Framing plagiarism as a disease heightens students’ valuation of academic integrity

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Prior research based on conceptual metaphor theory has explored how metaphorical language subtly influences how people perceive social issues. For instance, rhetoric comparing a perceived problem to a disease has been used historically to generate support for a wide array of measures proposed to “treat” the problem, and recent experimental work demonstrates the efficacy of this approach. The current paper extends this literature by looking at the use of disease metaphor in a novel domain: student perceptions of plagiarism on campus. We found that participants (N = 365) exposed to a disease-metaphoric description of plagiarism on campus perceived it to be a more severe problem and, as a result, were more supportive of a variety of anti-plagiarism policies. This mediational analysis further demonstrates the far-reaching practical significance of metaphor.

Keywords: Metaphor; Language; Social issues; Disease.

Although plagiarism is a persistent issue, it has become a prevalent problem in our digitally connected age. One survey found that 52% of high school students used the Internet to plagiarise written work (Wallace, 2009). This pattern continues into higher education, with 62% of undergraduates and 40% of graduate students sampled from 2002 to 2015 admitting to plagiarising written work (McCabe, 2017). The widespread prevalence of this dishonesty poses an immediate threat to the value of education and, in the case of graduate students, the academic disciplines in which they plagiarise.

This rising threat necessitates communication about the importance of academic integrity by professors and administration. Unfortunately, students, the audience for such communications, may not see the value of academic integrity for their future and fail to prioritise integrity over more immediate concerns (e.g., grades). In concert with the proliferation of technologies that facilitate students’ ability to plagiarise, policy-makers must develop effective interventions to mitigate students’ desire to plagiarise.

One possibility is suggested by research on conceptual metaphor theory (Lakoff & Johnson, 1980; Landau, Meier, & Keefer, 2010). This theory posits that metaphors in language are often extensions of conceptual metaphors, the use of one concept to scaffold information about another, unrelated concept. This process allows individuals to use familiar concepts to mentally represent less familiar or abstract ideas.

For example, people commonly describe life as a journey (Trim, 2011), a comparison equating abstract goals with destinations and progress with forward movement. Although these descriptions exist in language, experimental evidence demonstrates these comparisons influence cognition: individuals implicitly associate success/failure with forward/backward movement (Robinson & Fetterman, 2015). These conceptual associations emerge because metaphor represents complex ideas (e.g., goal pursuit) in terms of something concrete and known (e.g., forward motion) to understand a complex idea.

Supporting evidence shows conceptual metaphors are particularly influential when individuals feel uncertain about target ideas (Keefer, Landau, Sullivan, & Rothschild, 2011; Landau, Keefer, & Rothschild, 2014) and that systematic metaphors foster a sense of meaning (e.g., comparing life to a journey; Baldwin, Landau, & Swanson, 2018).

Because metaphors foster understanding, it may be unsurprising that they are commonly used to represent abstract social problems and possible solutions (Keefer & Landau, 2016). Experimental evidence demonstrates
far-reaching implications. For example, describing crime as a beast preying upon a town (vs. a disease) causes a preference for policy solutions based on stricter punishment and enforcement (Thibodeau & Boroditsky, 2011, 2013). People were biased to use force ostensibly because the beast metaphor, unlike the disease framing, caused individuals to use their knowledge of beasts and the role force in that context to reason about crime.

The current study

Because metaphors provide a way for audiences to think about target issues and conceptualise possible solutions, we sought to test whether a metaphoric description of plagiarism would increase concern among college students.

How might a metaphor have this effect? One clue comes from research showing that metaphors for social problems (e.g., comparing crime to a disease or beast) cause people to see these problems as more severe and pressing (Thibodeau & Boroditsky, 2015). By seeing a diffuse abstract problem in terms of a concrete threat, individuals are both motivated to act (due to an increase in perceived severity) and to propose responses that are consistent with the salient concept underlying the metaphor.

To motivate students to avoid plagiarism, a fruitful emphasis may therefore be metaphors evoking domains that elicit avoidance. We focus on domain noted above: In the service of mitigating the likelihood of infection, humans have evolved to maintain distance from entities they perceive as pathogenic (Murray & Schaller, 2016). Such aversion is especially apparent towards socially deviant behaviours, given such behaviours have historically been associated with infection risk (Brown, Rodriguez, Gretak, & Berry, 2017).

Thus, language describing plagiarism systematically as a disease could cause perceivers to transfer this avoidance motivation to a new domain. A disease metaphor would be expected to increase the perceived severity of plagiarism as a social problem (extending Thibodeau & Boroditsky, 2015). Furthermore, we predicted that perceiving plagiarism as a more severe problem would then elicit a subsequent desire to avoid, prevent and punish plagiarism (extending effects shown for disease metaphors for immigration; Brown, Keefer, Sacco, & Bermond, 2019). We test this full mediational model.

