

1                   Conspiracy Theories: A Cultural Evolution Theory approach

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4   28<sup>th</sup> September 2021

5   For submission to the *Oxford Handbook of Cultural Evolution*

6   Edited by R. Kendal, J.J. Tehrani, & J. Kendal

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8   **Word count:** 5949 (exc. Abstract, key words, and reference list)

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## Abstract

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20 Conspiracy theories have been part of human culture for hundreds of years, if not millennia,  
21 and have been the subject of research in academic fields such as Social Psychology, Political  
22 Science and Cultural Studies. At present, there has been little research examining conspiracy  
23 theories from a Cultural Evolution perspective. This chapter discusses the value of Cultural  
24 Evolution approaches to understanding the diffusion of conspiracy theories. Focusing on the  
25 role of biases in cultural transmission, it argues that a key advantage of applying a Cultural  
26 Evolution approach to this phenomenon is that it provides a strong theoretical and  
27 methodological framework to bridge the individual, inter-individual and population level  
28 factors that explain the cultural success of conspiracy theories, with potential for producing  
29 insights into how to limit their negative influence.

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31 **Keywords:** cultural evolution; social transmission; social learning; conspiracy theories

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## 38 **1. Introduction**

39

40 Unverified tales of malign groups or organisations secretly orchestrating disasters, controlling  
41 others and acting against the interests of the majority are pervasive in contemporary society  
42 and examples can be found across the world (West & Sanders, 2003; Butter & Knight,  
43 2020a). As well as being widely believed, they have a long history of persistence. Tales of  
44 outgroup members conspiring to abduct ingroup children for horrifying blood rituals existed  
45 in Ancient Rome as anti-Christin conspiracy theories and persisted as the anti-Semitic ‘Blood  
46 Libel’ for centuries, before adapting to modern concerns about varying outgroups such as  
47 Hippies in the 1960s (Ellis, 1983), and are now reflected in recent accusations against  
48 celebrities and politicians in the QAnon conspiracy theory. As well as persisting in society  
49 and adapting with changing attitudes, conspiracy theories can vary wildly, even when  
50 ‘explaining’ the same event. Conspiracy theories about the 9/11 terrorist attacks ranged from  
51 the US Government allowing them to occur as a pretext to military action to the planes  
52 actually being rockets disguised by holograms (Aaronovitch, 2010). While conspiracy  
53 theories in general are pervasive in global society and history, only a few of these variants  
54 will become culturally successful. Sunstein (2014, p. 13) states that “the key question is why  
55 some [conspiracy] theories take hold, while many more vanish into obscurity”. In this chapter  
56 I argue that Cultural Evolution Theory (CET) is uniquely suited to answering this vital  
57 question and can offer valuable insights into the dissemination of conspiracy theories.

58

### 59 **1.1 Defining conspiracy theories**

61 When considering the evolution of cultural behaviour, it is important to define that behaviour.  
62 Defining conspiracy theories, however, has been a topic of debate between researchers and  
63 many operate on a common understanding rather than a universally accepted definition (Bost,  
64 2019). Drawing on typical definitions in prior research (e.g., Dentith, 2019; Douglas et al.,  
65 2019; Goertzel, 1994; Keeley, 1999), here ‘conspiracy theory’ is defined as an explanation of  
66 important events which alleges a secret plot by two or more powerful actors as a salient  
67 cause. Conspiracy theories are not inherently false or irrational (Dentith, 2014; Pidgen, 1995),  
68 as they may or may not be true, but (crucially) they are allegations without evidence (Douglas  
69 et al., 2019). ‘Mature’ conspiracy theories survive in society despite a failure to find  
70 supporting evidence, or a reliance on already disproved evidence (Keeley, 1999). This lack of  
71 evidence is what distinguishes *conspiracy theory* from *conspiracy*. A further complication is  
72 that beliefs about genuine conspiracies, through processes of social transmission, can evolve  
73 to include elements for which there is no evidence. For example, the Tuskegee Study of  
74 Untreated Syphilis (TSUS) was an unethical study of the natural history of untreated syphilis  
75 conducted in the USA between 1932 and 1972. It involved leaving hundreds of African  
76 American men with latent syphilis to live untreated while believing they were receiving  
77 medical treatment. TSUS is an example of a genuine medical conspiracy, however, there are  
78 also common misconceptions about it which verge on conspiracy theory. A common  
79 misconception is that the participants were *deliberately* infected with syphilis, rather than left  
80 untreated (Brandon et al., 2005; White 2005). CET provides a useful framework to examine  
81 this process of evolution from verified information about a genuine conspiracy, to conspiracy  
82 theory. For example, Stubbersfield et al (2018) examined how genuine news might be altered  
83 through social transmission to better fit cognitive biases.

