ORIGINAL ARTICLE

Morally offensive scientific findings activate cognitive chicanery

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Abstract

We document a mutually reinforcing set of belief-system defenses—cognitive chicanery—that transform "morally wrong" scientific claims into "empirically wrong" claims. Five experiments (four preregistered, $N = 7040$) show that when participants read identical abstracts that varied only in the sociomoral desirability of the conclusions, morally offended participants were likelier to (1) dismiss the writing as incomprehensible (motivated confusion); (2) deny the empirical status of the research question (motivated postmodernism); (3) endorse claims inspired by Schopenhauer's stratagems (*The Art of Being Right*) and the Central Intelligence Agency's (CIA's) strategies for citizen-saboteurs; and (4) endorse a set of contradictory complaints, including that sample sizes are too small and that anecdotes are more informative than data, that the researchers are both unintelligent and crafty manipulators, and that the findings are both preposterous and old news. These patterns are consistent with motivated cognition, in which individuals seize on easy strategies for neutralizing disturbing knowledge claims, minimizing the need to update beliefs. All strategies were activated at once, in a sort of belief-system "overkill" that ensures avoidance of unfortunate epistemic discoveries. Future research should expand on this set of strategies and explore how their deployment may undermine the pursuit of knowledge.

KEYWORDS
censorship, ideology, moral offense, motivated reasoning, science

INTRODUCTION

What is good and what values should be upheld are fundamental questions for every collective. Historically, religious leaders and rulers took on the role of deciding such matters, seeking credibility by claiming exclusive insights into truth. In contemporary Western societies, where religious influence has waned, science has increasingly assumed this role—not as a moral arbiter but as a key source of knowledge that offers at least guidance on which values are worth pursuing.[1,2] Many contemporary scientific efforts are regarded as a force for good, with research informing policies ranging from health and climate change to social justice and governance.[3,4] However, there are limits to calling upon science to improve the human condition.[5] Because moral values are shaped by cultural, ideological, and subjective commitments, scientific inquiry does not and cannot always align with prevailing moral expectations. It can also expose inconsistencies, challenge assumptions, or

even contradict deeply held beliefs. Some findings may transgress social norms so strongly that they provoke discomfort or even rage; they *offend*.

A dispassionate critic might uphold Hume's fact-value distinction[6] and contend that empirical claims merit no moral weight—and even "offensive" findings should be judged strictly on their methodology and their power to expand the scope of inquiry. Yet, when individuals encounter information that contradicts their convictions, engaging with it in good faith does not come naturally. Instead of welcoming dissonant evidence as an opportunity to refine one's understanding, people may process it selectively, setting stricter evidentiary standards for disagreeable claims.[7–11] Regardless of whether such tendencies are justified, moral concerns appear to influence evaluations of science.[12–14] In the present work, we sought to (1) identify specific cognitive strategies people deploy when confronting undesirable empirical claims, including those previously theorized but not yet empirically demonstrated, (2) explore the breadth and flexibility of such strategies by testing several potential options including those that directly contradict one another, and (3) experimentally test whether such strategies appear *motivated* by offense and subsequent desires to suppress the content.

THEORETICAL FOUNDATION

Festinger's[15] proposed theory of *cognitive dissonance* has been the focus of much research and debate over nearly seven decades.[16–18] The theory posits that people are motivated to reconcile contradictory ideas by bringing them into line—into congruence. Although some precise details of Festinger's theory have not panned out,[19] the notion that human psychology attempts to sidestep or reconcile contradictory information and beliefs is uncontroversial. And similar to later cognitive miser theories,[20,21] cognitive dissonance theory proposed that most of the time, most people picked dissonance reduction strategies guided by a "principle of least effort." For example, if an individual who firmly believes in equality between men and women on all important metrics is confronted with evidence demonstrating that men tend to be better leaders than women, a low-effort, decisive reconciliation would be to conclude that the provider of this evidence is a "sexist" whose views can be dismissed out of hand.

Respecting science as a source of informational authority means that encountering offensive findings will create dissonance—either the science is wrong, or one's beliefs require updating. In some cases, this dissonance may be more easily resolved by questioning the science than by adjusting convictions. Indeed, convictions can be quite immutable, as documented in numerous disciplines.[22–24] Therefore, the most cognitively comfortable conclusion could be that the research itself does not reach standards worthy of scientific authority.[25,26] This could occur through elevating the evidentiary threshold needed to prove a claim, devaluing its credibility, or dismissing the legitimacy of the inquiry altogether.

The motivated reasoning literature[27] has documented many tendencies that allow individuals to preserve their beliefs without engaging with the substance of the contradictory claims. For example, people selectively seek out information that supports important beliefs and avoid information that challenges them[28–30] and are more skeptical and critical of the latter sort of information.[14,31,32] Such partiality is especially strong when evaluating scientific research viewed as morally offensive, as documented in several contributions. For example, Stewart-Williams et al.[33,34] found that people were more critical of scientific research reporting male- (vs. female-) favoring sex differences in part because they considered male-favoring sex differences as harmful to women. Similar patterns have been replicated among scientists themselves: social psychologists who felt it would be bad to disseminate research reporting a genetic contribution to sex differences were also less likely to believe there could be a genetic contribution.[35] Likewise, across a set of taboo conclusions in behavioral science, psychology professors who had stronger desires to discourage research into the conclusions also tended to believe the conclusions were false.[12] These patterns suggest that moral aversion to scientific findings and subsequent desire to prevent their dissemination may also motivate people to find fault with and reject such undesirable empirical claims. The present research explores specific strategies epistemic agents might employ as a means of denigrating the quality of information and avoiding its assimilation, as well as the degree to which motivated thinkers are prepared to endorse logically contradictory claims as long as those claims point to a preferred conclusion about scientific studies and authors.

Expanding on cognitive evasion strategies

We seek to expand our understanding of the various ways in which people avoid assimilating dissonant scientific research. We term these strategies *cognitive chicanery* and pull influence from previous work and theorizing. We test whether people employ these strategies when confronted with morally undesirable empirical claims. These are not intended to be exhaustive but rather to highlight the kinds of tactics individuals may use when evaluating research, with the aim of identifying patterns of partiality as they unfold in actual discourse rather than remaining in the realm of abstract theorizing.

Motivated confusion

Cull[36,37] has examined the strategic use of ignorance (or purported ignorance) to undermine arguments, a phenomenon he terms *dismissive incomprehension*. Rather than reflecting a genuine lack of understanding or seeking clarification with the hope of fostering engagement, the aim of claiming incomprehension is the opposite: to publicly delegitimize speakers by alleging that the research is too incoherent to warrant serious consideration. Almost 200 years ago, Schopenhauer[38] proposed a similar idea:

> If you know that you have no reply to the arguments
> which your opponent advances, you may, by a fine

stroke of irony, declare yourself to be an incompetent judge: 'What you now say passes my poor powers of comprehension; it may be all very true, but I can't understand it, and I refrain from any expression of opinion on it.' In this way you insinuate to the bystanders, with whom you are in good repute, that what your opponent says is nonsense. (p. 32).

Clark et al.[7] provided preliminary empirical support for this phenomenon, termed *motivated confusion*, by demonstrating that the perceived offensiveness of a scientific claim correlates with reported difficulty in understanding that claim. We can think of little reason why a lack of clarity should cause a claim to be more offensive. If one cannot discern the meaning of a claim, to what does one take offense? It thus seems plausible that, instead, incomprehension can be caused *by* moral offense and a desire to disengage with the offensive content.

Motivated postmodernism

People might also dismiss certain lines of inquiry, not by refuting empirical findings, but by questioning the legitimacy of the research questions themselves; an evasion strategy we call "motivated postmodernism." Critics may argue that certain lines of inquiry are conceptually misguided, that the phenomena in question are too subjective or socially constructed to be measured, or that the very act of reducing a morally charged issue to quantifiable data is ethically or politically objectionable. Our expectations rest on postmodern critiques of scientific knowledge, which question the assumption that phenomena can be meaningfully quantified or studied through positivist methodologies. Postmodernism, by its nature, challenges the assumption that objective reality can be captured through empirical methods, instead emphasizing the role of power, language, and social context in shaping knowledge.[39] As Hutcheon[40] notes, postmodernism is characterized by a commitment to "doubleness" or "duplicity" (p. 1), often engaging in deconstruction of accepted knowledge rather than its affirmation. Although difficult to define singularly, postmodernism is tightly intertwined with political discourse, particularly in its critique of dominant cultural narratives. By framing certain investigations as inherently flawed, oppressive, unanswerable, or not a matter for empirical research, individuals can justify the rejection of offensive scientific results seemingly on principle.