METHOD

Participants

We recruited 365 undergraduates to participate for course credit. Given the results of a pilot study, we wanted a sample large enough to detect indirect effects with small paths and bootstrapping with bias-corrected and accelerated (BCa) confidence intervals (Target $N = 400$; Fritz & MacKinnon, 2007). Although 400 participants were recruited, 35 did not complete the study resulting in 365 usable cases (314 women, 50 men, 1 missing; $M_{\text{Age}} = 20.14, 85.3\%$ White). All data and materials for both the pilot and current study are available for use or review at: osf.io/gz56t/.

Materials and procedure

Metaphor framing. Participants were randomly provided with one of three articles for our metaphor framing manipulation. In the disease condition, the article systemically employed a disease metaphor to describe the threat and consequences of plagiarism (see Table 1; full articles on the Open Science Foundation page). The beast condition was similar in valence and tone but framed plagiarism as a wild animal attacking campus. The no-metaphor condition was matched on length and tone, but described plagiarism as problematic without any systematic metaphor. Articles were on university letterhead and designed to appear as official statements from a department on campus.

Perceived severity. To assess the perceived severity of plagiarism on campus, we next asked participants to indicate the extent to which they perceived plagiarism was a severe problem (on 7-point scales for this and

<table>
<thead>
<tr>
<th>Disease</th>
<th>Beast</th>
<th>No metaphor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plagiarism is defined as the use of another person’s words and ideas without providing proper credit for that person’s work. Not only is this unethical, but plagiarism is a disease that is infecting campuses across the country. To prevent these consequences, as well as the spread of plagiarism, university administrators have prescribed tough remedies in the classroom.</td>
<td>Plagiarism is defined as the use of another person’s words and ideas without providing proper credit for that person’s work. Not only is this unethical, but plagiarism is a beast that is preying upon campuses across the country. To prevent these consequences, as well as the wounds plagiarism inflicts, university administrators have armed instructors to hunt it down.</td>
<td>Plagiarism is defined as the use of another person’s words and ideas without providing proper credit for that person’s work. Not only is this unethical, but plagiarism is a major problem on campuses across the country. To prevent these consequences, as well as the increase of plagiarism, university administrators have imposed tough policies in the classroom.</td>
</tr>
</tbody>
</table>
DISEASE METAPHOR

TABLE 2
Descriptive statistics and observed correlations

<table>
<thead>
<tr>
<th></th>
<th>Perceived severity</th>
<th>Plagiarism avoidance</th>
<th>Policy support</th>
<th>Plagiarism punishment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived severity</td>
<td>-</td>
<td>0.12*</td>
<td>0.18***</td>
<td>0.13*</td>
</tr>
<tr>
<td>Plagiarism avoidance</td>
<td>0.12*</td>
<td>-</td>
<td>0.42***</td>
<td>0.30***</td>
</tr>
<tr>
<td>Policy support</td>
<td>0.18***</td>
<td>0.42***</td>
<td>-</td>
<td>0.64***</td>
</tr>
<tr>
<td>Plagiarism punishment</td>
<td>0.13*</td>
<td>0.30***</td>
<td>0.64***</td>
<td>-</td>
</tr>
<tr>
<td>M (SD)</td>
<td>3.22 (1.68)</td>
<td>5.00 (1.29)</td>
<td>4.60 (1.41)</td>
<td>4.61 (1.29)</td>
</tr>
</tbody>
</table>

Note: *p < .05, **p < .01, ***p < .001.

all measures). Finally, participants received our three outcome measures (described below) in random order.

**Plagiarism avoidance.** Students’ motivation to avoid plagiarism was measured through a 6-item ad hoc scale (e.g., “The next time you write a paper, how likely are you to double-check it to make sure it is entirely in your own words before submitting it?”; \( \alpha = .81 \)).

**Policy support.** Participants indicated their support for five current and/or potential policies intended to mitigate plagiarism (e.g., “How much do you support this university’s requirement for incoming freshmen to complete an anti-plagiarism training module?”; \( \alpha = .84 \)).

**Plagiarism punishment.** Participants reviewed an ostensible disciplinary record of a student found guilty of plagiarism and sentenced to academic probation, before indicating the punishment’s appropriateness and the extent to which they believed the student should have been expelled. The two items correlated (\( r = .39 \)) and were averaged to form a composite score reflecting support for stronger punishment. Afterwards, participants were asked to recall the theme of the article as an attention check; due to high rates of attrition, we report analysis for the full sample but report results using this check in a supplement on OSF.

**RESULTS**

**Initial analyses**

We initially conducted four analyses of variances for our four measured variables (see Table 2 for correlations; Table 3 for descriptive and inferential statistics for these analyses). Participants in the disease condition perceived plagiarism as a more severe problem than did those in the control (\( p = .006 \)) or beast (\( p = .07 \)) conditions. However, no statistically significant differences emerged between conditions for our outcome variables.

**Mediation analysis**

Although no difference emerged for three of our dependent measures, they nonetheless remained positively correlated with perceived severity, prompting us to test the predicted indirect effect of disease metaphor on each outcome due to greater perceived severity. Even without direct effects, indirect effects remain interpretable, although they do raise questions about unconsidered mediators (Rucker, Preacher, Tormala, & Petty, 2011).

