

## Correspondence

# Creationism and conspiracism share a common teleological bias

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Teleological thinking — the attribution of purpose and a final cause to natural events and entities — has long been identified as a cognitive hindrance to the acceptance of evolution, yet its association to beliefs other than creationism has not been investigated. Here, we show that conspiracism — the proneness to explain socio-historical events in terms of secret and malevolent conspiracies — is also associated to a teleological bias. Across three correlational studies ( $N > 2000$ ), we found robust evidence of a teleological link between conspiracism and creationism, which was partly independent from religion, politics, age, education, agency detection, analytical thinking and perception of randomness. As a resilient ‘default’ component of early cognition, teleological thinking is thus associated with creationist as well as conspiracist beliefs, which both entail the distant and hidden involvement of a purposeful and final cause to explain complex worldly events.

Although teleological thinking has long been banned from scientific reasoning, it persists in childhood cognition, as well as in adult intuitions and beliefs [1,2]. Noting similarities between creationism (the belief that life on Earth was purposefully created by a supernatural agent) and conspiracism, we sought to investigate whether teleological thinking could underlie and associate both types of beliefs. First, we sought to establish whether teleological thinking, classically associated with creationism, was also related to conspiracist beliefs. College students ( $N = 157$ ; Supplemental Information) filled a questionnaire including teleological claims and conspiracist statements, as well as measures of analytical thinking, esoteric and magical beliefs, and a randomness perception task.

Promiscuous teleology — the tendency to ascribe function and a final cause to nonintentional natural facts and events — was significantly, albeit little to moderately, correlated with conspiracist beliefs scales, (e.g.,  $r(155) = 0.21$ ;  $p < 0.05$ ; 95% CI [0.05, 0.35]). In addition, teleological thinking was negatively related to analytical thinking,  $r(155) = -0.30$ ;  $p < 0.05$ ; 95% CI [-0.44, -0.15], and positively to esoteric beliefs,  $r(155) = 0.36$ ,  $p < 0.05$ , 95% CI [0.22, 0.49], which in turn were both related to acceptance of conspiracist beliefs (respectively  $r(155) = -0.30$ ,  $p < 0.05$ , 95% CI [-0.44, -0.15] for analytical thinking and  $r(155) = 0.44$ ,  $p < 0.05$ , 95% CI [0.30, 0.56] for esoteric beliefs). Confirming previous research, randomness perception was unrelated to conspiracism [3].

Second, we drew on a large-scale survey in a representative sample of the French population [4] ( $N = 1252$ ) to test if creationism and conspiracism are directly associated. We found a substantial correlation,  $r(1250) = 0.51$ ,  $p < 0.05$ , 95% CI [0.47, 0.55] (Figure 1A), which remained high when controlling for age and educational level,  $pr(1082) = 0.45$ ,  $p < 0.05$ , 95% CI [0.40, 0.50]. This correlation also remained significant and moderate to high in every religious group ( $r$  from 0.32 to 0.80) and for every political orientation on the French political spectrum ( $r$  from 0.36 to 0.61).

Having found confirming evidence for our hypothesis of a link between conspiracism and teleological thinking, as well as creationism, we then investigated more closely this association using more refined measures to distinguish between agent-based and purpose-based explanations. A diverse sample was recruited online ( $N = 733$ ) and filled a new set of questionnaires (Supplemental Information). Teleological thinking was again moderately correlated with conspiracism,  $r(727) = 0.31$ ,  $p < 0.05$ , 95% CI [0.24, 0.37] and, as expected, with creationism,  $r(728) = 0.32$ ,  $p < .05$ , 95% CI [0.25, 0.38], which in turn was positively related to conspiracism (Figure 1B),  $r(730) = 0.27$ ,  $p < 0.05$ , 95% CI [0.20, 0.34], thus replicating our previous results.