Stratagems for always being right

Schopenhauer's *Art of Being Right*[38] listed 38 stratagems for winning any argument, even if one's opponent clearly has the epistemic upper hand. Forwarded as a set of tricks (and apparently inspired by his observations of his own adversaries), the book is a forerunner of our ideas about cognitive chicanery. We test a small selection of these stratagems: the extension ("carrying your opponent's proposition beyond its natural limits… so as to exaggerate it"), odious categoriza-

tion ("If you are confronted with an assertion, there is a short way of getting rid of it… by putting it into some odious category; even though the connection is only apparent, or else of a loose character."), and *ad personam* ("A last trick is to become personal, insulting, rude, as soon as you perceive that your opponent has the upper hand… It consists in passing from the subject of dispute… to the disputant himself, and in some way attacking his person.").

Strategies for saboteurs

In 2008, the Central Intelligence Agency (CIA) of the United States declassified the *Simple Sabotage Field Manual*,[41] a document that provided ideas for how citizen-saboteurs could interfere to prevent enemies from achieving their goals. We test a small selection of strategies from their guidelines on interfering with organizations and production: "When possible, refer all matters to committees, for 'further study and consideration'. Attempt to make the committees as large as possible…"; "Haggle over precise wordings of communications, minutes, resolutions"; and "Be worried about the propriety of any decision—raise the question of whether such action as is contemplated lies within the jurisdiction of the group or whether it might conflict with the policy of some higher echelon."

Testing the incoherence required to maintain coherence

We also tested an additional set of contradictory criticisms that may be activated by moral offense. We selected criticisms that feasibly could be made about research or researchers that contradict other criticisms that feasibly could be made: that the sample size is too small; the elevation of personal anecdotes (or "lived experience") as more informative than data; that the findings are preposterous and that they are old news; and suggesting the researchers are unintelligent or they use their high intelligence to manipulate others. In our earlier studies, we focused primarily on motivated confusion and motivated postmodernism; but in later studies, and particularly in Study 4, in our study here we expand our set of cognitive evasion strategies. We anticipate that any "full" list of strategies to be long—and we invite future researchers to contribute more ideas. The present work is preliminary.

Making "motivated" claims

We contend that cognitive evasion strategies are motivated by desires to dismiss dissonant claims with minimal effort or engagement. Although we test and report correlations between moral offense and desires to suppress scientific findings with various types of cognitive chicanery, such results would only be suggestive of the possibility that moral outrage is motivating the use of such strategies. To test the *causal* influence of moral offense on cognitive chicanery, we used classic procedures in the motivated reasoning and bias literature[13,14,42] by

randomly assigning participants to read one of two identical research descriptions that address the same research question with the same methods but reach different conclusions. For example, we use political ideology and well-known ingroup biases[13,43,44] to elicit more or less offense depending on whether one's political ingroup or outgroup is portrayed more favorably. It seems unjustifiable to declare that writing is less clear (as in motivated confusion) or that the research question cannot be addressed with data (as in motivated postmodernism) or that the sample size is too small when the words "liberal" and "conservative" are swapped, but the writing, the research question, and the sample size are identical. By demonstrating cognitive chicanery using this "matched materials" design, we can be more confident that such tendencies are indeed motivated by desires to dismiss the findings.

METHODS AND RESULTS

Study 1a: Method

Study 1a tested the causal relationship between morally offending people and their embracing the evasive tactics of confusion and postmodernism (consistent with claims that these are "motivated" evaluations). The study manipulated the results of research descriptions to be more or less offensive while holding constant other details of the research. Throughout the paper, we interpret results that reach a small effect per Cohen's standards.[45]

Participants ($n = 397$, $M_{age} = 40.45$, SD = 11.11, 217 male, 173 female, seven nonbinary or unreported; $M_{conservatism} = 3.80$, SD = 1.99) were recruited from CloudResearch. Participants were asked to evaluate three abstracts (regarding Mentorship; Open-mindedness; and diversity, equity, and inclusion (DEI)) that were said to have been submitted for an academic conference. Participants were randomly assigned to one of two conditions for each of the three abstracts, in which the conclusions were manipulated for offensiveness to different subsets of people (e.g., men or women, political liberals or conservatives). We also varied the materials; two of the abstracts were reasonably clear and one was unclear. A sample abstract (alternative conditions separated with a slash) is presented below.

Open-mindedness abstract: We leveraged a nationally representative survey conducted by a polling organization to test for political differences in open-mindedness to scientific evidence. We selected a set of recent scientific findings that would support or contradict the policy preferences of those on the political left and those on the political right and presented these findings to our 1278 participants. We found that both liberals and conservatives were willing to update their beliefs when presented with scientific evidence that *supports* their political preferences, and to virtually identical degrees. However, we found that liberals/conservatives were much less likely to update their beliefs in response to scientific evidence that contradicts their political preferences. In other words, liberals/conservatives were far more open-minded and willing to change their beliefs in response to scientific evidence than were conservatives/liberals.

Our confusion index ($\alpha s = 0.83$–0.95) contained five items answered on relevant 7-point scales: "How difficult versus easy was it to understand the methods the researchers used to test their research question?, How difficult versus easy was it to understand what pattern the researchers found?, How would you evaluate the clarity of the writing?, To what extent were the methods described in sufficient detail? Overall, how difficult versus easy was it to understand what the researchers were trying to communicate?" All items were reverse-scored so higher values indicate more confusion. Our postmodernism index ($\alpha s = 0.93$–0.95), contained four items (answered on 7-point agreement scales): "It does not even make sense to ask this research question in the first place. This is not a research question that can be answered with the collection of data. This issue is too complex to be addressed with research, and Universal claims of this sort can never be warranted by data."

Suppression desires were measured with three items (answered on 7-point agreement scales, $\alpha s = 0.92$): "This abstract should not be accepted for presentation at a conference, The clarity of this abstract is too low for presentation at a conference," and "If this abstract were presented at a conference, others would find it too difficult to understand." Next, participants rated the offensiveness of each abstract on three items (on 7-point agreement, $\alpha s = 0.93$–0.94): "The results reported in this study were offensive. The results reported in this study are likely to cause harm. The results reported in this study are unfair." Last, participants reported demographics, including their ideology on a 7-point scale from "extremely liberal/left-leaning" to "extremely conservative/right-leaning."

Study 1a: Results

As displayed in Table S1, consistent with motivated confusion and postmodernism, desires to suppress the research were moderately associated with confusion, $rs = 0.37$–0.50, $ps < 0.001$, and strongly associated with postmodernism, $rs = 0.51$–0.84, $ps < 0.001$, for all three abstracts. Offense was weakly associated with confusion for the Mentorship, $r = 0.09$, $p = 0.070$, and Open-mindedness abstracts, $r = 0.10$, $p = 0.039$, but weakly negatively associated with confusion for the DEI abstract, $r = -0.11$, $p = 0.028$, indicating mixed evidence overall. However, offense was consistently and strongly associated with postmodernism across all three abstracts, $rs = 0.63$–0.70, $ps < 0.001$.

As an experimental test of whether confusion and postmodernism were motivated by moral offense and desires to suppress research, we conducted a 2×2 multivariate analysis of variance (MANOVA) to test the interaction between the gender manipulation and participant gender (nonbinary responses dropped) on all outcome variables regarding the Mentorship abstract. As displayed in Table S2, participants were more offended by the abstract asserting that men were better mentors than the one asserting that women were better mentors, $\eta_p^2 = 0.06$, $p < 0.001$, but otherwise, no other effects reached minimum thresholds for small effects. Nonetheless, as displayed in Figure 1, in the condition in which men (vs. women) were described as better mentors, women
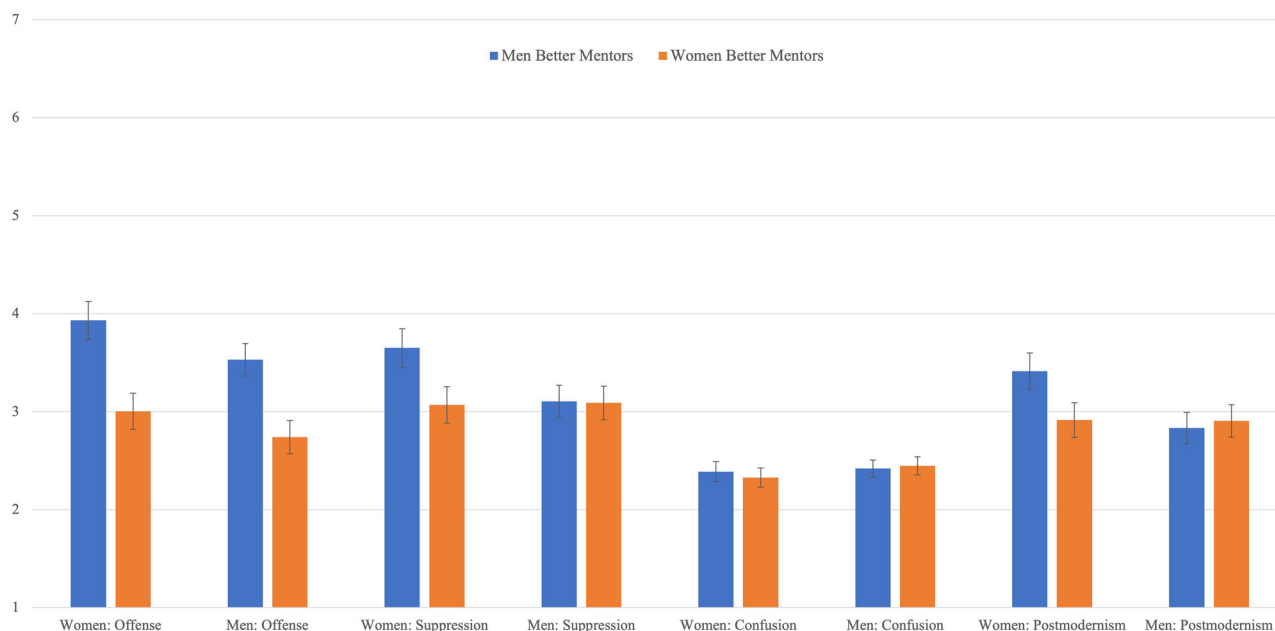
FIGURE 1 Interaction between experimental condition and participant gender (women vs. men) on evaluations of the Mentorship abstract in Study 1a.