We submitted our data to three separate mediation models with 5000 resamples (see Figure 1 for a simplified representation of all models). Condition was

<table>
<thead>
<tr>
<th></th>
<th>Perceived severity</th>
<th>Plagiarism avoidance</th>
<th>Policy support</th>
<th>Plagiarism punishment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disease M (SD)</td>
<td>3.54 (1.71)a</td>
<td>3.16 (1.70)ab</td>
<td>2.95 (1.59)b</td>
<td>3.89</td>
</tr>
<tr>
<td>Beast M (SD)</td>
<td>5.11 (1.31)a</td>
<td>4.82 (1.40)a</td>
<td>5.07 (1.16)a</td>
<td>1.73</td>
</tr>
<tr>
<td>Control M (SD)</td>
<td>4.71 (1.48)a</td>
<td>4.53 (1.31)a</td>
<td>4.57 (1.44)a</td>
<td>.55</td>
</tr>
<tr>
<td>F</td>
<td>3.89</td>
<td>1.73</td>
<td>.55</td>
<td>.893</td>
</tr>
<tr>
<td>( \eta^2 )</td>
<td>0.022</td>
<td>0.010</td>
<td>.003</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

Note: F df = (2, 361) for all tests except severity (2, 358) due to missing cases. Means with different letters differed at \( p < .05 \).
disease metaphor significantly predicted greater perceptions of plagiarism as a severe problem \((b = 0.592, SE = 0.215, p = .006)\). This perceived severity ultimately predicted motivation to avoid plagiarism \((b = 0.090, SE = 0.041, p = .028)\), support for anti-plagiarism policies \((b = 0.149, SE = 0.044, p = .0007)\), and a desire to punish the plagiariser \((b = 0.103, SE = 0.041, p = .011)\). A test of the indirect effect for each mediation model indicated mediation by severity for avoidance \((95\% CI: 0.006, 0.144, p = .041)\), support \([95\% CI: 0.026, 0.201, p = .004]\), and punishment \([95\% CI: 0.008, 0.157, p = .036]\).

**DISCUSSION**

The current study validates and extends prior research on the role of metaphor in perceptions of social problems. We found, following past research, that the disease metaphor caused participants to perceive plagiarism to be a more serious issue. Although the article did not demonstrate direct effects on our outcomes, we found indirect effects suggesting that metaphor encouraged participants to endorse more anti-plagiarism views (although see supplemental analysis for a direct effect on policy support).

Practically, these data point out how rhetoric can potentially elicit avoidance motives (Murray & Schaller, 2016). This mediation pathway provides some evidence that vigilance towards pathogens could manifest in unrelated domains if activated by systematic metaphoric language.

The pilot and current study also strengthen work on metaphor in several ways. Some major findings on conceptual metaphor have failed to replicate (e.g., Lynott et al., 2014), suggesting researchers in this area should be more transparent and seek to replicate effects as we have done here. Metaphor studies noted above have found that linguistic metaphor effects are often moderated (e.g., Keefer et al., 2011), so minor discrepancies in the literature may hint at important moderators. For example, we did not replicate an effect of the beast metaphor on severity (Thibodeau & Boroditsky, 2015), perhaps because of the context or our methods. Future investigation is necessary.

**Limitations and future directions**

The lack of direct effects of metaphor is notable and calls for future research. Although mediation without a direct effect is interpretable (Rucker et al., 2011), future research is necessary for greater understanding of the possible relationships between the metaphor and our outcomes. Given that disease strikes unexpectedly, the disease metaphor may have increased sympathy for plagiarisers who may be seen as victims rather than agentic perpetrators. This perception may have counteracted the indirect effects we observed through perceived severity. Our data suggest that we simply may not have assessed all of the various consequences of metaphor, despite significant and expected indirect effects.

There are also good reasons to be sceptical of mediation analysis (Kline, 2015). Although the data for both studies support our proposed pattern of indirect effects, longitudinal designs and/or more direct causal-chain analyses would be necessary to draw firm conclusions about the downstream effects of disease metaphor.

Although our focus was on an applied test of disease metaphor in the context of plagiarism, the current design could be extended. Our emphasis required a college student sample, but we would expect similar results if, for example, employees at a company were encouraged to think of misconduct as a disease. Moreover, it is unclear why the metaphor impacted severity exclusively in the disease condition. We hope researchers continue to explore the process and consequences of disease metaphors.

Other work on disease avoidance finds individuals are additionally more likely to punish those perceived as a disease risk (Brown et al., 2017). Although these data do not speak to this possibility, it may be that the disease metaphor motivated avoidance by priming literal health risk. Future work could explore the cognitive processes in this context that ultimately connect rhetoric to action.

**CONCLUSION**

In summary, we found that a disease metaphor describing plagiarism caused students to perceive it to be a more serious concern on campus and, as a result, to report greater motivation to prevent it. Remarkably, these effects were evident not only in participants own reported behavioural intentions, but their support for mitigating institutional policies and serious punitive actions as well. This finding suggests one helpful way to communicate about plagiarism that may effectively motivate students to improve academic integrity.

Manuscript received July 2018
Revised manuscript accepted March 2019

**REFERENCES**


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