84           While some argue that conspiracy theories are a necessary part of holding those in  
85 power accountable (see Basham, 2003; Dentith, 2016a, 2016b; Dentith & Orr, 2017) others  
86 argue that this is outweighed by their negative impact. Conspiracy theory belief is associated  
87 with reduced engagement with mainstream politics (Jolley & Douglas, 2014a), increased  
88 support for political violence and extremism (Bartlett & Miller, 2010; Imhoff et al., 2020;  
89 Uscinski & Parent, 2014), far-right activism (Appelrouth, 2017; Hofstadter, 1964; Sunstein &  
90 Vermule, 2009), and increased prejudice towards minority groups (Jolley, Meleady, &  
91 Douglas, 2020; Kofta et al., 2020). In public health, conspiracy theory belief is associated  
92 with reduced contraceptive use (Bogart & Thorburn, 2005), reduced intention to vaccinate  
93 (Jolley & Douglas, 2014b), avoidance of mainstream medicine (Lamberty & Imhoff, 2018;  
94 Oliver & Wood, 2014), reduced trust in medical experts (Oliver & Wood, *ibid*) and is a  
95 significant obstacle to constructive public responses to pandemics (Romer & Jamieson, 2020;  
96 Van Bavel et al., 2020). Health-related conspiracy theories also have implications beyond  
97 individual believers' health, as they can also be associated with increased prejudice, such as  
98 increases in anti-Asian discrimination associated with COVID-19 conspiracy theory beliefs  
99 (He et al., 2020; Roberto et al., 2020) and historical anti-Semitic conspiracy theories linking  
100 Jewish people with plague (Alcabes 2009; Brotherton, 2015). A key advantage of applying  
101 CET to understanding this issue is that it presents the possibility of developing novel  
102 interventions aimed at inhibiting the spread of harmful conspiracy theories or enhancing the  
103 spread of genuine information.

104

## 105 **1.2 Current approaches**

106

107 As a pervasive cultural phenomenon, conspiracy theories have been the subject of diverse,  
108 multi-disciplinary study. Significant and valuable insights have been provided by research in  
109 the fields of psychology, political science, sociology, history, information sciences, and  
110 media and cultural studies, among others (for multi-disciplinary overviews, see Butter &  
111 Knight, 2020a; Douglas et al 2019; Uscinski, 2019). The disparate nature of these research  
112 programmes has led the field to be somewhat fragmented (Butter & Knight, 2019; Dentith,  
113 2019) but broadly these approaches could be categories as research which seeks to examine  
114 and explain conspiracy theories as the products of dynamic socio-cultural processes which  
115 serve a particular cultural role to particular societies or groups, varying over time and  
116 between populations (social anthropology, cultural studies, philosophy and other humanities);  
117 and research which seeks to examine and explain conspiracy theories as the products of  
118 individual minds, with specific needs, mindsets and worldviews, and may focus on the  
119 potential negative impact of conspiracy theories (some psychology and some political science  
120 approaches).

121 For example, some psychological research (e.g., Douglas et al., 2017) proposes that  
122 individuals are attracted to conspiracy theories if they appear to meet the epistemic,  
123 existential, and social needs of those individuals. Other approaches in psychology have  
124 sought to identify the cognitive and/or personality factors underlying belief in conspiracy  
125 theories. This approach has tested for a general “conspiracy mindset” that distinguishes those  
126 who are likely to believe conspiracy theories from others (e.g., Brotherton, French, &  
127 Pickering, 2013; Imhoff & Bruder, 2014; Moscovici, 1987; Uscinski & Parent, 2014). Other  
128 researchers argue that, rather than a product of individual needs or mindsets, conspiracy  
129 theories function as collective attempts to understand and explain social and political  
130 realities, reflecting wider anxieties and concerns (Radnitz & Underwood, 2017; Singh, 2016),  
131 such as uncertainties surrounding power and agency (Knight, 2000), and that these concerns

132 are rational and ordinary rather than a product of a unique mindset (Dentith, 2014; Singh,  
133 2016). A key advantage of a CET approach is that it offers a framework to bridge these  
134 individual, inter-individual and population-level approaches. It is a framework which can  
135 explain conspiracy theories as the products of ‘ordinary’ cognitive and socio-cultural  
136 processes, while incorporating individual susceptibilities and wider contextual factors as  
137 influences on their cultural transmission and evolution.

138

## 139 **2 Social transmission biases**

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141 The transmission of conspiracy theories has received relatively little attention in research and  
142 is not well understood (Bangerter et al, 2020) and is an area where CET can make a valuable  
143 contribution. A central concept within CET is that indiscriminate copying of behaviour is  
144 rarely beneficial, so the social transmission of culture demonstrates biases. These social  
145 transmission biases will lead individuals to more readily copy or adopt behaviours based on  
146 the appeal of inherent characteristics (content dependent biases), the characteristics of the  
147 model there are copying, or the nature of the circumstances of transmission (both context  
148 dependent biases) (see Kendal et al, 2018). As with any culturally successful phenomena, we  
149 can expect the cultural evolution of conspiracy theories to have been shaped by these biases,  
150 and that popular conspiracy theories will reflect these biases in transmission.