were more offended, $p < 0.001$, had stronger desire to suppress, $p = 0.031$, and marginally more strongly endorsed postmodernism, $p = 0.055$, indicating only weak support. There was virtually no difference between conditions among women for confusion, $p = 0.672$. Among men, other than higher offense, the experimental manipulation had virtually no effects, $ps > 0.75$.

Next, we regressed condition, Z-scored participant ideology, and their interaction on all outcomes for the Open-mindedness and DEI abstracts. As displayed in Table S3, for the Open-mindedness abstract, we observed significant interactions between the experimental manipulation and participant ideology on offensiveness, semipartial $r = -0.17$, and suppression desires, semipartial $r = -0.15$, indicating that our manipulation was successful. To probe the pattern of interactions, we calculated simple slopes at +1 and −1 SD from the scale midpoint. As displayed in Figure 2 panels A and B, liberals were more offended by ($b = 0.85$, $p < 0.001$) and had stronger desires to suppress ($b = -0.64$, $p = 0.006$) the result that conservatives were more open-minded ($b = 0.85$, $p < 0.001$). Conservatives were nonsignificantly more offended by ($b = -0.36$, $p = 0.108$) and had stronger desires to suppress ($b = 0.39$, $p = 0.116$) the finding that liberals were more open-minded, indicating weaker effects for conservatives in this study.

We also observed potential evidence for motivated confusion and motivated postmodernism with significant interactions between the condition and participant ideology on confusion, semipartial $r = -0.23$, and postmodernism, semipartial $r = -0.11$. As displayed in Figure 2 panel C, more right-leaning (+1 SD) participants reported greater confusion when liberals were said to be more open-minded ($b = 0.61$, $p < 0.001$), and more left-leaning (−1 SD) participants reported greater confusion when conservatives were said to be more open-minded ($b = -0.42$, $p = 0.004$). Similar but weak patterns were observed for

postmodernism, which were significant only for conservatives: conservatives $b = -0.049$, $p = 0.022$; liberals: $b = 0.30$, $p = 0.247$ (Figure 2, panel D).

The manipulation for the DEI abstract (which was deliberately designed to be confusing) was less successful, with only one significant interaction effect (semipartial $r = -0.16$, $p < 0.001$): liberals showed no difference across conditions, $b = -0.05$, $p = 0.830$, whereas conservatives were more offended by the abstract in favor of DEI, $b = 1.09$, $p < 0.001$. There was also no significant interaction for suppression desires (semipartial $r = -0.04$). For these reasons, these results are reported in Table S3 and Figure S1.

Study 1a: Discussion

Study 1 uncovered mixed support for motivated confusion and motivated postmodernism. Desires to suppress the research were moderately associated with more confusion, but offense had mixed (and small) associations with confusion, and we observed evidence for motivated confusion in the Open-mindedness abstract, but not the Mentorship abstract. Offense and suppression desires were strongly associated with more postmodernism. For the Mentorship abstract, women more strongly endorsed postmodernist dismissal when the findings portrayed men favorably than when the same study portrayed women favorably (men showed no equivalent effect). For the Open-mindedness abstract, liberals and conservatives tended to endorse postmodernism more when the findings portrayed their ingroup unfavorably but with weak effects. These findings provide preliminary but far from decisive support for the claim that confusion and endorsements of postmodernism may be motivated, in part, by moral distaste for research findings.
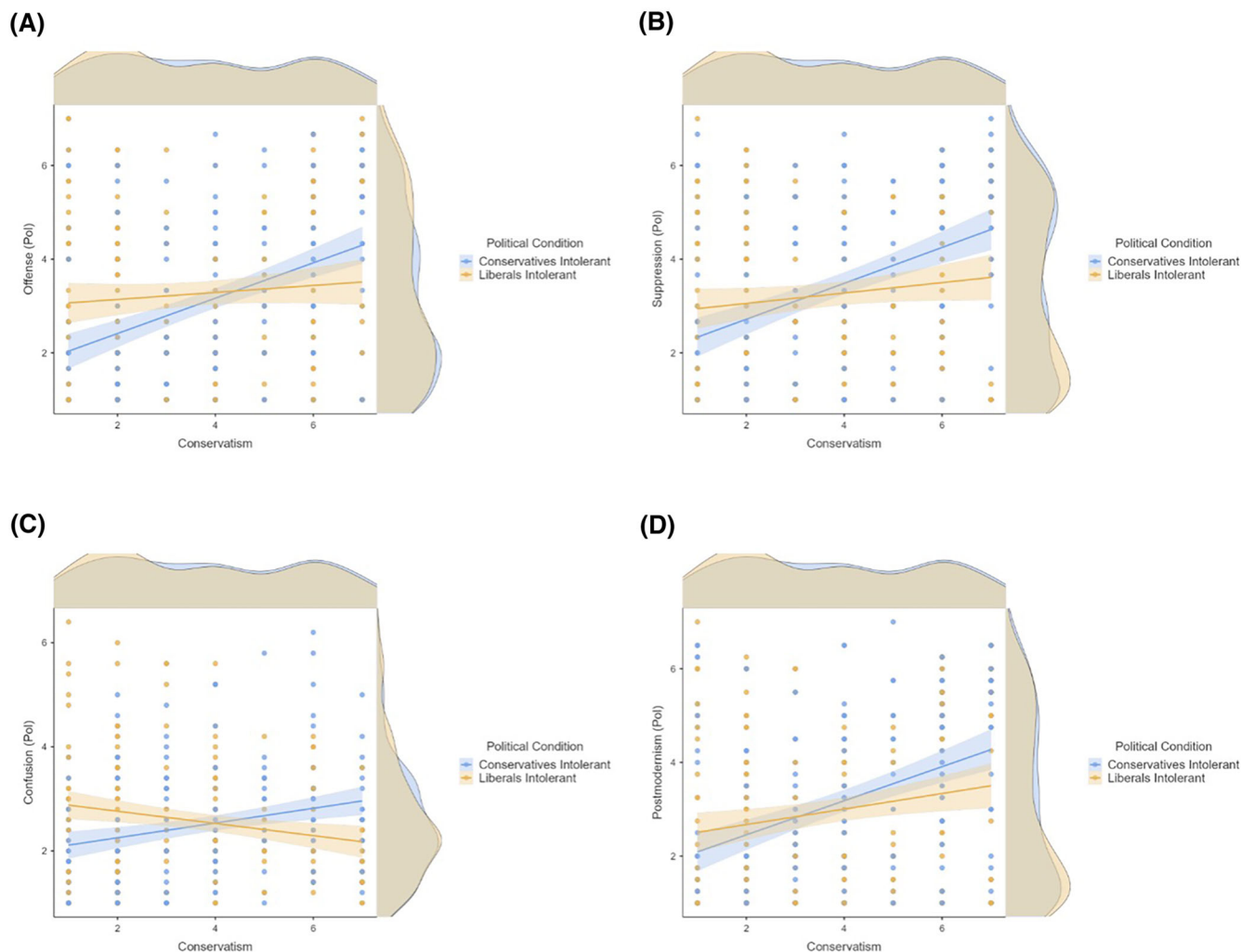
(A)

(B)

(C)

(D)

FIGURE 2 Interactions between experimental manipulation and participant ideology on evaluations of the Open-mindedness abstract.

Study 1b: Method

Study 1b replicated Study 1a with a few adjustments. Because the DEI manipulation was weak, this abstract was dropped. To avoid possible floor effects, we sought to create more ambiguity in the clarity of the Mentorship and Open-mindedness abstracts. We also recruited a larger sample from a different platform to increase power and generalize to a different sample of online US adults. Study 1b was pre-registered. This preregistration was followed exactly except we did not conduct analyses with the PROCESS macro,[46] and because of a division of labor miscommunication, offensiveness was accidentally described as an exploratory mediator rather than a manipulation check as intended.

