

“GIRLS ARE AS GOOD AS BOYS” IMPLIES BOYS ARE BETTER, BUT ONLY IN THE
ABSENCE OF EXPLICIT AWARENESS

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Abstract

The statement “girls are as good as boys at math” appears to express that girls and boys are equally skilled, but research indicates that such subject-complement statements subtly imply that the group in the complement position (boys) is superior. Even when people hold baseline stereotypes about the domain in question, their judgments of ability can still be swayed by reading such a statement. In three experiments, we investigated the effects of explicit awareness of this kind of syntax in regard to math ability and likelihood of being a terrorist. Participants read a passage describing a large-scale study about either math or terrorism that contained such subject-complement statements and then judged either which gender (girls or boys) was more skilled at math or which religious group (Christians or Muslims) was more likely to be terrorists. By replicating and extending previous work, we found that those who do not explicitly attend to the statements containing subject-complement syntax make judgments in line with the implied biases. Those who do explicitly attend to the statements either show a bias in the opposite direction or none at all, perhaps because they consciously resist the subtle biases. Our results suggest that effects of these statements on judgments of ability and disposition are not as pervasive as previously assumed.

Keywords: language, syntax, framing, gender, terrorism

“Girls Are as Good as Boys” Implies Boys Are Better, But Only in the Absence of Explicit Awareness

“Girls are just as good at math as boys” (Rahhal, 2019). This news headline—from an online article describing an fMRI study that revealed gender similarities in the neural processing of math in young children (Kersey, Csumitta, & Cantlon, 2019)—appears to express that girls and boys have equal math skills. However, the syntactic structure of the statement positions boys as the reference point, implying that they are naturally more skilled at math than girls. Recent research suggests that such *subject-complement* statements, despite ostensibly expressing equality, are implicitly perceived as asymmetric. Chestnut and Markman (2018) found that the statement “girls are as good as boys at math” led people to attribute more natural math ability to boys (complement) than girls (subject), thus reinforcing the common gender stereotype. In three experiments, we replicated this syntactic framing effect and found that it extends to a novel, politically charged domain: terrorism. However, our results reveal an important caveat. Most people recognize subject-complement statements as influential in their attributions, but the syntactic framing effect is driven by those who do *not*. Thus, the effect is covert, but it is found in only a small subset of people.

Previous evidence for the influence of subject-complement syntax comes from Chestnut and Markman’s (2018) study of attributions of natural math and verbal ability. In one study, after reading statements that placed “boys” in the complement position, participants attributed more natural math ability to boys, mirroring baseline attributions. However, after reading statements that placed “girls” in the complement position, participants attributed more natural math ability to girls, reversing the widely held stereotype. The opposite pattern of results was observed for the verbal domain, for which people hold the stereotype that girls are more skilled. These

findings suggest that subject-complement syntax can either reinforce or combat stereotypes, depending on the order of the items in such statements.

In a follow-up study, Chestnut and Markman (2018) found that people do not explicitly judge subject-complement statements as biased, suggesting that their asymmetric effect on attributions is covert. These results parallel other linguistic framing effects that similarly go unnoticed (e.g., Thibodeau & Boroditsky, 2011, 2013). For example, Thibodeau and Boroditsky (2011) found that people's preferred crime mitigation strategies differed depending on the metaphor used to describe crime ("beast" vs. "virus"), even though the vast majority of participants cited seemingly more substantive information (e.g., crime statistics) rather than the metaphor as the rationale for their responses.

However, there may be some important differences in the framing effects of metaphors and subject-complement syntax. In Thibodeau and Boroditsky (2011), the crime metaphor was incidental to the substantive information, while in Chestnut and Markman (2018), the subject-complement syntax was what carried this information (e.g., "a recent study has shown that girls do just as well as boys at math"). Thus, participants in the latter study might have been more likely to regard the linguistic frame as influential in their evaluations (though this was not assessed). The syntactic frame also appeared in three statements in the passage, and thus the majority of participants may have explicitly attended to it. Given that the statements were not explicitly regarded as biased, the syntactic framing effect might have been driven by the relatively small proportion of participants who did not attend to the subject-complement statements deeply enough to cite it as influential in their judgments.

In Experiment 1, we investigated this possibility by replicating Chestnut and Markman's (2018) syntactic framing effect in the math domain, examining whether the effect is stronger in

those who do not cite the subject-complement statements as influential in their judgments. In Experiment 2, we explored whether the effect extends to the domain of terrorism, and if so, whether it is similarly modulated by explicit awareness of the statements' influence. Terrorism is a politically charged topic, and there are pervasive stereotypes about who is most likely to commit terrorist acts. In the wake of 9/11, many Americans believe that Muslims are more likely to commit violent acts than people in other religious groups (Sides & Gross, 2013; West & Lloyd, 2017). However, subject-complement statements could potentially reverse this common stereotype by placing Muslims in the subject position and Christians in the complement position, thus implying that Christians are more typical terrorists. If such statements yield a similar framing effect to that in the math domain, this would suggest that subject-complement syntax can influence not just attributions of ability but also attributions of *disposition*, or the inherent qualities that underlie behavior (cf. Cimpian & Salomon, 2014). Such attributions have clear social implications.

In Experiments 1 and 2, we also investigated whether the effects of subject-complement statements depend on the genericness of the statements. Chestnut and Markman's (2018) statements included a mix of generic language (i.e., "girls are as good as boys at math," a claim about boys and girls in general) and non-generic language (i.e., "[the researchers] found that girls performed as well as boys in grades two through eleven," a statement about a specific study finding). Previous research suggests that findings phrased generically are perceived as more important than those framed non-generically (DeJesus, Callanan, Solis, & Gelman, 2019), so subject-complement statements may be more likely to elicit the observed framing effect when they are generic.

We did not find that genericness affected participants' judgments, so in Experiment 3, we

focused more on the effects of explicit awareness of the subject-complement statements' influence than on genericness. The final experiment was a high-powered within-subjects replication of the first two, with preregistered, confirmatory analyses of the effects of explicit awareness of the statements' influence on one's judgments. All participants judged both math ability and terrorist likelihood in scenarios and we again analyzed the effects of explicit awareness of subject-complement statements on the syntactic framing effect.

In sum, the goals of these three experiments were (1) to investigate the reliability of Chestnut and Markman's (2018) syntactic framing effect in the math domain (Experiment 1), (2) to examine whether this effect generalizes to the hot-button domain of terrorism (Experiment 2), and (3) to explore whether explicit awareness of the subject-complement statements' influence moderates such effects (Experiments 1-3).

