COVID-19 conspiracy beliefs (cf. Chan et al., 2020; Latkin et al., 2021). Indeed, many of situational, individual, and socio-cultural factors of vulnerability to misinformation overlap with the factors listed here, such as lower information literacy, minority

membership, distrust in media and authorities, and political polarisation (Hansson et al., 2021; Pickles et al., 2021). Though it was outside of the scope of the current paper, a larger overview may be able to also encompass misinformation and scepticism (as well as other content and/or mechanisms, such as other epistemically suspect beliefs).

The model also has practical implications: While focusing on and increasing civic scientific literacy (the knowledge of scientific facts, the ability to reason scientifically, and an understanding of how science works; Miller, 1998) is often suggested to stop the spread of misinformation and COVID-19 conspiracy theories, increasing it may not always be achievable, especially not in a short span of time. It thus becomes even more important to increase accessibility to (scientifically-grounded) information and communicating this information in a way that people with an intuitive thinking style or lower levels of education can relate to, from sources they trust, including communication via social media. Additionally, endorsements of theories such as COVID-19 conspiracy theories is often found in groups with lower levels of psychological well-being, education and income (Earnshaw et al., 2020; Freeman et al., 2020; van Prooijen et al., 2018), and information may be rejected on the basis that it threatens one's worldview (Nyhan & Reifler, 2019), meaning that focusing on building trust rather than focusing solely on conveying facts may be a more effective pathway. For example, trust in government predicted adherence to guidelines over everything else in 51,000 adults in the United Kingdom, in a longitudinal study (Wright et al., 2020). This would be in line with the suggestion that belief in conspiracy theories is also crucially motivated by socio-existential needs, not just epistemic needs.

Interestingly, the 'inoculation against fake news' method (van der Linden et al., 2020) is an example which has taken both pathways into account, even if it focuses on fake news or misinformation rather than conspiracy beliefs per se. Inoculation against fake news may be accomplished through an online game called 'Bad News' (Roozenbeek & van der Linden, 2019; van der Linden et al., 2020). In this game, participants earn six 'badges' by learning about how misinformation is spread (van der Linden & Roozenbeek, 2020), which consistently involve combinations of manipulating information/uncertainty and trust/threat, with regards to all relevant sources (e.g., other group members, media, authorities). The game deals with the tactics of impersonating a real (trusted) person or organisation and using Twitter bots until one has a trustworthy reputation, with how certain (emotional) content and group polarisation increases perceived threat, how false amplification and casting doubt on official narratives increases perceived uncertainty and reduces trust in authorities, as does the discrediting of opponents (e.g., through ad hominem attacks) and denying problems with conspiracy theories.

We hope that the current dual pathway framework encourages future research that incorporates measures from both pathways of the model and monitors their interactions. Further quantifying levels of trust and information along a continuum (cf. Franks et al., 2017) or assessing different aspects of trust, such as opinions about capability, benevolence, and integrity (Mayer et al.,

1995) would be elucidating. Specific attention should also be paid to a variety of sources of trust (interpersonal or authorities such as political parties, governments, scientists, or corporations) and information (social media, conventional news sources, sources associated with authorities). These sources likely have differential effects to certain types of conspiracy theories (e.g., political versus scientific). Textual analyses, such as through data mining, may further establish the content of specific conspiracy theories and how they relate to sources of information and trust, and situations of uncertainty and threat.

Overall, we suggest that future research may consider biases in both learning content and context, which crucially influence what people come to believe or disbelieve (Gervais et al., 2019). To understand the interaction between what misinformation (content) people learn and where they learn it (context), the conspiracy theory literature could look to appraisal theory (Lazarus & Folkman, 1984), social representation theory (Moscovici, 1984; Smith et al., 2015), social learning (Frith & Frith, 2012; Tamir & Hughes, 2018), and public information and Bayesian information updating frameworks (Danchin et al., 2004; Valone, 2007). The approach of the cognitive science of religion might furthermore be particularly helpful: It has a long tradition of assessing what types of religious beliefs persist (Norenzayan et al., 2006), and how and where people come to endorse such beliefs (Atran & Henrich, 2010). Moreover, its close collaboration with evolutionary scientists has provided enduring insights on how such beliefs came to be in the first place, through evolved cognitive architecture and cultural learning (Gervais et al., 2011; White et al., 2020). Extensions of the dual pathway model to broader (cultural) evolution research are suggested to be similarly worthwhile (cf. Danchin et al., 2004).

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