151

### 152 **2.1 Content dependent biases**

153

154 The content of conspiracy theories has been recognised as playing an important role in their  
155 transmission (Bangerter et al, 2020). In CET, content dependent biases may be related to the  
156 effectiveness of a behaviour, or a payoff related to adopting the behaviour (something easier  
157 to assess in overtly goal directed behaviours), or it may be related to the inherent nature of the  
158 information. Research has examined the role of content biases in the evolution and  
159 transmission of a range of cultural phenomena, some of which is relevant to the  
160 dissemination of conspiracy theories, this includes ‘Fake News’ (Acerbi, 2019), urban  
161 legends (Stubbersfield et al, 2017a), and supernatural concepts (Barrett et al., 2009). This  
162 research has tested for and demonstrated several relevant content biases, including  
163 hyperactive agency detection (HAD), minimally counterintuitive (MCI) bias, social  
164 information bias, negativity bias, and threat bias.

165 As both function as narratives which provide explanations about the world around us,  
166 the parallels between conspiracy theories and religious mythology have long been recognised  
167 (Robertson & Dyrendal, 2019). Due to the close proximity of religious belief and conspiracy  
168 theories in terms of their function and, potentially, their psychological appeal, it follows that  
169 cognitive approaches used to explain religious belief may be usefully applied to  
170 understanding conspiracy theory belief (Dyrendal, 2020; Franks et al, 2013). Two relevant  
171 biases from research in the cognitive science of religion and related CET research on  
172 supernatural concepts are HAD and MCI bias.

173 HAD describes the tendency to attribute agency to events where none exists (Barrett,  
174 2004; 2007). Barrett (2004) argues that this is an evolved response, as false negatives (not  
175 assuming agency when there is an intentional agent) are more costly to survival than false  
176 positives (assuming agency when there none). Narratives and beliefs which posit intentional  
177 agents, such as spirits and gods, as the causes of events are likely to have cultural success by

178 appealing to HAD (Barrett, 2007). By their nature, conspiracy theories explain events as  
179 being caused by the actions of intentional agents. This is often the case with events which  
180 have natural causes without agency but are of great social significance. For example,  
181 COVID-19 (Van Bavel et al., 2020), the Zika virus (Kadri & Trapp-Petty, 2016; Klofstad et  
182 al., 2019), Ebola virus (Falade & Coultas, 2017; Abramowitz et al., 2017; Coltart et al., 2017)  
183 and the Bubonic plague (Alcades 2009; Brotherton, 2015) all have associated conspiracy  
184 theories which explain pandemics as the result of the actions of intentional agents rather than  
185 as natural occurrences. Further, studies have found a positive correlation between the  
186 tendency to attribute agency to inanimate objects and belief in a range of conspiracy theories  
187 (Douglas et al, 2016; Imhoff & Bruder, 2014).

188         By necessity, the unseen, intentional agents described in mythology are often  
189 attributed supernatural abilities of power, control, and knowledge. MCI bias has been used to  
190 explain the cultural success of such supernatural concepts. Boyer (1994) proposes that  
191 humans hold natural assumptions about the world around them, and that concepts which  
192 breach these assumptions are counterintuitive. Research has demonstrated that human recall  
193 and social transmission is biased towards information which contains a small number of  
194 counterintuitive concepts relative to a larger number of intuitive concepts, hence *minimally*  
195 counterintuitive bias (Barrett & Nyhof, 2001; Boyer & Ramble, 2001; Gregory et al., 2019;  
196 Norenzayan et al., 2006). Research has tested for MCI bias using traditional folktales (Barrett  
197 et al., 2009; Norenzayan et al., 2006), Ancient Roman Prodigia (Lisdorf, 2004), American  
198 superhero comic characters (Carney & Carron, 2017), and the urban legend Bloody Mary  
199 (Stubbersfield & Tehrani, 2013), and has provided valuable insights into the evolution of  
200 these cultural artefacts. Currently no research has tested for MCI bias in conspiracy theories  
201 directly. However, belief in conspiracy theories is associated with belief in the supernatural  
202 (Darwin et al, 2011; Lobato et al, 2014; van Prooijen et al, 2018) and counterintuitive

203 concepts are present in successful conspiracy theories (Franks et al, 2013). Conspiracy  
204 theories often attribute counterintuitive levels of control and knowledge to the agents behind  
205 the conspiracy. The attribution of supernatural powers of surveillance which were once the  
206 preserve of gods to conspiring human agents is illustrated nicely by the changing  
207 interpretation of the Eye of Providence. Once a medieval symbol of God's omnipresence, this  
208 symbol is now, perhaps, more commonly recognised as the watching eye of the Illuminati.  
209 Given these examples, the application of HAD and MCI bias theory to understanding the  
210 appeal of conspiracy theories could be fruitful.