Experiment 1: Math Ability

Our first experiment was a replication of Chestnut and Markman's (2018) study in the math domain. After reading a passage about a large-scale math study with subject-complement statements that were either generic or non-generic, participants judged whether boys or girls were naturally more skilled at math and then indicated which part of the passage was most influential in their judgment. Following Chestnut and Markman, we expected that participants would attribute more natural math ability to the gender in the complement position (e.g., "boys" in the statement "girls are as good as boys at math") than the gender in the subject position. We also examined whether this framing effect would be stronger in participants who did not cite the subject-complement statements as influential and whether the effect would differ as a function of genericness. We preregistered our methods and planned analyses on AsPredicted.org.¹

¹ See <http://aspredicted.org/blind.php?x=g8ni9z>

Method

Participants

Participants were 338 English-speaking adults from the United States ages 18 to 72 ($M = 36.4$; 186 men, 152 women) who participated through Amazon Mechanical Turk for a payment of \$0.30. A power analysis using G*Power 3.1 indicated that a total sample size of 134 would be needed to replicate the smallest of Chestnut and Markman's (2018) effects (*Baseline vs. Boys = Girls*) with .99 power. Therefore, given that we had three additional conditions, we sought a total sample of 335 (*Baseline: n = 72; Boys=Girls Generic: n = 67; Girls=Boys Generic: n = 68; Boys=Girls Non-Generic: n = 67; Girls=Boys Non-Generic: n = 64*).

Materials and Procedure

Participants were randomly assigned to one of five conditions: *Baseline; Boys=Girls Generic; Girls=Boys Generic; Boys=Girls Non-generic; or Girls=Boys Non-generic*. In the *Baseline* condition, participants simply judged which gender they thought was more naturally skilled at math. Then they rated how confident they were in their choice using a sliding scale from "Not at all confident" (0) to "Very confident" (100), as in Chestnut and Markman (2018). For the four subject-complement conditions, participants read a variation of Chestnut and Markman's passage about a large-scale math study, judged which gender (girls or boys) was naturally more skilled at math ("Based on these findings, who do you think is naturally more skilled at math?"), and rated their confidence in their judgment. Although Chestnut and Markman also included a question about which gender has to work harder to be good at math, their supplemental analyses suggested that the effects were stronger for the skill question; therefore, we only asked the latter question. We also added two free-response questions to determine whether participants took note of the subject-complement statements ("Please copy

the part of the article that was most influential in your evaluation and paste it in the text box below,” and “Was there any other information that contributed to your evaluation? If so, please specify:”).

Participants in the *Generic* conditions were presented with passages containing three generic subject-complement statements, and participants in the *Non-generic* conditions were presented with passages containing three non-generic subject-complement statements. To manipulate the genericness of the stimuli, we varied several cues in the subject-complement statements, including verb tense (present vs. past) and cues suggesting that the findings may be limited to the study sample (e.g., "the" and "most"). Below are the passages that participants read:

Boys=Girls Generic condition [The three generic statements of “equality” are underlined here. No statements were underlined for the participants.]

Recent Study: Boys Equal Girls at Math

A recent study has shown that boys do just as well as girls at math. At the University of Wisconsin, a team of researchers analyzed scores from standardized tests taken in 2005, 2006, and 2007 by approximately seven million students in ten different states. Overall, they found that boys perform as well as girls in grades two through eleven. A troubling finding from the study, however, is that many tough math questions seem to have been removed from state tests. The researchers worry that teachers, as a result, may start dropping harder math problems from their curriculums.

The *Girls=Boys Generic* condition was identical to the *Boys=Girls Generic* condition, except girls were in the complement position in each of the three generic statements.

Boys=Girls Non-generic condition [The three non-generic statements of “equality” are

underlined here. No statements were underlined for the participants.]

Recent Study: Boys Equaled Girls at Math

A recent study has shown that most boys did just as well as most girls at math. At the University of Wisconsin, a team of researchers analyzed scores from standardized tests taken in 2005, 2006, and 2007 by approximately seven million students in ten different states. Overall, they found that the boys performed as well as the girls in grades two through eleven. A troubling finding from the study, however, is that many tough math questions seem to have been removed from state tests. The researchers worry that teachers, as a result, may start dropping harder math problems from their curriculums.

The *Girls=Boys Non-generic* condition was identical to the *Boys=Girls Non-generic* condition, except girls were in the complement position in each of the three non-generic statements.

Statistical Analysis

Following Chestnut and Markman (2018), we used logistic regression models with condition as a categorical predictor to analyze the binary responses. For the following analyses, we report odds ratios (OR) for the Wald tests in the models (an OR of 0.5 would indicate that participants were half as likely to select “boys” in the condition of interest than in the reference condition), their 95% confidence intervals, and their *p*-values. Our first set of planned contrasts compared each subject-complement syntax condition against the *Baseline* condition. The second set compared the *Boys=Girls Generic* condition to the *Girls=Boys Generic* condition, and the *Boys=Girls Non-generic* condition to the *Girls=Boys Non-generic* condition. The third set compared the *Girls=Boys Generic* condition to the *Girls=Boys Non-generic* condition, and the *Boys=Girls Generic* condition to the *Boys=Girls Non-generic* condition. We also conducted

exploratory analyses to explore whether attending to the statements interacted with Syntax by adding this factor separately as an additional categorical predictor in the models.

Additionally, we followed Chestnut and Markman's (2018) method to compute weighted responses by multiplying the binary responses ("boys" coded as 1, "girls" coded as -1) by the confidence ratings (0 to 100, with higher ratings indicating greater confidence). Weighted responses thus had a range of -100 (extremely confident in selecting "girls") to 100 (extremely confident in selecting "boys"), with 0 reflecting a preference for neither gender. We used linear regression models analogous to the logistic models described above to analyze the weighted responses. We report unstandardized beta coefficients for the t-tests in the models, 95% confidence intervals, and *p*-values for these analyses.

Results

Baseline Condition

Responses in the *Baseline* condition reflected the stereotype that boys are naturally more skilled at math than girls. When asked which gender is naturally more skilled, 66.7% of participants ($SE = 5.6\%$, $n = 72$) chose boys—a value that was greater than chance (binomial sign test, $p = .006$) and almost identical to that of Chestnut and Markman (2018) at *Baseline* (67%). Participants also attributed more natural math ability to boys in their weighted responses ($M = 17.75$, $SE = 5.75$, $n = 72$), $t(71) = 3.09$, $p = .003$.

Comparisons against Baseline

As shown in Figure 1, the results from the four subject-complement conditions replicated Chestnut and Markman (2018). In the *Girls=Boys* conditions, participants' attributions did not differ significantly from *Baseline* (*Girls=Boys Non-generic*: 60.9% chose "boys," $SE = 6.1\%$, $n = 64$, $OR = .78$ [.39 to 1.57], $p = .49$; *Girls=Boys Generic*: 55.9% chose "boys," $SE = 6.1\%$, $n =$

68, OR = .63 [.32 to 1.26], $p = .19$). In both *Boys=Girls* conditions, however, participants' attributions were reversed, differing significantly from *Baseline*. In the *Boys=Girls Non-generic* condition, only 32.8% of participants ($SE = 5.8%$, $n = 67$) chose "boys," OR = .24 [.12 to .50], $p < .001$. Similarly, in the *Boys=Girls Generic* condition, 41.8% of participants ($SE = 6.1%$, $n = 67$) chose "boys," OR = .36 [.18 to .72], $p = .004$.