We recruited 600 participants on Prolific; 599 provided some data (M_{age} = 42.76, SD = 14.16; 298 men, 278 women, 10 nonbinary, 13 unreported or missing gender). We used prescreening to recruit equal numbers of men and women and Republican and Democrat voters (based on the 2020 general election). Participants leaned slightly left ($M_{ideology}$ = 3.84, SD = 2.18).

Similar to Study 1a, participants read two abstracts regarding gender differences in mentorship ability or political differences in open-mindedness and were randomly assigned to one version of each (Mentorship: men better vs. women better; Open-mindedness: liberals more open-minded vs. conservatives more open-minded). All questions were the same, all indices, αs = 0.85–0.93.

Study 1b: Results

For both abstracts, offense was weakly to moderately associated (rs = 0.19–0.24, ps < 0.001), and suppression desires strongly associated with confusion (rs = 0.63–0.67, ps < 0.001). Offense (rs = 0.49–0.50, ps < 0.001) and suppression desires (rs = 0.63–0.66, ps < 0.001) were moderately to strongly associated with postmodernism (see Table S4).

Using a 2 × 2 MANOVA, we tested the interactions between the gender manipulation and participant gender (nonbinary responses dropped) regarding the Mentorship abstract. The manipulation was moderately successful. As displayed in Table S5 and Figure 3, participants were more offended by the abstract asserting that men were better mentors than the one asserting that women were better, η_p^2 = 0.06, p < 0.001. However, the condition had virtually no effect on suppression desires. Nonetheless, we observed some evidence
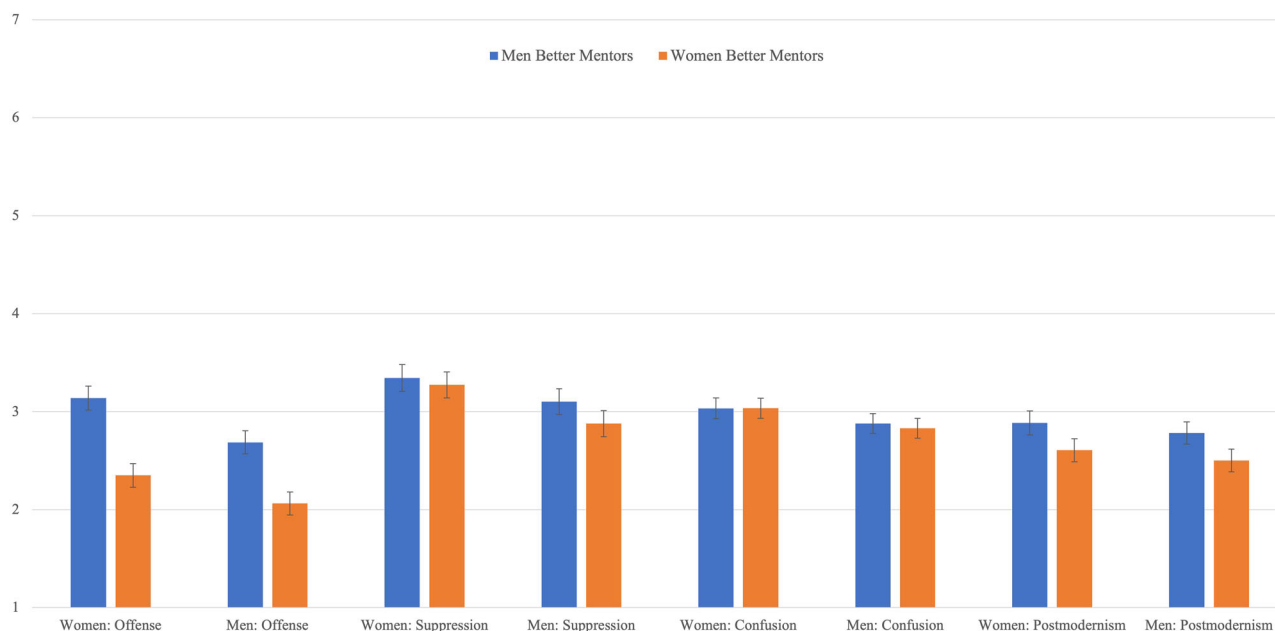
FIGURE 3 Interaction between experimental condition and participant gender (women vs. men) on evaluations of the Mentorship abstract.

for motivated postmodernism, with participants endorsing postmodernism more in the more offensive condition, $\eta_p^2 = 0.01$, $p = 0.017$. We observed no evidence for motivated confusion for the Mentorship abstract.

As displayed in Table S6, for the Open-mindedness abstract, we observed significant interactions between the manipulation and participant ideology on offensiveness, semipartial $r = -0.22$, and suppression desires, semipartial $r = -0.13$, indicating our manipulations were successful. As displayed in Figure 4 panels A and B, liberals ($b = -0.61$, $p < 0.001$) and conservatives were more offended when the outgroup was portrayed as more open-minded ($b = 0.72$, $p < 0.001$), and conservatives ($b = 0.57$, $p = 0.008$) and liberals ($b = -0.36$, $p = 0.062$) had stronger desires to suppress the finding that portrayed their outgroup favorably.

We observed little evidence for motivated confusion as the interaction, although in the expected direction, did not reach a small effect, semipartial $r = -0.06$ (Figure 4, panel C). We did, however, observe evidence for motivated postmodernism, semipartial $r = -0.11$. As displayed in Figure 4, panel D, liberals adopted more postmodernist attitudes when conservatives were portrayed as open-minded ($b = -0.48$, $p = 0.007$), and conservatives showed a nonsignificant trend in the opposite direction ($b = 0.21$, $p = 0.269$).

Study 1b: Discussion

Once again, the findings were mixed and weak regarding motivated confusion. Although offense and suppression desires were associated with more confusion for both abstracts, our experimental manipulations had little to no influence on confusion. Thus, this study provides

virtually no evidence that offense is causing confusion. Future studies will test this possibility further.

Support for motivated postmodernism was stronger. Offense and suppression desires were strongly associated with postmodernism for both abstracts. For the Mentorship abstract, participants more strongly endorsed postmodernism in the offensive condition (in which men were said to be better mentors). Similarly, for the Open-mindedness abstract, participants more strongly endorsed postmodernism when their political outgroup was portrayed as more open-minded. In both cases, the abstracts considered more offensive and that elicited stronger suppression desires also elicited higher endorsements of postmodernism. These findings suggest that endorsements of postmodernism are—to a small degree—motivated by moral aversion to scientific findings.

Study 2: Method

Study 2 aimed to improve generalizability and ecological validity. First, we expanded our investigation to six research summaries from Clark et al.,[47] of which five were modified from real scientific papers and one included an experimental manipulation to test more definitively whether confusion and postmodernism may be motivated. We slightly modified our confusion measure and added a comprehension check. We again increased our sample size and recruited from a new platform using a US census-matched template. Study 2 was preregistered, and there were no deviations.

We recruited 800 participants from CloudConnect with a US census-matched template; 802 provided some data ($M_{age} = 45.25$, SD = 15.73; 396 men, 400 women, three nonbinary, three unreported or missing gender). Participants leaned slightly left ($M_{ideology} = 3.54$, SD
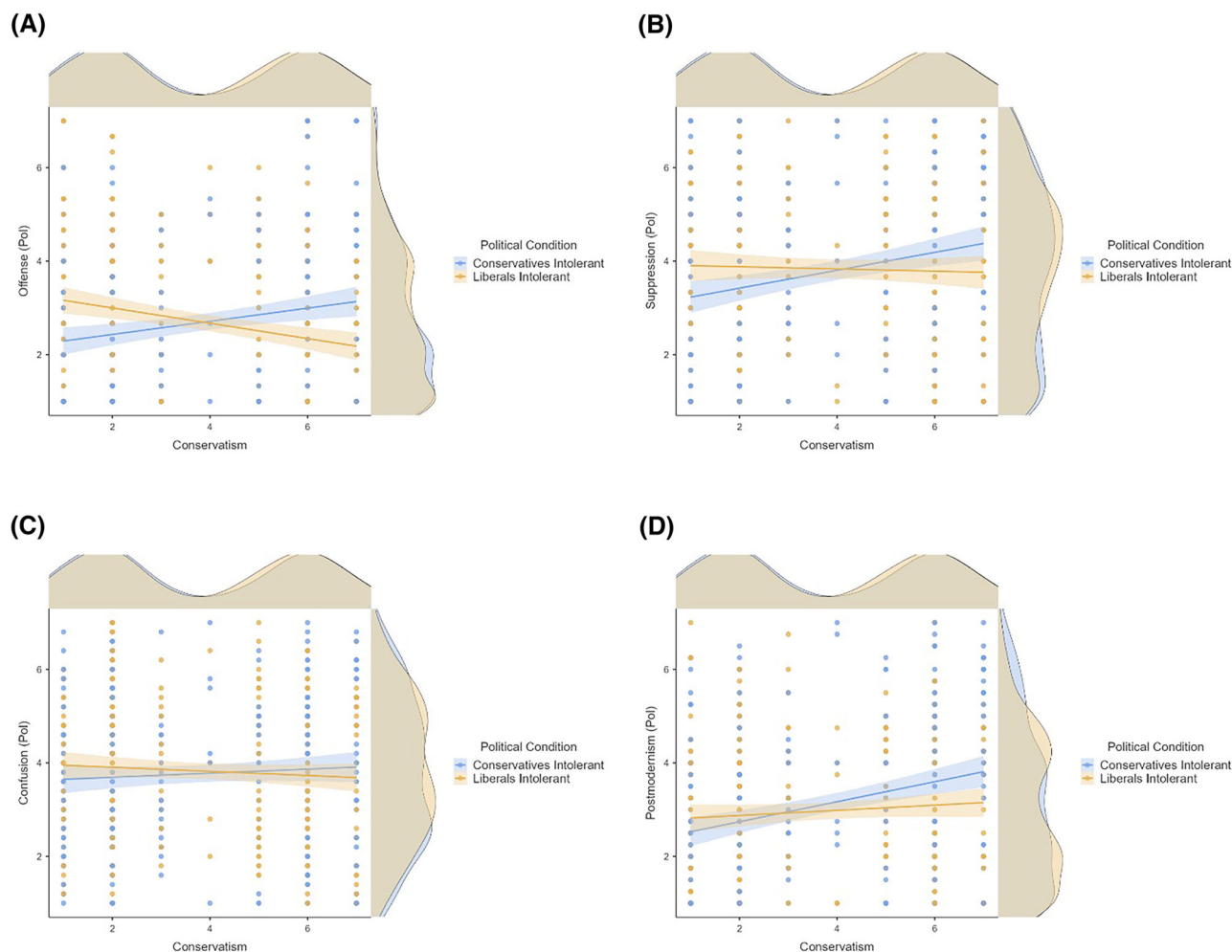
FIGURE 4 Interactions between condition and participant ideology in Study 1b.