211           By definition, conspiracy theories describe the social interaction of third parties. The  
212 powerful intentional agents which are alleged to be behind events are not presented in  
213 abstract but rather as identifiable, publicly known individuals and organisations. Some  
214 conspiracy theories put extensive focus on positing links between individuals and  
215 organisations or allege malign motives behind existing links. For example, the 'Deep State  
216 Mapping Project' is a project created by a QAnon believer which focuses on mapping the  
217 social links between individuals and organisations alleged to be involved in the 'Deep State'  
218 (see Paul, 2020). Prior research has recognised that the success of conspiracy theories is, in  
219 part, related to appealing to social needs and motivations (Douglas et al., 2017) but CET can  
220 explain some of their success as appealing not just to social identity needs, but to a content  
221 bias for social information. Based on evolutionary hypotheses that primate intelligence and  
222 language evolved to keep track of and maintain social relationships in complex social groups  
223 (e.g. Byrne & Whiten, 1990; Dunbar, 1998, 2003), Mesoudi and colleagues (2006) proposed  
224 that humans are biased towards noticing, remembering and sharing social information over  
225 other, equivalent information. Evidence for a social information bias has been found in  
226 studies of recall (Owens et al., 1979; Reysen et al., 2011), and social transmission (Aarøe &  
227 Petersen, 2018; McGuigan & Cubillo, 2013; Mesoudi et al., 2006; Stubbersfield et al., 2015)

228 as well as content analyses of urban legends (Stubbersfield et al., 2017a), online  
229 misinformation (Acerbi, 2019) and Facebook group posts (Berriche & Altay, 2020). As such  
230 a candidate explanation for some of the cultural success of conspiracy theories is the ubiquity  
231 of social information in their content.

232 Another content bias which is relevant to the diffusion of conspiracy theories is a bias  
233 for content which evokes negative affect (negativity bias). While not necessarily defined as  
234 inherently negative, conspiracy theories predominantly provide explanations for negative  
235 events and/or assume malevolent intentions on the part of the conspirators (Douglas et al.,  
236 2019) and are most prevalent during societal events which would evoke negative emotions  
237 (van Prooijen & Douglas, 2017, 2018). Negative sentiment has been shown to have an  
238 advantage over positive sentiment in a range of domains, including memory, perception, and  
239 impression formation (Baumeister et al., 2001; Rozin & Royzman, 2001). Within cultural  
240 evolution research negativity bias has been demonstrated in social transmission using  
241 experimental ‘transmission chain’ (Bebbington et al, 2017) and naturalistic open diffusion  
242 study designs (Walker & Blaine, 1991). Further, evidence of negativity bias has been found  
243 in cultural artefacts such as online social media (Hansen et al, 2011), ‘Fake News’ articles  
244 (Acerbi, 2019), and song lyrics (Brand et al, 2019). As such we might assume that the  
245 conspiracy theories are appealing, memorable and culturally successful because they appeal  
246 to a negativity bias. However, research has suggested that the appeal of conspiracy theories is  
247 related to the *intensity* of emotions they evoke rather than positive or negative sentiment (van  
248 Prooijen et al, 2021). Similarly, some research within CET has found that the intensity of  
249 emotion is more influential on social transmission than sentiment (Kashima et al., 2020;  
250 Stubbersfield et al, 2017b), as such CET is well placed to examine the relative influence of  
251 emotional intensity and sentiment in the social transmission of conspiracy theories.

252 A common argument for explaining negativity bias is that is the outcome of an  
253 evolved predisposition towards being vigilant of threats in our environment (Baumeister et  
254 al., 2001; Fessler et al., 2014; Rozin & Royzman, 2001). A bias for survival relevant or  
255 threat-related content has been found in attention (Yiend, 2010) and memory (Kang et al.,  
256 2008; Nairne, 2010; Nairne et al., 2019; Otgaar et al., 2010). Further, threat/survival  
257 information bias has been found in social transmission using recall-based (Moussaïd et al,  
258 2015; Stubbersfield et al, 2015) and selection-based (Blaine & Boyer, 2018) transmission  
259 chain designs. Conspiracy theories related to our health and survival have been present since  
260 at least the medieval period (Alcabas 2009; Brotherton, 2015), and are common and widely  
261 believed presently in the USA (Oliver & Wood, 2014), and UK (Stubbersfield et al, 2021).  
262 Frequently, these feature direct threats to our health or survival, such as claims that  
263 HIV/AIDS was deliberately created by the US government for genocidal purposes (Bogart &  
264 Thorburn, 2005) or authorities obscuring threats to our health, such as claims that  
265 corporations have covered-up the connection between mobile phones and cancer (Oliver &  
266 Wood, 2014). They also may feature threats to our fitness in the sense of threats to fertility,  
267 such as widespread claims that vaccinations are part of a plot to sterilise certain groups  
268 (Feldman-Savelsberg, 2000; Kaler, 2009). Interestingly, conspiracy theories don't always  
269 feature direct, fitness-relevant, threats to health or survival but also feature threats to abstract  
270 concepts that we may hold as important, such as liberty or democracy (Bangertter et al, 2020;  
271 Franks et al, 2013). This can be seen in longstanding and widespread claims that water  
272 fluoridation in the USA was a plot to pacify people and make them susceptible to  
273 communism (Armfield, 2007), or recent electoral fraud conspiracy theories (Enders et al.,  
274 2021). The extent to which this represents an extension of the psychological mechanisms  
275 involved in responding to direct threat-related information (similarly to how moral disgust is  
276 an extension of disgust felt towards contaminants or evidence of disease) or is unrelated and