We found similar results for the weighted responses. Responses did not differ significantly from *Baseline* in either of the *Girls=Boys* conditions (*Girls=Boys Non-generic*: $M = 6.19$, $SE = 6.88$, $n = 64$, $b = -11.56$ [-29 to 6.05], $p = .20$; *Girls=Boys Generic*: $M = 8.47$, $SE = 7.02$, $n = 68$, $b = -9.28$ [-27.14 to 8.58], $p = .31$). In contrast, both *Boys=Girls* conditions differed significantly from *Baseline*. Participants in the *Boys=Girls Non-generic* condition ($M = -11.27$, $SE = 6.57$, $n = 67$) attributed more natural math ability to girls, $b = -29.02$ [-46.22 to -11.81], $p = .001$, as did those in the *Boys=Girls Generic* condition ($M = -7.84$, $SE = 7.75$, $n = 67$), $b = -25.59$ [-44.49 to -6.68], $p = .008$.

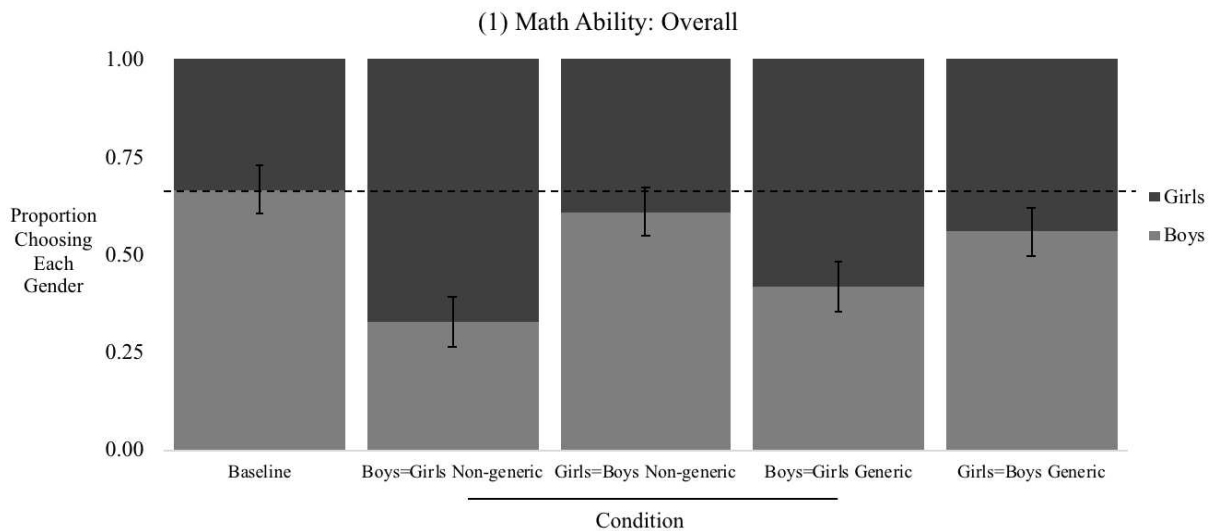


Figure 1. Participants' binary responses in Experiment 1. Responses reflect the gender to whom participants attributed more natural math ability. Error bars represent $\pm 1 SE$.

Effects of Syntax

The second set of analyses compared the *Boys=Girls Generic* condition to the *Girls=Boys Generic* condition, and the *Boys=Girls Non-generic* condition to the *Girls=Boys Non-generic* condition. Participants were more likely to attribute greater natural math ability to boys in the *Girls=Boys Non-generic* condition than the *Boys=Girls Non-generic* condition, OR = .31 [.15 to .64], $p = .001$; this difference was marginal for the weighted responses, $b = -17.46$ [-36.27 to 1.36], $p = .069$. The two *Generic* conditions followed the same trend (i.e., more likely to choose “boys” in the *Girls=Boys* condition), but the difference between them did not reach significance for either the binary responses, OR = .57 [.29 to 1.12], $p = .10$, or the weighted responses, $b = -16.31$ [-36.98 to 4.36], $p = .12$. Overall, when collapsing across the two levels of genericness, there was a significant difference between the *Girls=Boys* conditions and the *Boys=Girls* conditions for both the binary responses, OR = .43 [.26 to .70], $p = .001$, and the weighted responses, $b = -16.92$ [-30.80 to -3.04], $p = .017$. These results indicate that there was an overall effect of subject-complement syntax that did not depend on genericness.

Effects of Genericness

The third set of analyses compared the *Girls=Boys Generic* condition to the *Girls=Boys Non-generic* condition, and the *Boys=Girls Generic* condition to the *Boys=Girls Non-generic* condition. Neither the difference between the *Girls=Boys* conditions (binary: OR = .81 [.41 to 1.63], $p = .56$; weighted: $b = 2.28$ [-17.19 to 21.76], $p = .817$) nor the difference between the *Boys=Girls* conditions (binary: OR = 1.47 [.73 to 2.97], $p = .29$; weighted: $b = 3.43$ [-16.66 to 25.53], $p = .736$) was significant. Overall, when collapsing across syntactic conditions, there were no significant differences between the *Non-Generic* conditions and the *Generic* conditions for either the binary responses, OR = 1.10 [.41 to 1.63], $p = .56$, or the weighted responses, $b =$

3.12 [-10.91 to 17.15], $p = .66$. Thus, participants' attributions did not depend on whether the subject-complement statements were phrased generically or non-generically.

Exploratory Analyses: Effects of Explicit Awareness of Subject-Complement Statements

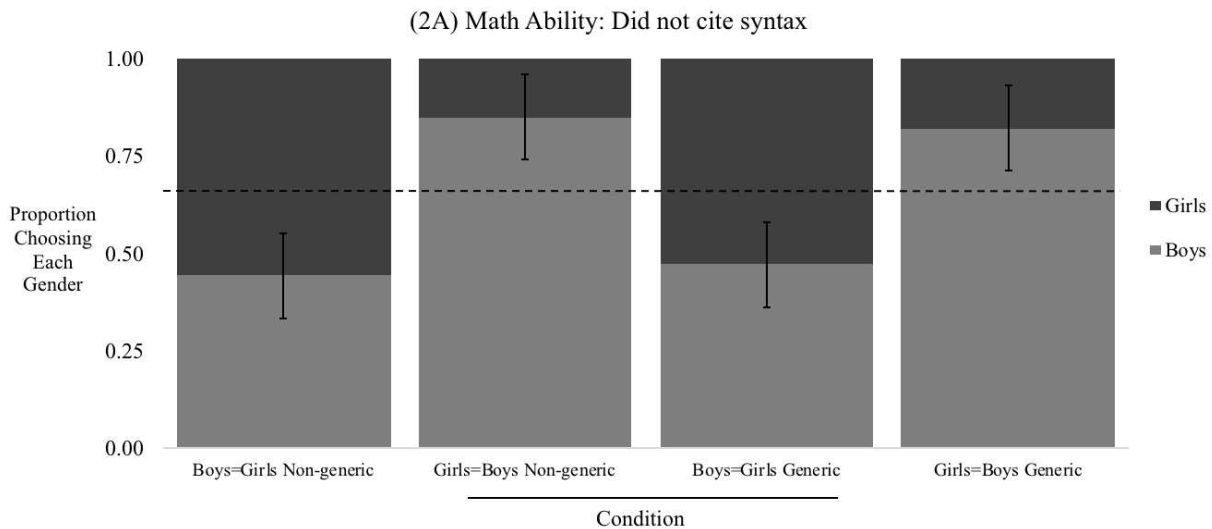
To explore whether explicitly citing the subject-complement statements as influential moderated the syntactic framing effect, we coded responses as “cited syntax” if participants pasted any part of the subject-complement statements in either free response box. Of the 266 participants in the syntactic conditions, 202 (76%) cited the subject-complement statements and only 64 (24%) did not.