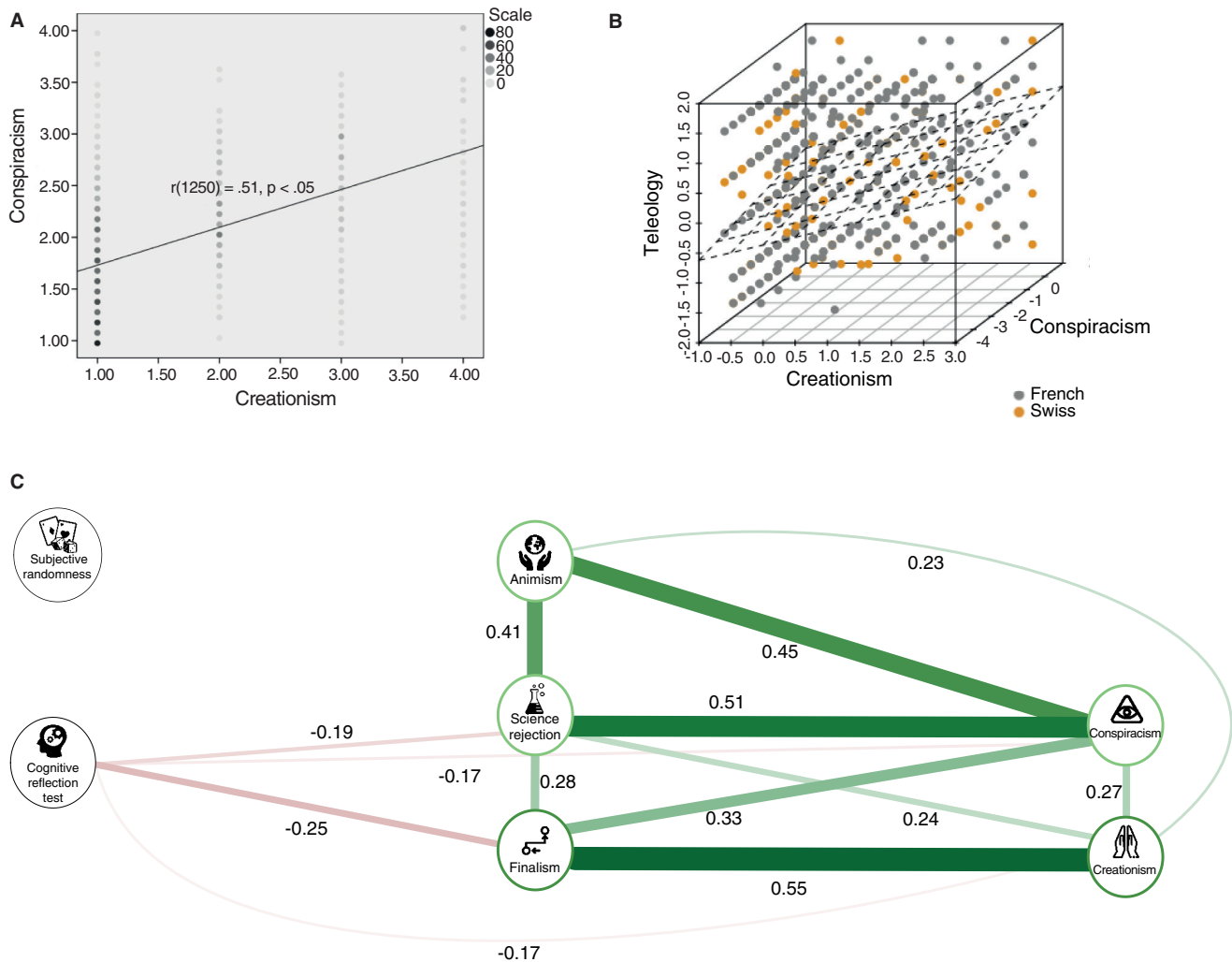
In order to investigate the correlational structure of our different measures of causal and intentionality perception, we

ran a principal component analysis (with orthogonal rotation, Varimax method). The *KMO* index proved satisfactory ( $KMO = 0.81$ ), and Bartlett’s test of sphericity significant,  $chi^2(21) = 1242.86$ ,  $p < 0.05$ . Following Kaiser-Guttman criteria (eigenvalues  $> 1$ ), we retained a two-factor solution. We called the first factor ‘animism’, as it clusters measures involving attribution of consciousness and agency to nonliving entities. The second factor, ‘finalism’, tapped instead into the attribution of purpose and final causes to the universe and human life. We then conducted a series of multiple regressions with creationism and conspiracism as dependent variables, and animism and finalism, as well as science rejection, analytical thinking and randomness perception, as predictors. Finalism was the main predictor for creationism,  $\beta = 0.55$ ,  $t = 17.19$ ,  $p < 0.05$ , followed at a smaller degree by animism,  $\beta = 0.23$ ,  $t = 6.93$ ,  $p < 0.05$ , whereas rejection of science and animism were the main predictors for conspiracism (respectively  $\beta = 0.30$ ,  $t = 8.80$ ,  $p < 0.05$ ;  $\beta = 0.32$ ,  $t = 9.65$ ,  $p < 0.05$ ), jointly with finalism to a slightly lesser extent,  $\beta = 0.23$ ,  $t = 7.26$ ,  $p < 0.05$  (Figure 1C; Supplemental Information).

Collectively, these results identify teleological thinking as a new predictor of conspiracism, independent of agency perception, anthropomorphism, science rejection, analytical thinking and randomness perception. As a finalist and purpose-driven view of the natural world, teleological thinking has long been associated with creationism and identified as an obstacle to the acceptance of evolutionary theory [5,6]. We suggest that this powerful cognitive bias extends to social and historical events, and nowadays to conspiracy narratives. As such, creationism could be seen as a conspiracist belief system (indeed, involving the ultimate conspiracy theory: the purposeful creation of all things [7]), and conspiracism as a type of creationist belief targeting socio-historic events (e.g. specific events have been purposefully created by an all-powerful agency).

Because teleological and animist thinking are part of children’s earliest intuitions about the world and are resilient in adulthood [8,9], they thus could be causally involved in the acquisition of creationist and





**Figure 1. A common thread between creationism and conspiricism.**

(A) Scatterplot of creationism by conspiricism in study 2. (B) Scatterplot of creationism, conspiricism and teleology in study 3 (z-transformed scores), across French and Swiss samples. (C) Q-graph of Pearson zero-order correlations between predictors (subjective randomness, cognitive reflection test (CRT), animism, rejection of science, finalism) and criteria (conspiricism, creationism) in study 3 (line thickness and darkness indicate strength of association).

conspiracist beliefs. However, our results do not rule out the possibility that acceptance of such beliefs could, conversely, favor a teleological bias. Yet, in both cases, the ‘everything happens for a reason’ or ‘it was meant to be’ intuition at the heart of teleological thinking not only remains an obstacle to the acceptance of evolutionary theory, but could also be a more general gateway to the acceptance of anti-scientific views and conspiracy theories.

#### SUPPLEMENTAL INFORMATION

Supplemental Information including experimental procedures, one figure and three tables can be found with this article online at <https://doi.org/10.1016/j.cub.2018.06.072>.

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