277 relies on different systems is an area worthy of examination as it could give insights into the  
278 relative cultural success of conspiracy theories featuring different types of threat.

279         Of particular relevance to belief in conspiracy theories is the finding that statements  
280 which are framed negatively and threat-relevant, are more likely to be believed than  
281 positively framed equivalents (Fessler et al, 2014). Interestingly, this credulity bias towards  
282 negative or threat-related information varies between individuals. Fessler et al (2017) found  
283 that American conservatives were more likely to believe information about threats than  
284 liberals were, although the association between threat sensitivity and political affiliation is  
285 likely a complex one (Brandt et al, 2021). Conspiracy theories are found across the political  
286 spectrum (Goertzel, 1994), although are more frequently found among those who lack socio-  
287 political control (Douglas et al, 2019). A valuable application of CET would be investigating  
288 how this potential disparity in threat bias might influence the cultural success of different  
289 types of conspiracy theories among different populations.

290         As narratives, conspiracy theories are not limited to strictly one type of content. They  
291 are likely to have been shaped by these biases to feature both social information content and  
292 threat-relevant content in the form of social threats (i.e., threats presented by the coalition of  
293 others). A common feature of conspiracy theories, and their cultural success, is intergroup  
294 conflict, with a perceived outgroup threat playing a key role (Chichoka et al, 2016; van  
295 Prooijen, 2020; van Prooijen & Song, 2021). Successful conspiracy theories frequently  
296 feature a malign outgroup working in secret to harm the ingroup of the believer (van Prooijen  
297 & Lange, 2014). Research within social psychology has sought to understand in this within  
298 the framework of Social Identity Theory (Chichoka et al, 2016; Douglas et al, 2017).  
299 Typically, this focus is on examining associations between conspiracy theory belief and  
300 negative attitudes towards outgroups, suggesting that conspiracy theories inherently denigrate

301 outgroups, rather than examining whether the content of conspiracy theories has been shaped  
302 by these attitudes. While this research has provided valuable insights, applying CET provides  
303 a shift of focus onto how conspiracy theories evolved to appeal to these biases, with the  
304 potential for new insights into the role of conspiracy theories in prejudicial attitudes.

305         A key advantage of understanding the cultural success of conspiracy theories as the  
306 success of narratives which appeal to content biases, is that this explanation can explain why  
307 conspiracy theories continue to appeal to people despite their lack of functionality in terms of  
308 appeasing psychological needs (Douglas et al, 2017; van Prooijen, 2020) and why people are  
309 attracted to and share conspiracy theories without believing them (Bangerter et al, 2020). In  
310 the absence of belief, conspiracy theories may be shared as storytelling (Bangerter et al,  
311 2020) or due to their entertainment value (van Prooijen et al, 2021). Conspiracy theories have  
312 had considerable cultural success in popular fiction, with examples in film, comics, tv and  
313 other media (Arnold, 2008; Butter, 2020; Dorfman, 1980; Jameson, 1992; Letort, 2017;  
314 Melley, 2020). Both explicitly fictional and believed (or shared as true) conspiracy theories  
315 share similarities (Butter & Knight, 2020b) and the boundary between the two may also be  
316 unclear. The Lizard Elite conspiracy theory, which posits that shapeshifting reptilian aliens  
317 control Earth by taking on human form, likely has its origins in a 1929 short story written by  
318 pulp fiction writer Robert E. Howard (Barkun, 2003), suggesting the potential for fictional  
319 conspiracies to inspire or become conspiracy theory beliefs. The cognitive appeal of a  
320 conspiracy narrative can account for both the popularity of the X-Files as a fictional  
321 television programme and beliefs that the moon landings were faked.