We used logistic regression models with syntactic condition (*Girls=Boys* or *Boys=Girls*, collapsing across genericness; the *Baseline* condition was omitted), explicit awareness (cited syntax vs. did not cite syntax), and the interaction of these factors as predictors of the binary responses. There was a main effect of syntactic condition, $OR = 4.37 [2.05 \text{ to } 9.31]$, $p < .001$, confirming the second set of analyses above. There was also a main effect of explicit awareness, $OR = .20 [.17 \text{ to } .76]$, $p < .001$; participants who did not cite the statements as influential (73.4%, $SE = 5.6\%$, $n = 64$) were more likely than those who cited the statements (39.6%, $SE = 3.4\%$, $n = 202$) to attribute greater math ability to boys overall.

Notably, there was an interaction between syntactic condition and explicit awareness, $OR = .36 [.17 \text{ to } .76]$, $p = .008$. To unpack this interaction, we ran separate logistic regression models with syntactic condition as a predictor for participants who did and did not cite the statements as influential. Of those who did not, those in the *Girls=Boys* conditions (91.9%, $SE = 4.6\%$, $n = 37$) were more likely than those in the *Boys=Girls* conditions (48.1%, $SE = 9.8\%$, $n = 27$) to attribute greater natural math ability to boys, $OR = 12.21 [3.01 \text{ to } 49.55]$, $p < .001$ (see Figure 2A). Thus, the attributions of participants who did not explicitly cite the subject-complement statements as

influential mirrored the overall pattern of the full sample. However, of participants who did cite the statements' influence, there was no significant difference in responses between the *Girls=Boys* conditions (45.3%, $SE = 5.13\%$, $n = 95$) and the *Boys=Girls* conditions (34.6%, $SE = 4.62\%$, $n = 107$), $OR = 1.56$ [.89 to 2.76], $p = .12$ (see Figure 2B). [We found the same pattern of results for the weighted responses, using analogous linear regression models. There was an interaction between syntactic condition and explicit awareness, $b = -9.33$ [-17.15 to -1.51], $p = .02$. Participants who did not cite the statements as influential showed a significant syntactic framing effect, $b = 21.21$ [8.81 to 33.61], $p = .001$, but those who cited the statements did not, $b = 2.55$ [-5.30 to 10.40], $p = .52$.]

These results indicate that only a small subset of participants in the syntactic conditions did not explicitly attend to the statements' influence, but that the overall syntactic framing effect was driven almost exclusively by these participants.



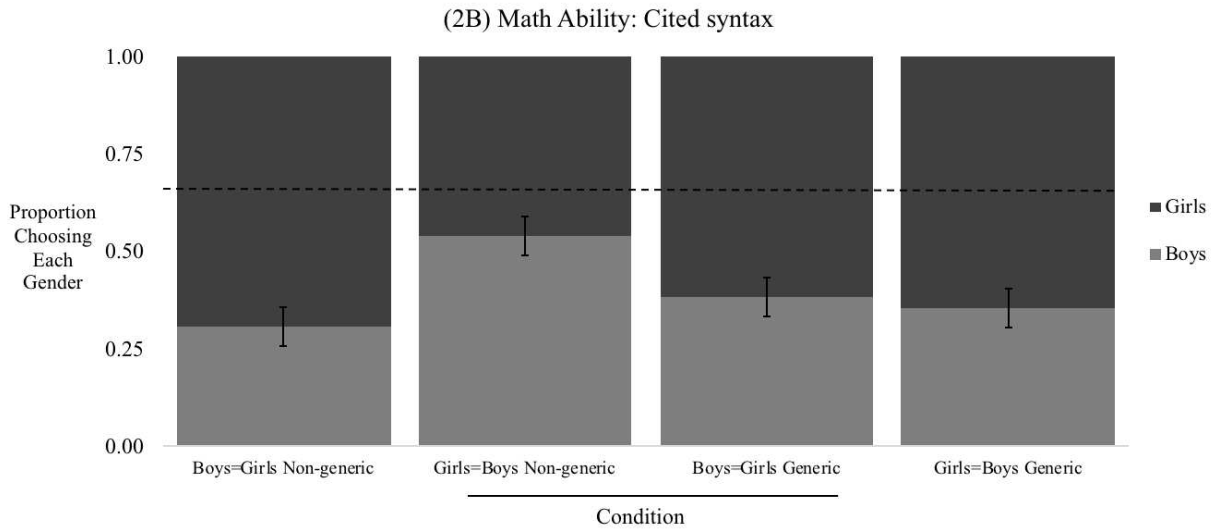


Figure 2. Participants' binary responses in Experiment 1 for those who (a) did not cite the subject-complement statements as influential in their attributions, and (b) cited the statements. Responses reflect the gender to whom participants attributed more natural math ability. Error bars represent $\pm 1 SE$.

Discussion

Overall, the results replicated Chestnut and Markman (2018). After reading subject-complement statements, participants attributed more natural math ability to the gender in the complement position than the gender in the subject position. Specifically, in the *Baseline* and *Girls=Boys* conditions, participants attributed more natural math ability to boys, while in the *Boys=Girls* conditions, they attributed more natural math ability to girls. These results suggest that subject-complement statements can either affirm or deny stereotypes about ability, even though the statement may appear to express equality at face-value.

However, our exploratory analyses add an additional wrinkle to Chestnut and Markman's (2018) effects. When asked to cite which elements of the passage were most influential in their evaluations, about 76% of participants cited the subject-complement statements, but those participants were equally likely to select either gender regardless of syntax. Only the 24% of

participants who did not cite the statements responded in line with Chestnut and Markman's effects, and likely drove the overall pattern of results in both their study and ours. This exploratory finding suggests that the covert biases within subject-complement syntax affect attributions only when participants do not cite the statements as influential in their judgment. We return to this point in the General Discussion.

The genericness of the statements did not have any clear effects on attributions. There were no significant differences between the generic and non-generic conditions for either the *Girls=Boys* or *Boys=Girls* frames, which suggests that the effects of subject-complement syntax do not depend on the verb tense or scope of the statement. Thus, it appears that Chestnut and Markman's (2018) syntactic framing effects remain robust regardless of the degree of generalizability or importance of the scientific finding described by the subject-complement statements.