= 1.82). Participants were randomly assigned to read two of five non-manipulated research descriptions and one of two versions of a sixth experimentally manipulated research description portraying either liberals or conservatives as more intolerant. Immediately following, participants had to pass a comprehension check to move forward.

Our motivated confusion index included four items answered on relevant 7-point scales: "To what extent is the writing clear versus unclear?, To what extent is there sufficient or insufficient detail to comprehend the findings?, How easy versus difficult would it be for an average person to comprehend what pattern the researchers found?, and In general, how clear versus confusing is this research description?" Our postmodernism index was nearly the same as in previous studies except the word "universal" was dropped from the final item to "claims of this sort can never be warranted by data." We then assessed suppression desires on two items (on 7-point agreement scales): "The quality of this research is too low for presentation at a conference and This research should not be accepted for presentation at a conference." After participants responded to all three abstracts, they rated each for offensiveness as in earlier studies.

Study 2: Results

Across abstracts, offense was weakly to moderately associated with confusion ($rs = 0.26$–0.35, $ps < 0.001$) and postmodernism ($rs = 0.22$–0.56, $ps < 0.001$), and suppression desires were moderately to strongly associated with confusion ($rs = 0.52$–0.62, $ps < 0.001$) and postmodernism ($rs = 0.40$–0.73, $ps < 0.001$; see Table S7). Although not dispositive, these findings are consistent with the possibility that confusion and postmodernism are motivated in part by moral offense and desires to suppress offensive research.

For the experimental abstract, we tested the interactions between condition and Z-scored participant ideology on our outcome variables. As shown in Figure 5 and Table S8, there were significant interactions for offense and suppression desires, indicating our manipulations were successful. Both liberals ($b = 0.44$, $p = 0.002$) and conservatives ($b = -1.28$, $p < 0.001$) were more offended and had stronger desires to suppress research (liberals $b = 0.87$, $p = 0.004$; conservatives $b = -1.78$, $p < 0.001$) when the conclusions portrayed their ingroup as relatively intolerant.
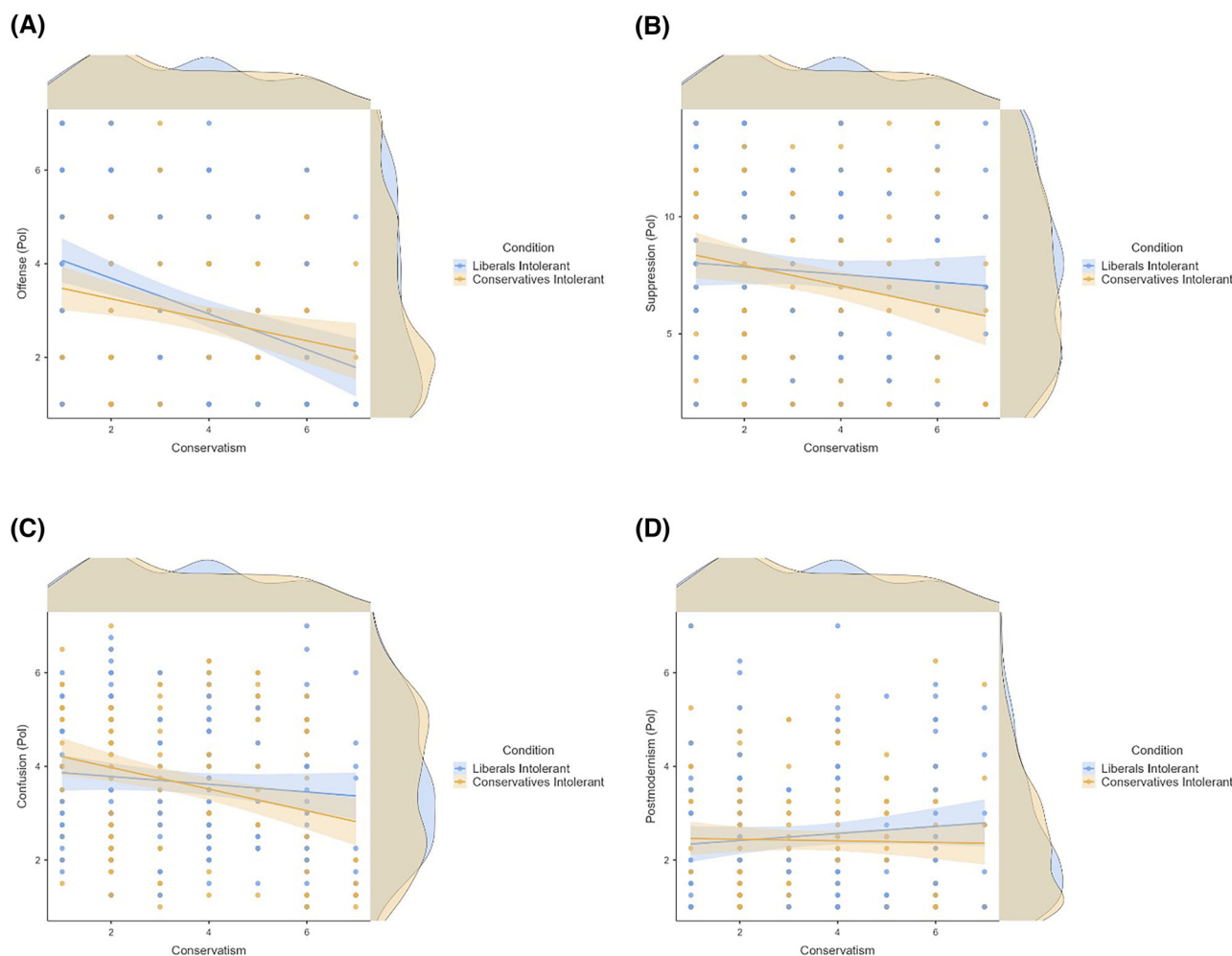
(A)

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FIGURE 5 Interactions between condition and participant ideology in Study 2. All interactions $p < 0.001$.

There were also significant interactions ($ps < 0.001$) on both confusion and postmodernism, indicating that such tendencies might be motivated. Both liberals and conservatives reported more confusion (liberals $b = 0.20$, $p = 0.096$; conservatives $b = -0.52$, $p = 0.001$) and endorsed more postmodernist views of the research (liberals $b = 0.38$, $p = 0.003$; conservatives $b = -0.68$, $p < 0.001$) when the conclusions favored their outgroup.

Study 2: Discussion

Study 2 demonstrated consistent support for motivated confusion and motivated postmodernism. We found strong associations between moral offense and suppression desires with reported confusion and endorsements of postmodernism. Providing support for the "motivated" component, when identical research descriptions were experimentally manipulated to produce greater moral offense and stronger suppression desires, participants reported that the abstract was less clear and agreed more strongly that the research question could not be addressed with data. It is hard to make a rational case that the perceived clarity of an abstract or the perceived validity

of asking a research question depends on swapping the words "liberals" or "conservatives." Thus, it seems a plausible explanation is that human beings neutralize dissonant claims by declaring them incomprehensible and/or rejecting the validity of even asking the question.