322         A limitation of applying the discussed content biases to understanding conspiracy  
323 theories is their breadth. They might explain why conspiracy theories exist in general and are  
324 culturally successful (and may provide insight into enhancing the appeal of genuine

325 information, see Jiménez et al, 2018; Salali & Uysal, 2021) but given that most conspiracy  
326 theories by definition feature content which exploit these biases to some extent, it cannot  
327 necessarily explain the relative success of different conspiracy theories, or, given that these  
328 biases are generally argued to be universal, why conspiracy belief might vary between  
329 individuals and populations. To add to our explanatory power, we might consider examining  
330 more specific aspects of content as factors of cultural attraction (see Claidière & Sperber,  
331 2007 for discussion of attraction in cultural evolution). For example, some aspects of the  
332 conspiracy theory accusing outgroup members of abducting ingroup member children for  
333 blood rituals have varied across history, while other aspects, such as the child as a victim and  
334 the prominence of blood, have endured (Ellis, 1983). Previous research using this framework  
335 has suggested the practise of bloodletting is explained by universal cognitive mechanisms  
336 (Miton et al, 2015), and a similar approach could prove fruitful in examining which aspects  
337 of specific conspiracy theories may be driven by factors of cultural attraction.

338

## 339 **2.2 Context dependent biases**

340

341 While content biases refer to the characteristics of the information or behaviour being  
342 adopted through social transmission, context dependent biases refer to the state of the learner,  
343 the characteristics of the model being copied, and the circumstances of transmission. These  
344 context biases are likely to be relevant to the cultural evolution of conspiracy theories. A  
345 relevant state-based social transmission bias is ‘copy when uncertain’. This proposes that  
346 individuals will be more likely to copy from others (learn socially) when they are uncertain  
347 about their circumstances (Boyd & Richerson, 1985). The copy when uncertain bias has been

348 demonstrated in adults when they have low confidence in how to complete a task (Morgan et  
349 al, 2012), and when their knowledge is unreliable (Toelch et al, 2014). Uncertainty is strongly  
350 associated with conspiracy theory belief, as they emerge in response to societal crises as  
351 explanations for uncertain, complex circumstances (Franks et al, 2017; van Prooijen, 2011;  
352 van Prooijen & Douglas, 2017). Inducing uncertainty has been found to increase belief in  
353 conspiracy theories (van Prooijen, 2016; van Prooijen & Jostman, 2013; Whitson et al, 2015).  
354 Potentially, conspiracy theories may be advantaged by the increase in social information use  
355 associated with uncertain circumstances. A limitation in applying this bias to understanding  
356 conspiracy theory belief and wider cultural phenomenon is that the experimental research  
357 within CET has focused on uncertainty in how to complete practical tasks. This could be  
358 distinct from a more general feeling of uncertainty about societal events associated with  
359 conspiracy theory belief. As such, examining the impact of copy when uncertain bias on  
360 conspiracy theory belief could also provide valuable insights into how this bias operates in a  
361 wider, more naturalistic context beyond specific task-based paradigms.

362         Regarding model-based biases, a relevant bias is ‘copy successful individuals’  
363 (success bias), this is a tendency to copy individuals who are successful within the domain  
364 relevant to the behaviour being copied (Henrich & McElreath, 2003; Kendal et al, 2018;  
365 Laland, 2004). This intuitive bias has been demonstrated experimentally and in agent-based  
366 modelling, with a copy-successful individuals strategy outperforming simple asocial learning  
367 (Mesoudi, 2008; Mesoudi & O’Brien, 2008a; Mesoudi & O’Brien, 2008b). Within  
368 conspiracy theories, we might expect theories which are promoted by people with relevant  
369 domain success to be particularly successful in social transmission. While this has not been  
370 researched, it appears to be the case, particularly regarding health-related conspiracy theories.  
371 For example, the conspiracy theorist video ‘Plandemic: The Hidden Agenda Behind Covid-  
372 19’ (hereafter Plandemic) prominently featured Judy Mikovits, a former virologist, and draws

373 heavily on her supposed expertise (Funke, 2020). Plandemic became one of the most  
374 widespread pieces of COVID-19 misinformation, having been watched 1.8 million times and  
375 shared nearly 150,000 times on Facebook before it was removed (Andrews, 2020).