Chestnut and Markman (2018) found effects of subject-complement syntax for judgments of boys' and girls' verbal ability as well. In Experiment 2, we investigated whether such effects extend beyond domains about ability to those about *disposition*. We measured attributions of the category "terrorist" to different religious groups (Christians and Muslims), a highly emotional and polarizing domain for which there are pervasive stereotypes (e.g., that Muslims are predisposed to commit terrorist acts; Sides & Gross, 2013; West & Lloyd, 2017). Because the reference point in subject-complement statements is considered to be the more typical member of the category in question (Chestnut & Markman, 2016), syntactic framing effects in this domain could have significant social implications.

Experiment 2: Terrorism

Our second experiment mirrored the first, but here the subject-complement statements

ostensibly expressed that Christians and Muslims are equally likely to be terrorists. Participants read a passage about a large-scale study of terrorist behavior with subject-complement statements that were either generic or non-generic. Then they judged whether Christians or Muslims were more likely to be terrorists and indicated which part of the passage was most influential in their judgment. If subject-complement syntax influences attributions of disposition as well as ability, a similar framing effect to that of Experiment 1 should be observed. Of interest was whether the effect would again be stronger in participants who do not cite the subject-complement statements as influential in their judgments. We preregistered our methods and planned analyses on AsPredicted.org.²

Method

Participants

Participants were 340 English-speaking adults from the United States ages 19 to 75 ($M = 36.5$; 179 men, 160 women, 1 non-binary) who participated through Amazon Mechanical Turk for a payment of \$0.30. Participants were randomly assigned to one of five conditions mirroring those of Experiment 1 (*Baseline*: $n = 72$; *Muslims=Christians Generic*: $n = 66$; *Christians=Muslims Generic*: $n = 67$; *Muslims=Christians Non-generic*: $n = 67$; *Christians=Muslims Non-generic*: $n = 68$).

Materials and Procedure

The procedure was analogous to that of Experiment 1, but instead participants read a passage about a large-scale terrorism study and judged whether they thought Christians or Muslims were more likely to be terrorists (“Based on these findings, who do you think are more likely to be terrorists?”) and rated their confidence in their answer. Below are the passages that

² See <http://aspredicted.org/blind.php?x=ww9a7g>

participants read:

Muslims=Christians Generic condition [The three generic statements of “equality” are underlined here. No statements were underlined for the participants.]

Recent Study: Muslims Equal Christians in Terrorist Acts

A recent study has shown that Muslims are just as likely as Christians to commit terrorist acts. At the non-partisan Nation Institute, a team of researchers analyzed religiously motivated acts of violence and intimidation committed by hundreds of people in the United States from 1965 to 2015. Overall, they found that Muslims cause as many terror-related civilian deaths as Christians in major U.S. cities. A troubling finding from the study, however, is that there is no universal agreement on the definition of terrorism. The researchers worry that some government agencies, as a result, may fail to develop effective counterterrorism policies.

The *Christians=Muslims Generic* condition was identical to the *Muslims=Christians Generic* condition, except Christians were in the complement position in each of the three generic statements. The *Non-generic* conditions were identical to the above passage, except the verb in the title was in past tense, and we included “some” and “the” before “Christians” and “Muslims” in the other subject-complement statements, analogous to the passages in Experiment 1.

Statistical Analysis

All statistical analyses were identical to those of Experiment 1. For the weighted responses, we coded “Christians” as -1 and “Muslims” as 1.

Results

Baseline Condition

As in Experiment 1, the *Baseline* condition reflected a commonly held stereotype in the

United States. Here, 76.4% of participants ($SE = 5.0\%$, $n = 72$) judged Muslims as more likely to be terrorists, which was greater than chance, binomial sign test, $p < .0001$. In the weighted responses, participants also attributed more likelihood of being a terrorist to Muslims ($M = 42.39$, $SE = 7.58$, $n = 72$), $t(71) = 5.59$, $p < .0001$.

Comparisons against Baseline

As shown in Figure 3, responses in all conditions were significantly lower than those at *Baseline*, which was expected for the *Muslims=Christians* conditions (*Muslims=Christians Non-generic*, binary: 56.7%, $SE = 6.10\%$, $n = 67$, $OR = .41$ [.20 to .84], $p = .015$; weighted: $M = 4.00$, $SE = 7.62$, $n = 67$, $b = -38.39$ [-59.66 to -17.12], $p < .001$; *Muslims=Christians Generic*, binary: 56.1%, $SE = 6.16\%$, $n = 66$, $OR = .40$ [.19 to .82], $p = .01$; weighted: $M = 8.32$, $SE = 7.84$, $n = 66$, $b = -34.07$ [-55.65 to -12.50], $p < .001$). However, these results were unexpected for the *Christians=Muslims* conditions (*Christians=Muslims Non-generic*, binary: 45.6%, $SE = 6.1\%$, $n = 68$, $OR = .26$ [.13 to .53], $p < .001$; weighted: $M = .65$, $SE = 8.32$, $n = 68$, $b = -41.74$ [-63.96 to -19.53], $p < .001$; *Christians=Muslims Generic*, binary: 52.2%, $SE = 6.2\%$, $n = 67$, $OR = .34$ [.16 to .70], $p = .003$; weighted: $M = -1.28$, $SE = 7.74$, $n = 67$, $b = -43.67$ [-65.12 to -22.24], $p < .001$).

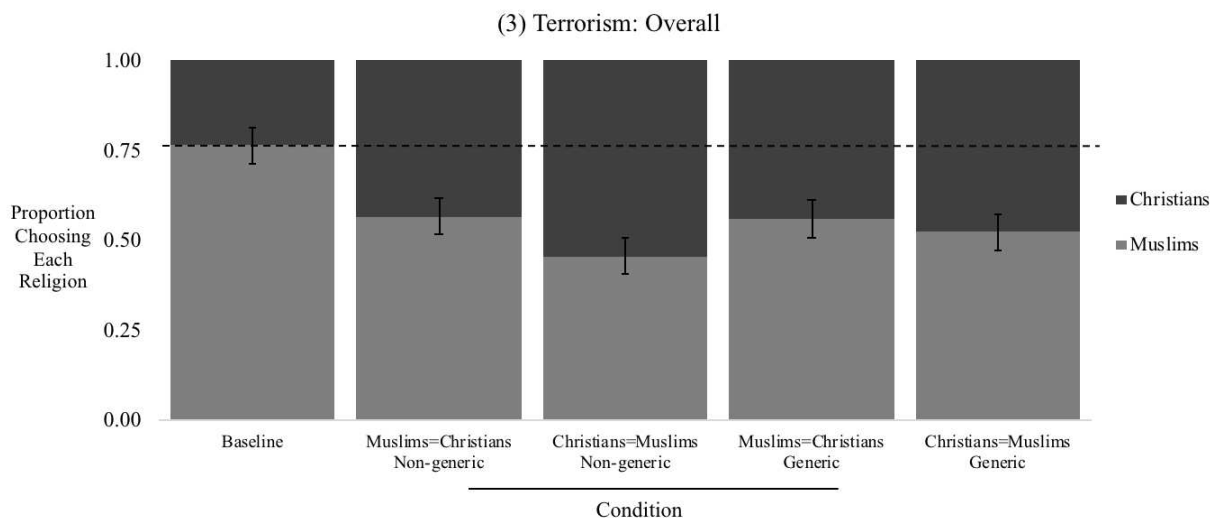


Figure 3. Participants' binary responses in Experiment 2. Responses reflect the religious group to whom participants attributed greater likelihood of being a terrorist. Error bars represent $\pm 1 SE$.