Study 3: Method

Study 3 sought to replicate Study 2, including a new variety of cognitive chicanery termed *anecdote elevation*. Study 3 also sought to directly manipulate suppression desires, but this manipulation failed (see below). Study 3 was preregistered. Our methods were followed as preregistered, but because our suppression manipulation failed, we analyzed our data as we did in Study 2 and reported the suppression manipulation results in the Supporting Information.

We recruited 3200 participants from CloudConnect with a US census-matched template; 3222 provided some data ($M_{age} = 41.42$, SD $= 14.35$; 1592 men, 1609 women, seven nonbinary, 14 unreported or missing gender). Participants leaned slightly left ($M_{ideology} = 3.42$, SD $= 1.71$).

Participants were randomly assigned to one of two suppression conditions: Suppress or Control. In the Suppress condition, they could endorse community comments undermining the research findings before public posting, whereas in the Control condition, they endorsed comments but were told that their endorsements would not be shared with others. This manipulation did not increase suppression desires as intended, and so further details are reported only in the Supporting Information (see Table S9).

Participants were randomly assigned to receive one of four non-experimentally manipulated findings from Study 2 or one of the two experimentally manipulated findings portraying liberals or conservatives as more intolerant. Because the experimentally manipulated findings would be analyzed including an interaction with participant ideology, we doubled the number of participants assigned to these two conditions.

Participants were then presented with 10 comments, ostensibly written by former participants, and indicated how highly they endorsed each on 7-point scales from strongly oppose to strongly endorse. Two measured confusion: "This writing is unclear and incomprehensible." "This an example of scientists writing in complex terms nobody can understand." Two measured postmodernism: "This issue is too complex to be addressed with research." "Universal claims of this sort can never be warranted by data." Three measured anecdote elevation: "My lived experience contradicts these findings." "These kinds of questions are better understood by talking to a few people than trying to scientize complex and sensitive questions with numbers." "I know these claims are false." We included three positive filler items to reduce suspicion: "This is an interesting and important study." "I have heard about this research before and it rings true." "Policymakers should learn about these findings."

Participants then indicated their agreement with six statements on 7-point agreement scales. Two measured suppression desires: "Spreading these kinds of research findings is bad for society." "If it were up to me, these research findings would not be shared publicly." Two measured offense: "The results reported in this study were offensive." "The results reported in this study were morally wrong." Two measured trust in science: "Science is the most reliable approach to understanding the world." "People should trust science." Participants also reported demographic variables as in earlier studies.

Study 3: Results

As displayed in Table S10, higher offense and suppression desires were moderately to strongly associated with confusion, postmodernism, and anecdote elevation ($rs = 0.47$–0.68, $ps < 0.001$), and lower trust in science and positive comments ($rs = -0.35$ to -0.53, $ps < 0.001$).

For the research description including the manipulation, we regressed the condition, Z-scored participant ideology, and their interaction on all outcomes. These interactions were all significant and small to moderate (see Table S11 and Figure 6). The manipulations were successful, with participants reporting more offense and stronger suppression desires when the ingroup was portrayed as intolerant. And

when the ingroup was portrayed as intolerant, both liberals and conservatives more strongly endorsed confusion (liberals $b = 0.55$, $p < 0.001$; conservatives $b = -1.53$, $p < 0.001$), postmodernism (liberals $b = 0.67$, $p < 0.001$; conservatives $b = -1.91$, $p < 0.001$), and anecdote elevation (liberals $b = 0.46$, $p < 0.001$; conservatives $b = -2.16$, $p < 0.001$), and they less strongly endorsed positive comments (liberals $b = -0.58$, $p < 0.001$; conservatives $b = 1.72$, $p < 0.001$) and reported lower trust in science (liberals $b = -0.17$, $p = 0.023$; conservatives $b = 0.50$, $p < 0.001$).

Study 3: Discussion

Study 3 replicated Study 2 and demonstrated similar patterns for anecdote elevation—when people were more offended and experienced stronger suppression desires, they also downplayed the importance of data in favor of anecdotes. These patterns were found in both correlational findings and when we experimentally manipulated offense. Participants were more likely to endorse confusion, postmodern dismissal, and anecdotal observations when the abstract concluded something negative about their ingroup than when the identical abstract concluded something negative about their outgroup. These experimental results suggest that confusion, postmodernism, and anecdote elevation may be motivated by moral offense and desires to suppress research.

Although not the primary focus of this research, we also observed similar patterns for endorsement of positive comments, and with a small effect, trust in science. When participants read the offensive abstract (vs. the less offensive one), they endorsed positive comments less and reported lower trust in science in general. These findings suggest that exposure to dissonant science may motivate people to denigrate the institution of science altogether.

Study 4: Method

Study 4 extended our findings in two main ways. To improve generalizability, we included an additional experimentally manipulated research description. Second, we sought to test whether moral offense triggers other kinds of cognitive evasion strategies.

We recruited 2000 participants from CloudConnect with a US census-matched template; 2020 provided some data ($M_{age} = 45.47$, SD = 15.90; 998 men, 992 women, one nonbinary, 23 unreported or missing gender). Participants leaned slightly left ($M_{ideology} = 3.51$, SD = 1.78). We followed the general design from Study 3. Participants were randomly assigned to one of two conditions for each of two research findings. One portrayed liberals or conservatives as more intolerant. The other reported that protégés benefit more when they have male mentors than female mentors (Offensive condition) or that protégés benefit more when they have same-sex mentors than opposite-sex mentors (Control condition).

After each finding, participants were presented with one of two sets of 10 community comments (see Table 1) and indicated their
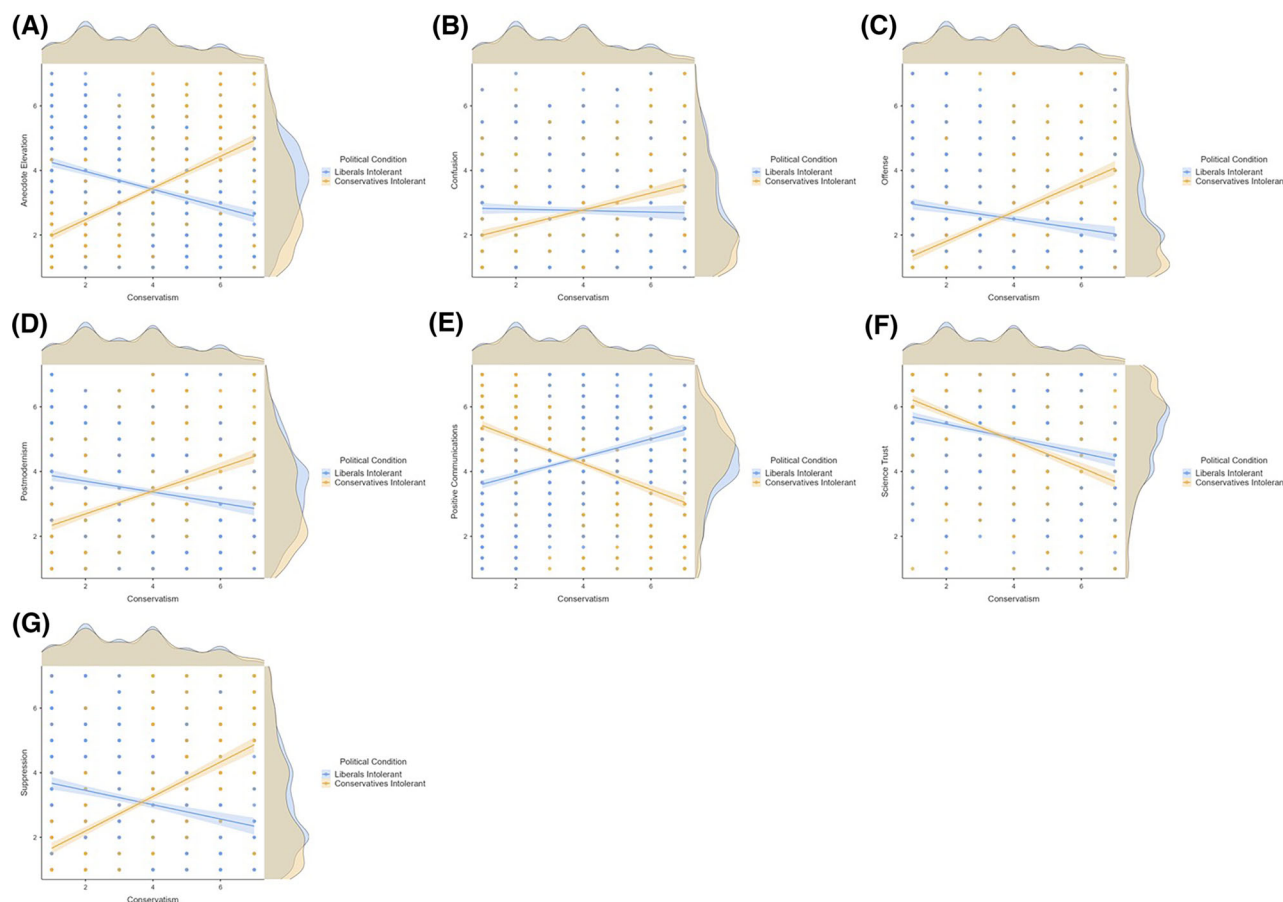
FIGURE 6 Interactions between condition and ideology in Study 3.

agreement with each on 7-point agreement scales. Whichever set was not presented first was presented after the second finding. Each set contained either two confusion ($rs = 0.50$–0.67) or two postmodernism items ($rs = 0.48$–0.58), either three items based on the *Simple Sabotage Field Manual* ($\alpha s = 0.45$–0.54,[41]) or three items based on Schopenhauer's stratagems ($\alpha s = 0.70$–0.71), one item from each of three contradictory pairs (e.g., anecdote elevation or sample size criticism), and two positive filler items ($rs = 0.49$–0.71, all four combined for index).