376           It is important to note, however, that at the time of recording Plandemic, Mikovits had  
377 become known for making discredited claims; having had a *Science* paper retracted and  
378 losing her job over concerns about her integrity (Enserink & Cohen, 2020; Kasprak, 2020).  
379 Mikovits was active in anti-vaccination and conspiracy theorist circles and spoke at anti-  
380 vaccination events prior to the filming of Plandemic (Kasprak, 2019; Merlan, 2020). This  
381 illustrates a common point regarding ‘expert’ conspiracy theorists: that success within a  
382 relevant domain is rarely contemporaneous with being a successful model of conspiracy  
383 theory belief. As such another, related transmission bias is relevant: copy prestigious  
384 individuals (prestige bias), which proposes that individuals will preferentially copy  
385 ‘prestigious’ models, i.e., those to which others show deference or greater attention (see  
386 Jiménez & Mesoudi, 2019). Prestige bias also accounts for copying the behaviour of a  
387 prestigious individual in domains irrelevant to their initial success, such as copying a popular  
388 footballer’s hair style (Henrich & Broesch, 2011). This bias has been demonstrated in  
389 experiments showing that adults prefer to copy from prestigious demonstrators (Brand et al,  
390 2021; Atkisson et al, 2012) and outside of the lab in behaviours such as dialect changes  
391 (Labov, 1972), teaching methods (Rogers, 1995), and tattoos (Boyd & Richerson, 1985). Of  
392 relevance to ‘expert’ conspiracy theorists, the opinions of experts have been shown to  
393 influence people’s opinions, even when that expert’s expertise is in a field unrelated to the  
394 topic at hand (Ryckman et al, 1972). We may see prestige bias exemplified in celebrity  
395 conspiracy theorists, i.e., those who have gained success and fame in domains such as music,  
396 film or sports and advocate conspiracy theories unrelated to their field of success. Examples  
397 include rapper Kanye West proposing that the coronavirus vaccine will be used to “put chips

398 inside us” (Solender, 2020) or actor Martin Sheen advocating conspiracy theories about the  
399 9/11 terrorist attacks (Carroll, 2012). Importantly, if learners have less knowledge of a topic,  
400 they will be less able to discern the domain relevance of a model’s expertise and may be  
401 more likely to attend to domain general prestige cues (Brand et al, 2021). With complex  
402 situations such as global pandemics, involving a range of complex domains such as virology  
403 and epidemiology, people may be as likely to copy models with what they perceive to be  
404 relevant expertise, as those with directly relevant expertise, making prestigious models  
405 espousing conspiracy theories as appealing as experts relaying genuine information.  
406 However, while model-based bias is apparently evident in the transmission of conspiracy  
407 theories, in that successful or prestigious individuals publicly support them, the impact of this  
408 on diffusion is not necessarily clear. In an experiment examining the influence of prestige  
409 bias, Acerbi & Tehrani (2018) found that it had no influence on participant behaviour.  
410 Similarly, in another experiment, Jiménez and Mesoudi (2020) found no evidence of prestige  
411 bias in the transmission of arguments. We should therefore be cautious about assuming the  
412 influence of model-based biases, and endeavour to investigate their role in the transmission of  
413 conspiracy theories.

414         When considering the circumstances of transmission, CET approaches have  
415 commonly examined how the frequency of a given trait in the population influences the  
416 likelihood of it being adopted by others. Researchers have proposed frequency-dependent  
417 biases in transmission, including both a conformist bias and an anti-conformist bias (Kendal  
418 et al, 2018; Denton et al, 2020). Within CET, conformity is defined as a *disproportionate*  
419 tendency to copy the most common variant within a population (Boyd & Richerson, 1985),  
420 distinguishing it from conformity within social psychology where it is simply a tendency to  
421 copy the majority (Mesoudi, 2011). While humans have been shown to display a conformist  
422 bias in social transmission experiments (Coultas 2004; Morgan et al, 2012; Muthukrishna et

423 al, 2016), typically, frequency-dependent biases (both conformist and anti-conformist) have  
424 been assessed at a population level by examining the frequency distribution of innovations.  
425 This has been done through various modelling techniques (Henrich, 2001; Krebs et al, 2020;  
426 Mesoudi & Lycett, 2009; Walters & Kendal, 2013) and by comparing the distribution  
427 frequencies of real data to those predicted by theoretical models (Acerbi & Bentley, 2014;  
428 Kandler & Shennan, 2013). As yet, none of these techniques have been applied to researching  
429 the diffusion of conspiracy theories. However, conformity may not be a clear explanation for  
430 their diffusion, as belief in specific conspiracy theories is rarely a majority behaviour within  
431 any population. For example, surveys in the UK and USA found belief in health conspiracy  
432 theories to be high but short of a majority for even those most widely believed (Oliver &  
433 Wood, 2014; Stubbersfield et al, 2021). However, a March 2021 poll found that the majority  
434 of US Republicans believe that the 2020 election was ‘stolen’ through widespread electoral  
435 fraud (Khan & Oliphant, 2021), so it may be a plausible diffusion mechanism in certain  
436 populations. The extent to which conspiracy theory diffusion is influenced by conformist or  
437 anti-conformist biases may be a fruitful area of research.

438         A further frequency-dependent influence on social transmission which operates at a  
439 smaller scale, is the number of models the learner is exposed to (Kendal et al, 2018).  
440 Experiment participants have been shown to be more likely to use information shared  
441 between multiple sources (Whalen et al, 2017) and to transmit narratives more faithfully  
442 along chains if they have multiple ‘cultural parents’ (Eriksson & Coultas, 2012). These  
443 findings suggest a bias in transmission for information shared between multiple demonstrator  
444 sources. This may be relevant to the Illusory Truth Effect, which has been used to explain the  
445 tendency to believe ‘Fake News’ (Hassan & Barber, 2021; Wu, 2020) and conspiracy  
446 theories (Grimes, 2021; Hasan & Barber, 2021). It suggests that repeated exposure to  
447 misinformation increases out tendency to believe it (Lynn et al, 1977; Dechêne et al, 2010).