Effects of Syntax

The second set of analyses compared the *Muslims=Christians Generic* condition to the *Christians=Muslims Generic* condition (with *Muslims=Christians Generic* coded as the reference condition), and the *Muslims=Christians Non-generic* condition to the *Christians=Muslims Non-generic* condition. Neither of the comparisons yielded significant differences (*Non-generic*, binary: OR = .64 [.32 to 1.26], $p = .20$; weighted: $b = -3.35$ [-25.68 to 18.98], $p = .77$; *Generic*, binary: OR = .86 [.43 to 1.70], $p = .66$; weighted: $b = -9.60$ [-31.40 to 12.20], $p = .29$; collapsing across genericness, binary: OR = .74 [.46 to 1.20], $p = .22$; weighted: $b = -6.45$ [-21.94 to 9.03], $p = .27$). These results indicate that there was no overall effect of syntax.

Effects of Genericness

The third set of analyses compared the *Christians=Muslims Generic* condition to the *Christians=Muslims Non-generic* condition, and the *Muslims=Christians Generic* condition to the *Muslims=Christians Non-generic* condition. Neither of the comparisons yielded significant differences (*Christians=Muslims*, binary: OR = .76 [.39 to 1.51], $p = .44$; weighted: $b = 1.93$ [-20.57 to 24.43], $p = .87$; *Muslims=Christians*, binary: OR = 1.03 [.52 to 2.04], $p = .94$; weighted: $b = -4.32$ [-25.94 to 17.30], $p = .29$; collapsing across syntactic conditions, binary: OR = .89 [.55 to 1.43], $p = .62$; weighted: $b = -1.17$ [-16.67 to 14.33], $p = .53$). These results indicate that there was no overall effect of genericness, as in Experiment 1.

Exploratory Analyses: Effects of Explicit Awareness of Subject-Complement Statements

Although the above analyses indicate that there was no syntactic framing effect overall, we conducted exploratory analyses to examine this effect in participants who did and did not explicitly attend to the subject-complement statements' influence. We coded the free responses as "cited syntax" or "did not cite syntax" as in Experiment 1. Of the 268 participants in the syntactic conditions, 183 (68%) cited the subject-complement statements as influential in their judgment and only 85 (32%) did not.

As in Experiment 1, we used logistic regression models with syntactic condition (*Christians=Muslims* or *Muslims=Christians*, collapsing across genericness; the *Baseline* condition was omitted), explicit awareness (cited syntax vs. did not cite syntax), and the interaction of these factors as predictors of the binary responses. There was no main effect of syntactic condition, $OR = 1.28$ [.71 to 2.30], $p = .41$, confirming the second set of analyses above. There was a main effect of explicit awareness, $OR = .39$ [.22 to .70], $p = .002$; participants who did not cite the statements as influential (67.1%, $SE = 5.13%$, $n = 85$) were more likely than those who cited the statements (45.9%, $SE = 3.69%$, $n = 183$) to attribute greater likelihood of being a terrorist to Muslims overall.

Notably, as in Experiment 1, there was an interaction between syntactic condition and explicit awareness, $OR = .22$ [.12 to .39], $p < .001$. To unpack this interaction, we ran separate logistic regression models with syntactic condition as a predictor for participants who did and did not cite the statements as influential. Of those who did not cite the statements, those in the *Christians=Muslims* conditions (83.3%, $SE = 5.43%$, $n = 48$) were more likely than those in the *Muslims=Christians* conditions (45.9%, $SE = 8.31%$, $n = 37$) to attribute greater likelihood of being a terrorist to Muslims, $OR = 5.88$ [2.17 to 15.94], $p < .001$ (see Figure 4A). Thus, the attributions of participants who did not explicitly attend to the subject-complement statements'

influence were as expected if the group in the complement position is perceived to be more typical.

In contrast, participants who did cite the statements as influential were more likely to attribute greater likelihood of being a terrorist to Muslims in the *Muslims=Christians* conditions (60.4%, $SE = 5.0%$, $n = 96$) than in the *Christians=Muslims* conditions (29.9%, $SE = 4.9%$, $n = 87$), $OR = .28$ [.15 to .52], $p < .001$ (see Figure 4B). The direction of this effect is the *opposite* of what would be expected if the group in the complement position is perceived to be more typical. [We found the same pattern of results for the weighted responses, using analogous linear regression models. There was an interaction between syntactic condition and explicit awareness, $b = -21.86$ [-29.70 to -14.02], $p < .001$. Participants who did not cite the statements as influential showed the expected syntactic framing effect, $b = 25.84$ [12.15 to 39.53], $p < .001$, but those who cited the statements showed a syntactic framing effect in the opposite direction, $b = -17.88$ [-26.50 to -9.26], $p < .001$.]

As in Experiment 1, these results indicate that only a small subset of participants in the syntactic conditions did not explicitly attend to the statements' influence, and that the expected syntactic framing effect (in this case, more terrorist attributions to the group in the complement position than the group in the subject position) was only observed in these participants.