Two additional items measured assimilation of the findings on relevant 7-point scales ($rs = 0.65$–0.71): "How likely is it that the reported findings are true?, Now that you have read the findings, to what extent do you think the claims made by the research are more or less likely to be true than you did before you read the findings?" As in Study 3, participants reported their suppression desires ($rs = 0.83$–0.86), moral offense ($rs = 0.85$–0.88), and demographics.

Study 4: Results

As displayed in Table S12, across both research descriptions, higher offense and stronger suppression desires were associated with confusion ($rs = 0.36$–0.51, $ps < 0.001$), postmodernism ($rs = 0.56$–0.68, $ps < 0.001$), the *Simple Sabotage Field Manual* ($rs = 0.49$–0.58, $ps <$ 0.001), Schopenhauer's stratagems ($rs = 0.69$–0.70, $ps < 0.001$), anecdote elevation ($rs = 0.27$–0.43, $ps < 0.001$), sample size complaints ($rs = 0.27$–0.41, $ps < 0.001$), agreement the scholars are unintelligent ($rs = 0.51$–0.62, $ps < 0.001$), agreement the scholars are using their high intelligence to manipulate people ($rs = 0.56$-0.64, $ps < 0.001$), agreement the finding is old news ($rs = 0.36$–0.40, $ps < 0.001$), and agreement the finding is preposterous ($rs = 0.66$–0.73, $ps < 0.001$), as well as with lower agreement with positive comments ($rs = -0.42$ to -0.58, $ps < 0.001$), and less assimilation ($rs = -0.52$ to -0.59, $ps <$ 0.001).

For the Mentorship description, as displayed in Table S13 and Figure 7, the Offensive Condition was evaluated as more offensive and elicited greater suppression desires than the Control, indicating our manipulation was successful. All outcome variables were in the expected direction, but some effects were smaller than a small effect size per Cohen's standards.[45] Compared to the Control, participants in the Offensive Condition endorsed higher postmodernism, *the Simple Sabotage Field Manual*, Schopenhauer's stratagems, that the researchers were unintelligent, that they were using their high intelligence to manipulate people, and that the findings were preposterous, and endorsed positive comments less and assimilated the findings less. The manipulation effect fell below small for confusion, anecdote elevation, sample size complaints, and claiming the findings were old news.

TABLE 1 Cognitive chicanery items and filler items in Study 4.

Confusion	
	This writing is unclear and incomprehensible.
	This an example of scientists writing in complex terms nobody can understand.
Postmodernism	
	This issue is too complex to be addressed with research.
	Claims of this sort can never be warranted by data.
Items modified from the CIA's *Simple Sabotage Field Manual*	
Refer all matters to committees	*These findings should be carefully evaluated by a committee before they are disseminated.*
Haggle over precise wordings	*Some of the word choices were less than optimal.*
Worry about the propriety of any decision	*I worry that evaluating these findings is not a task for the public.*
Items modified from Schopenhauer's *Art of Always Being Right* stratagems	
The extension	*To assert that all members of one group are better or worse than all members of another group is patently false.*
Odious categorization	*This claim is Extremist Pseudoscience, a system of thinking that has been entirely refuted and does not contain a word of truth.*
Ad personam	*The authors of these findings are bigots.*
Paired contradictory items	
Anecdote elevation	*These kinds of questions are better understood by talking to a few people than trying to scientize complex and sensitive questions with numbers.*
Sample size criticism	*To really understand this question, the researchers would need a much larger sample size.*
Old news	*This is old news—nobody needs to pay attention to this.*
Preposterousness	*This research is preposterous on its face.*
Unintelligent	*These researchers are clearly unintelligent.*
Highly intelligent	*These researchers are using their high intelligence to manipulate people.*
Positive filler items	
	Policymakers should learn about these findings.
	This is an interesting and important study. *This is a very useful and informative study.* *This study seems well-conducted.*

For the intolerance findings, as displayed in Table S14, there were significant interactions between the ideology manipulation and participant ideology across all outcome variables, all of which reached small effects or larger. Participants were more offended and had stronger suppression desires when their ingroup was portrayed as intolerant compared to when their outgroup was portrayed as intolerant, indicating that our manipulations were successful. Likewise, when ingroups were portrayed as intolerant, both liberal and conservative participants endorsed higher confusion, postmodernism, *Simple Sabotage Field Manual*, Schopenhauer's stratagems, anecdote elevation, complaints of too small a sample size, claims the researchers were unintelligent, claims the researchers were using their high intelligence to manipulate people, that the findings were old news, and that the findings were preposterous. And in the more offensive condition, they agreed less with the positive comments and assimilated the findings less. Figure 8 and Table 2 display simple slopes for liberals and conservatives, with the slope calculated at 1 SD in each direction from the scale midpoint for ideology.

GENERAL DISCUSSION

Across five studies, we found that when people were morally offended by scientific findings and experiencing desires to suppress those findings, they engaged in a host of cognitive evasion tactics. They were more likely to report that the writing was incomprehensible and that the question was beyond the purview of science. Later studies showed that moral offense and suppression desires also predicted endorsement of Schopenhauer's stratagems for always being right,[38] the *Simple Sabotage Field Manual*,[41] and a potpourri of contradictory complaints (including the elevation of anecdotes above data and the sample size being too small, that the researchers are unintelligent and using their high intelligence to manipulate, and that the findings are both preposterous and old news). Experimental results, especially in later studies, suggest that all of these evaluations are likely motivated by desires to suppress morally offensive findings. Because the studies used identical materials across conditions and varied only the moral desirability of the conclusions, we believe moral discomfort is the most
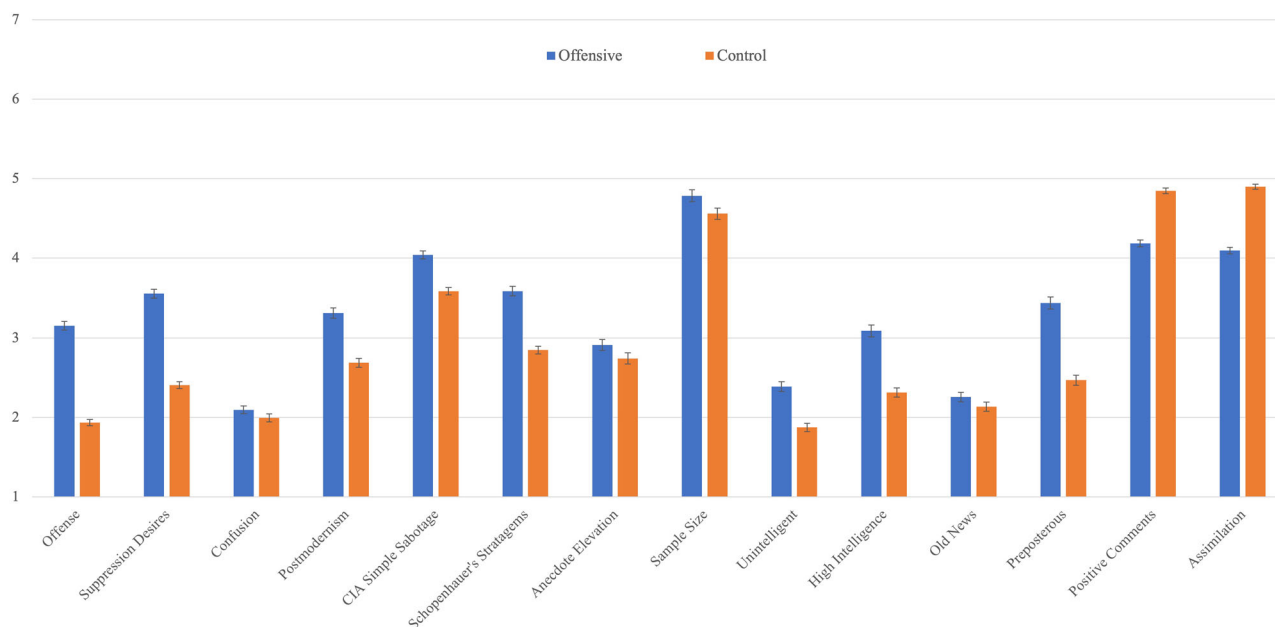
FIGURE 7 Effects of control versus offensive conditions in Study 4, mentorship description.