448 Future research applying CET to conspiracy theories could examine how a multiple  
449 demonstrator bias in social learning may be related to or function as a mechanism behind the  
450 Illusory Truth Effect.

451

### 452 **3. Conclusions**

453

454 Individually none of the discussed social transmission biases inherently lead people to believe  
455 or transmit conspiracy theories over any other type of information which shares similar  
456 content or context. However, it is reasonable to imagine that in situations that generate  
457 uncertainty, people may have an increased propensity to adopt the behaviours of prestigious  
458 models, and if those behaviours include the transmission of narratives which appeal to  
459 content biases, then these narratives will have a distinct advantage in cultural evolution. The  
460 nature of typical conspiracy theorist models and the typical content of conspiracy theories  
461 make them well suited to succeed in such an environment and highly competitive against  
462 genuine information, which may be slow to arrive during periods of uncertainty and less  
463 appealing to content biases. As such, a valuable application of CET to researching conspiracy  
464 theories would be determining the relative influence of both context and content biases, as  
465 well as their potential interaction (see Berl et al, 2021 for an experimental approach to this  
466 question). This could provide insights which could inform efforts to counter the diffusion of  
467 conspiracy theories and improve the transmission of genuine information.

468 The application of CET to conspiracy theories has parallels in existing research. For  
469 example, Bangerter et al (2020) acknowledge that conspiracy theories evolve through  
470 transmission, and emphasise the importance of understanding transmission processes, and the

471 role of content in that transmission. Van Prooijen and colleagues have proposed that the  
472 cultural success of conspiracy theories can be explained by their entertaining and emotional  
473 content (van Prooijen et al 2021) and their appeal to evolved dispositions (van Prooijen &  
474 van Vugt, 2018), paralleling the content biases of CET (although it should be noted that van  
475 Prooijen and van Vugt, 2018, argue against a by-product hypothesis, instead proposing  
476 conspiracy theories evolved as a part of a psychological mechanism responding to hostile  
477 coalitions). Additionally, DiFonzo (2019) argues that rumour psychology would be a  
478 valuable framework for understanding conspiracy theories with its focus on conspiracy  
479 theories being transmitted between interacting individuals and group dynamics, sharing  
480 similarities with a CET approach. ‘Herd behaviour’, where rational individuals with limited  
481 information will defer to crowd behaviour (Sunstein, 2014a; 2014b), and ‘follow-the-leader’  
482 (Zaller, 1992), where individuals take cues from ideologically like-minded leaders, have been  
483 proposed as mechanisms explaining the spread of conspiracy theories (Dewitt et al, 2019).  
484 These have parallels in the frequency-dependent and model-based biases of CET  
485 respectively. An advantage of CET is that it includes parallels of these distinct approaches  
486 within a single theoretical framework. Further, it comes with a suite of research approaches  
487 well suited to considering the role of content and context in social diffusion at different scales  
488 (from inter-individual to population level), including transmission chain and social learning  
489 experiments, corpus analysis, modelling, and cultural phylogenetic analysis. However, any  
490 application of CET to conspiracy theories should not simply add another approach to an  
491 already fragmented area of research, it should consider the contributions of previous research  
492 and seek to incorporate valuable research into a CET framework.

493         The potential value in applying CET to understanding the success of conspiracy  
494 theories has been recognised. For example, Bendixen (2020) considers this as part of a  
495 cultural evolution approach to science communication, and Bendixen and Purzycki

496 (forthcoming) discuss it within the wider context of a cultural evolution approach to the  
497 psychology of belief. Salali and Uysal (2020) refer to cognitive biases in explaining the  
498 appeal of misinformation about the origins of COVID 19. At present, however, there has  
499 been little research which applies CET directly to the understanding of conspiracy theories.  
500 Nonetheless, there are strong potential benefits to applying CET to this issue. This chapter  
501 has reviewed aspects of CET relevant to our understanding of the appeal of conspiracy  
502 theories, their social transmission, and the nature of their dissemination in populations. A key  
503 advantage of applying CET to this phenomenon is that it provides a strong theoretical  
504 framework to bridge the individual, inter-individual and population level factors that explain  
505 the cultural success of conspiracy theories. Further it can provide testable predictions about  
506 the nature of the cultural evolution of conspiracy theories. Applying a Cultural Evolution  
507 approach to the study of conspiracy theories has the potential to provide unique and valuable  
508 insights into understanding their cultural success and as such can produce novel insights into  
509 how to improve efforts to limit their negative influence.

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517 **References**

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