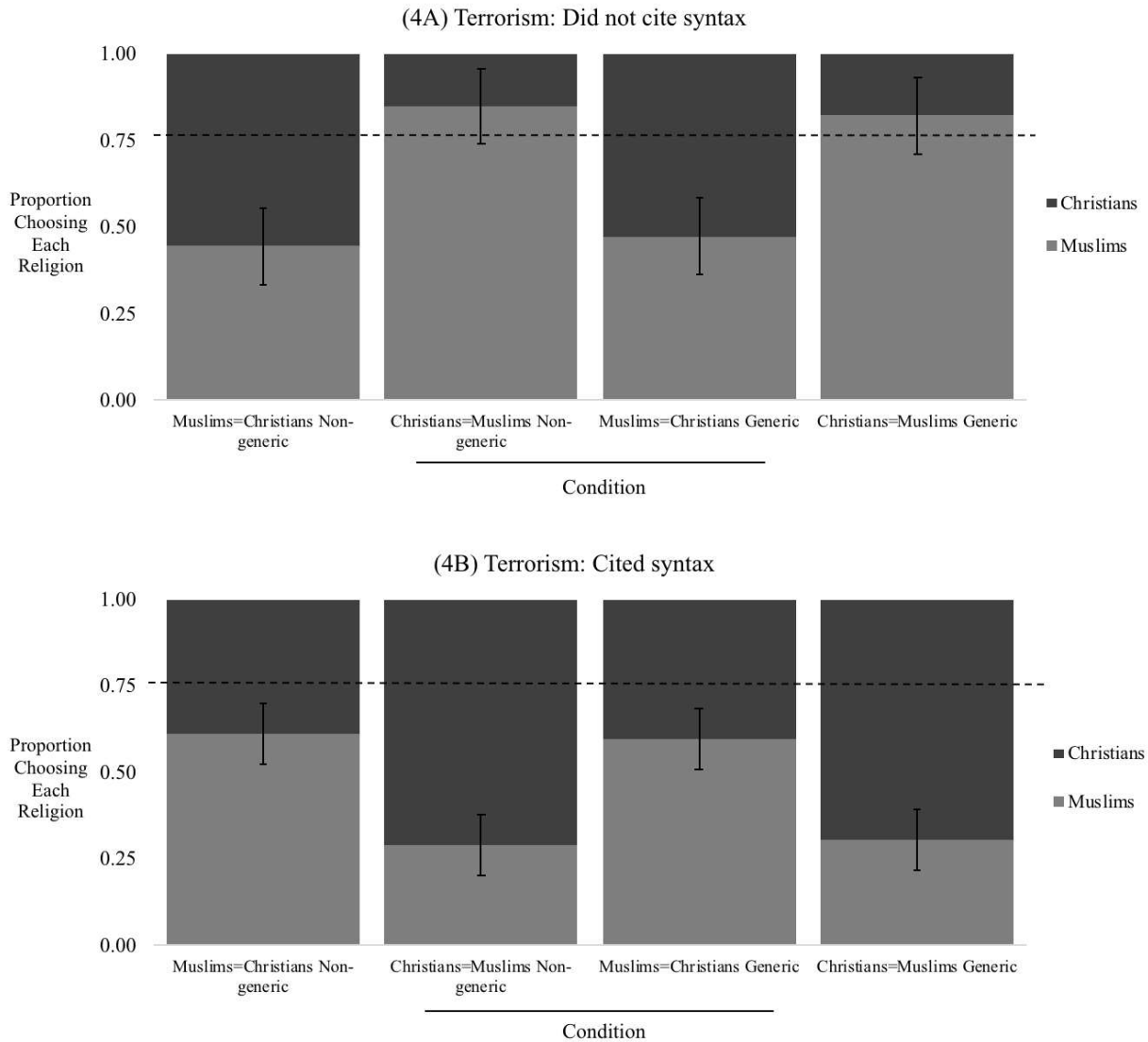


Figure 4. Participants’ binary responses in Experiment 2 for those who (a) did not cite the subject-complement statements as influential in their attributions, and (b) cited the statements. Responses reflect the religious group to whom participants attributed greater likelihood of being a terrorist. Error bars represent $\pm 1 SE$.

Discussion

Unlike in the math domain of Experiment 1, there was no overall syntactic framing effect in the terrorism domain. However, the results of our exploratory analyses mirror those of Experiment 1 in showing a significant syntactic framing effect in the roughly one-third of

participants who did not cite the subject-complement statements as influential in their judgments. These participants attributed more likelihood of being a terrorist to the group in the complement position: when reading “Christians are just as likely as Muslims to commit terrorist acts,” for example, they attributed more likelihood of being a terrorist to Muslims than Christians, as expected. In contrast, those who *did* explicitly attend to the statements’ influence responded in the opposite direction: for the same statement with Muslims in the complement position, they attributed more likelihood of being a terrorist to Christians than Muslims.

Why did explicitly attending to the subject-complement statements’ influence induce attributions that were opposite to the expected syntactic framing effect? Participants who cited the statements as influential in their judgments may have recognized the implied biases and thus consciously resisted them by selecting the religious group that the subject-complement statements were biased against. Participants’ free responses may also suggest a potential explanation as to why those who cited the statements as influential made attributions opposite to the expected framing effect. When asked about other factors that contributed to their evaluation, some participants rightly noted that there are more Christians than Muslims in the United States. Participants who cited the subject-complement statements as influential may have been more likely to consider this difference in the base rates of the two religious groups, and thus may have consciously chosen to account for this information in their attributions—for example, by choosing Christians even when “Christians” was in the subject position. Regardless of why participants who attended to the statements’ influence responded opposite to the expected syntactic framing effect, the key finding here is that, as in Experiment 1, relatively few participants did not attend to the statements’ influence, and only they showed the expected syntactic framing effect. These results suggest that the effect may not be as widespread as

implied by Chestnut and Markman (2018).

Experiment 3: Within-Subjects Replication

In Experiment 3, we replicated Experiments 1 and 2 (with preregistered confirmatory analyses) to further investigate the effects of explicit awareness of the subject-complement statements' influence. In this high-powered, within-subjects design, participants received one version of both the math and terrorism scenarios and judged which gender was naturally more skilled at math and which religious group was more likely to be terrorists. Only the generic versions of each passage were used, as Experiments 1 and 2 did not indicate that genericness significantly influenced participants' judgments. We hypothesized that those who did not explicitly attend to the statements' influence in both scenarios would show the expected syntactic framing effect, and those who did explicitly attend to the statements' influence would either show no effect (as in Experiment 1, where those who cited the statements as influential picked 'boys' and 'girls' at similar rates) or an effect in the opposite direction (in line with Experiment 2, where those who cited the statements' influence judged the religious group in the subject position as more likely to be terrorists). We preregistered our methods and planned analyses on AsPredicted.org.³

Method

Participants

Participants were 752 English-speaking adults from the United States ages 18 to 82 ($M = 37.5$; 406 men, 341 women, 5 non-binary) who participated through Amazon Mechanical Turk for a payment of \$0.50. Participants were randomly assigned to one of six conditions mirroring those of Experiments 1 and 2 (*Baseline Terrorism*: $n = 260$; *Muslims=Christians*: $n = 244$;

³ See <http://aspredicted.org/blind.php?x=m8j285>

Christians=Muslims: n = 248; Baseline Math: n = 260; Boys=Girls: n = 248; Girls=Boys: n = 244).

Materials and Procedure

The procedure combined Experiments 1 and 2 for a higher-powered, confirmatory analysis of the effect of explicit awareness of subject-complement statements' influence on judgment. Participants received one math scenario and one terrorism scenario (order counterbalanced) in either the *Baseline* condition or one of the syntactic conditions. All passages, questions, and statistical analyses were analogous to the generic version of those in Experiments 1 and 2.

Results

Baseline Condition

The *Baseline* conditions reflected those in Experiments 1 and 2: 66.5% of participants ($SE = 2.9\%$, $n = 260$) attributed greater math ability to boys, which was greater than chance, binomial sign test, $p < .001$, and 73.1% of participants ($SE = 2.8\%$, $n = 260$) attributed more likelihood of being a terrorist to Muslims, which was also greater than chance, binomial sign test, $p < .001$. In the weighted responses, participants similarly attributed greater math ability to boys ($M = 14.25$, $SE = 3.63$, $n = 260$), $t(259) = 3.92$, $p < .001$, and more likelihood of being a terrorist to Muslims ($M = 29.77$, $SE = 3.86$, $n = 260$), $t(259) = 7.71$, $p < .001$.