TABLE 2 Simple slopes for liberals and conservatives in Study 4, intolerance findings.

Variable	Liberals	Conservatives
Offense	0.38***	−1.17***
Suppression	0.52***	−1.52***
Confusion	0.31**	−0.67***
Postmodernism	0.45***	−1.09***
Simple Sabotage Field Manual	0.31***	−0.77***
Schopenhauer's stratagems	0.66***	−1.31***
Anecdote elevation	0.32**	−0.44**
Sample size	0.46***	−0.99***
Unintelligent	0.34**	−0.74***
High intelligence	0.55***	−1.14***
Old news	0.33**	−0.30*
Preposterous	0.68***	−1.78***
Positive comments	−0.57***	1.44***
Assimilation	−0.52***	1.89***
Average (of absolute values)	**0.46**	**1.09**

Note: Unstandardized slopes are at ±1 SD of the scale midpoint for conservative ideology (SD = 1.78).
***p<0.001, **p<0.01, *p<0.05,

plausible explanation for participants' increased engagement in cognitive chicanery.

Across all studies and samples, all presented research descriptions, and all varieties of chicanery, effects varied in size (and a few did not reach the standard significance cut-off) but were consistently in the expected direction: morally offensive findings activated various cogni-tive strategies aimed at denigrating and dismissing the research. We propose that cognitive chicanery results from humans' tendencies to justify the dismissal of dissonant claims with minimal effort. Although our findings are consistent with this assertion, future research should test more directly whether such chicanery reduces later willingness to critically engage with the material and whether lower-effort chicanery is preferred over more effortful criticism.

Moral offense activated many varieties of chicanery all at once, each providing some reason to dismiss the offending findings. Future research might test the relationship between these "multiple killings" of offensive ideas and the assimilation of those ideas. Does each additional strategy incrementally reduce the likelihood or amount of assimilation? And do conditions of accountability,[48] such as explicitly highlighting contradictory claims, undermine the use of some strategies? Future research should also attempt to disentangle the extent to which chicanery is motivated by reputation concerns (i.e., avoidance of socially costly beliefs) versus an internal need for psychological coherence. Scholars could test whether people activate more defense strategies when evaluating findings among like-minded others versus in private settings.

Our studies have multiple limitations. One persistent challenge for research exploring motivated reasoning is that people's evaluations cannot be effectively untangled from their prior beliefs. Many demonstrations of differential evaluations of identical methods—those that differ only in the direction of their conclusions—can be explained by differences in participants' preexisting beliefs. If a scholar reports a scientific finding that seems wildly implausible, it might make sense to infer that the scholar is incompetent or immoral or that their sample size was too small, even if their methods would have been considered acceptable had they found different results. We attempted here to minimize such counterexplanations by using items that ask about
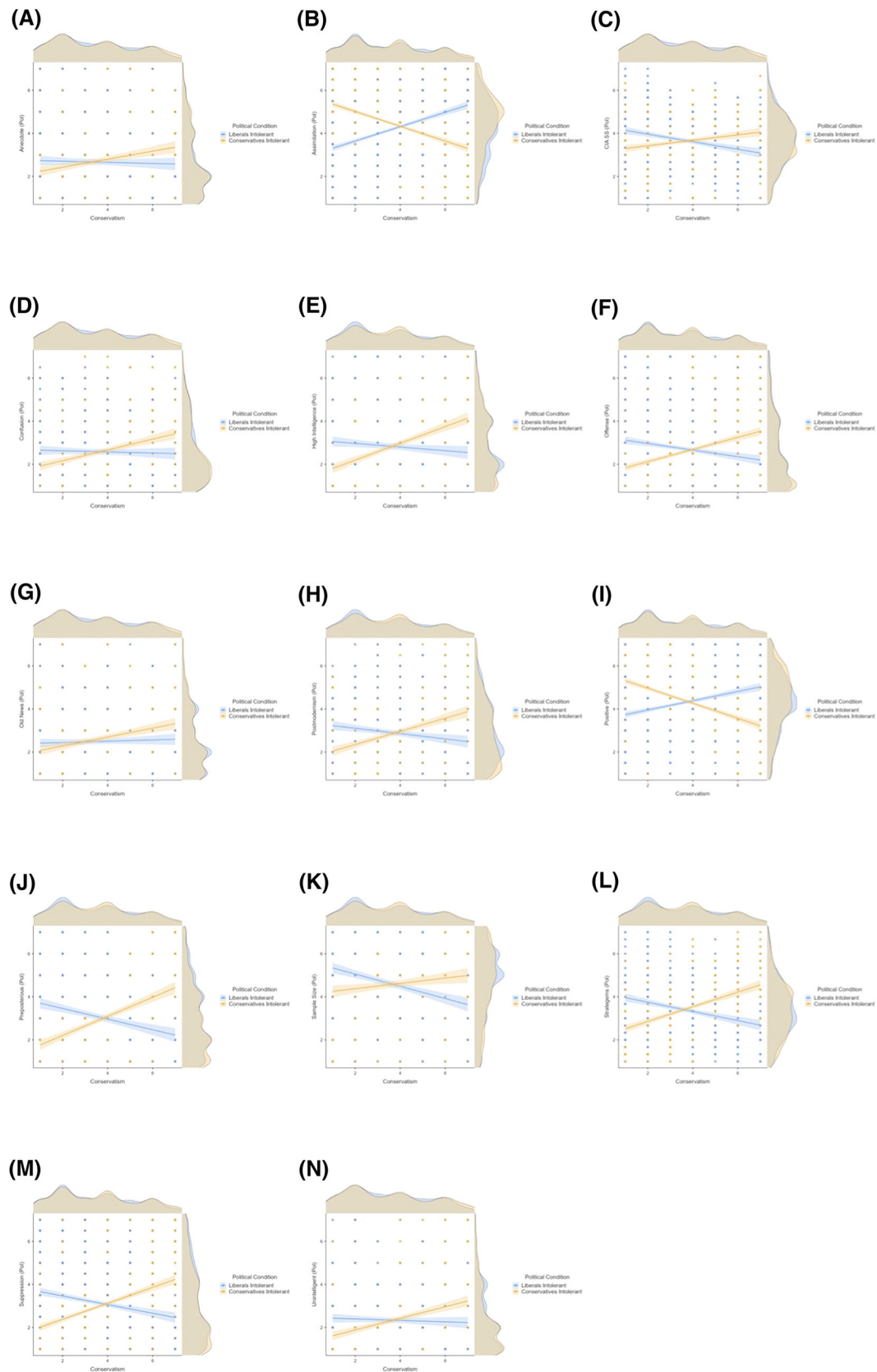
FIGURE 8 Interactions between condition and ideology for 14 outcomes in Study 4, intolerance findings.

the writing, terminology, or research question, all of which do not vary between conditions. For example, to our view, it makes little rational sense to assert that the terms used in the writing are too complex to understand when only the order of the words "liberal" and "conservative" are swapped. Nonetheless, we suspect counterexplanations still could be made for many of our findings. We hope future research will refine our questions to further minimize the plausibility of these counterexplanations when testing for motivated cognition patterns.

Although we diversified our recruitment platforms and recruited US census-matched samples in later studies, all of our samples were online US adults. Future research should explore similar tendencies in other cultures and more real-world contexts, including those where participants can offer up their own criticisms in an open response. This could lead to the discovery of many more types of chicanery. The full set of these tendencies could be in the dozens, hundreds, or thousands. Future research should expand the pool of possibilities to identify and classify the various ways people avoid dissonant claims.

Our effect sizes also ranged from very small to very large, but we do not yet understand why they varied across studies and materials. Future research should explore moderators of our findings to better understand which contexts increase or decrease cognitive chicanery. Identifying individual difference predictors of the use of chicanery would be particularly interesting.

Future research should also develop strategies for identifying the use of cognitive chicanery in the real world via the detection of systematic double standards applied to research that arrives at more versus less socially desirable conclusions. Our measures of suppression desires included items about rejecting a conference submission or not wanting the public to learn of the findings, but future work should test for similar patterns involving more severe suppression actions and especially real-world behavior, such as signing petitions to retract articles or fire scholars. Although human researchers might struggle with such a task, AI may soon (or already) be capable of identifying such double standards in criticisms of scientific findings among the public, among journalists, and among scientists themselves. This may help identify research conclusions or entire research areas that have been held to abnormally high standards or subjected to abnormally extreme hostility.

CONCLUSION

If science is to serve as the backstop authority of knowledge that people invoke to justify their worldviews, that knowledge should be grounded in facts. However, people are selective shoppers in the scientific marketplace of ideas. When facts do not align with their moral sensibilities, people deploy a host of cognitive strategies that discredit the research without engaging with its substance: the writing is incomprehensible; the researchers are foolish or morally suspect; the research question is beyond the limits of science; or even that the institution of science cannot be trusted. Documenting such strategies puts the scientific community in a better position to identify

when consumers of scientific data—be they the public, the media, or colleagues—are engaging in good faith with potentially valid research.

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PEER REVIEW

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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