Comparisons against Baseline

For the math scenario, the *Girls=Boys* condition (binary: 59.0%, $SE = 3.2\%$, $n = 244$; weighted: $M = 7.59$, $SE = 3.76$, $n = 244$) did not differ significantly from baseline (binary: OR = .72 [.50 to 1.04], $p = .081$; weighted: $b = -6.66$ [-16.93 to 3.61], $p = .20$), nor did the *Boys=Girls* condition (binary: 63.3%, $SE = 3.1\%$, $n = 248$, OR = .87 [.60 to 1.25], $p = .45$; weighted: $M =$

9.09, $SE = 3.88$, $n = 248$, $b = -5.15$ [-15.58 to 5.28], $p = .33$). See Figure 5.

For the terrorism scenario, participants in the *Christians=Muslims* condition (binary: 48.8%, $SE = 3.2\%$, $n = 248$; weighted: $M = 3.94$, $SE = 4.12$, $n = 248$) picked Muslims less often than those in the *Baseline* condition (binary: OR = .35 [.24 to .51], $p < .001$; weighted: $b = -25.83$ [-37.00 to -14.65], $p < .001$). There was not a significant difference between the *Muslims=Christians* condition (binary: 62.7%, $SE = 3.1\%$, $n = 244$; weighted: $M = 21.52$, $SE = 3.90$, $n = 244$) and the *Baseline* condition (binary: OR = .62 [.43 to .90], $p = .01$; weighted: $b = -8.25$ [-19.04 to 2.54], $p = .13$). See Figure 6.

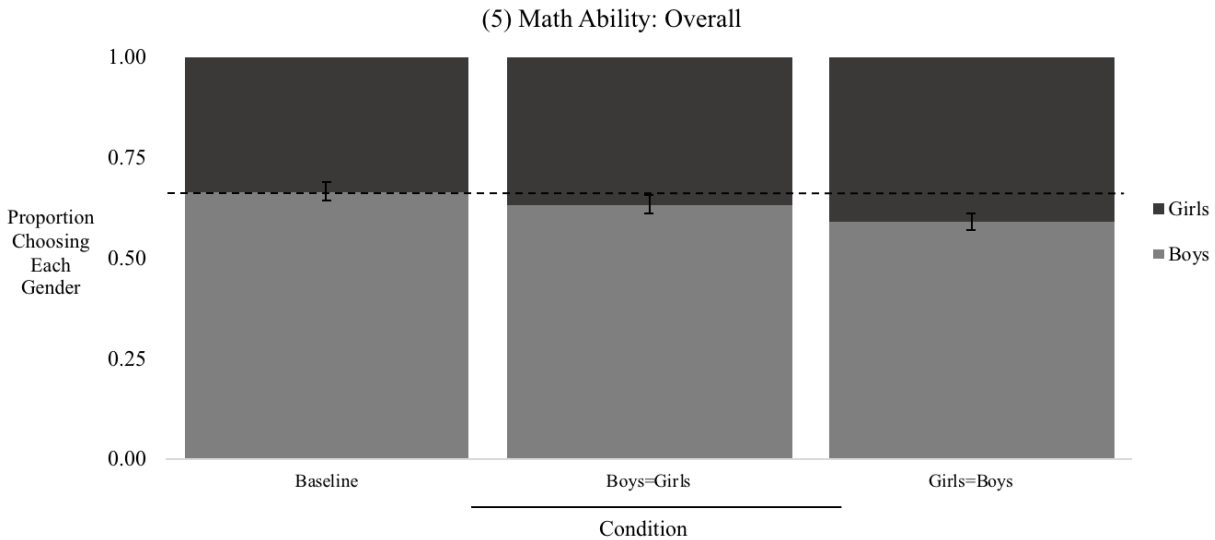


Figure 5. Participants' binary responses in Experiment 3. Responses reflect the gender to whom participants attributed greater math ability. Error bars represent $\pm 1 SE$.

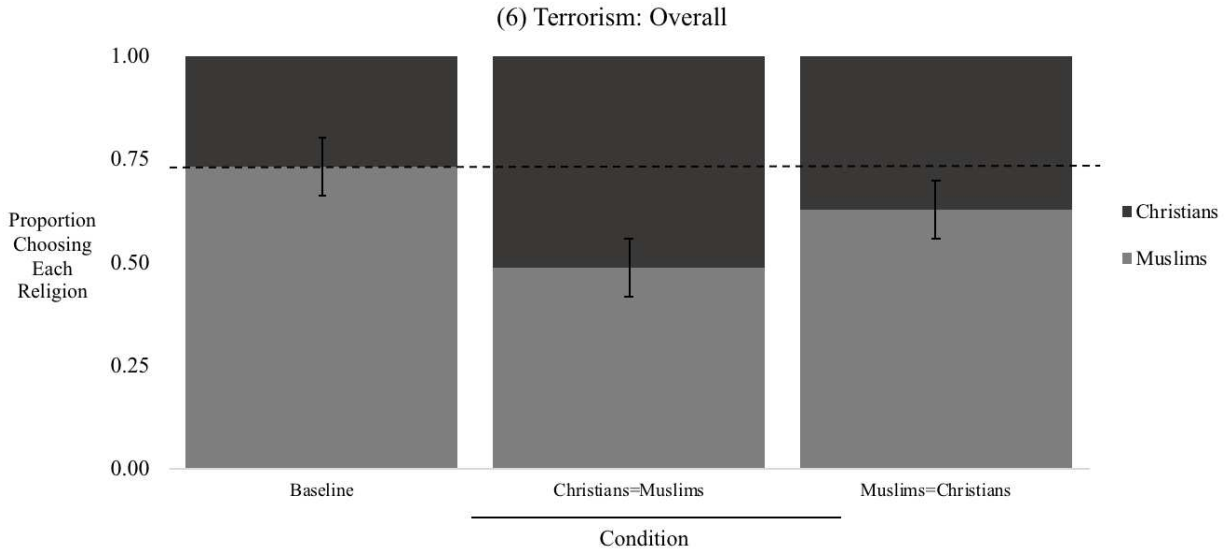


Figure 6. Participants' binary responses in Experiment 3. Responses reflect the religious group to whom participants attributed greater likelihood of being a terrorist. Error bars represent $\pm 1 SE$.

Effects of Syntax

The second set of analyses compared the *Boys=Girls* condition to the *Girls=Boys* condition and the *Muslims=Christians* condition to the *Christians=Muslims* condition (with the *Boys=Girls* and *Muslims=Christians* conditions as the reference conditions). In the math scenario, there was no significant effect of syntax (binary: OR = .84 [.58 to 1.20], $p = .33$; weighted: $b = -1.51$ [-12.12 to 9.10], $p = .78$). In the terrorism scenario, however, participants in the *Muslims=Christians* condition chose “Muslims” more often than those in the *Christians=Muslims* condition (binary: OR = .57 [.40 to .81], $p = .002$; weighted: $b = -17.58$ [-28.82 to -6.33], $p = .002$).

Confirmatory Analyses: Effects of Explicit Awareness of Subject-Complement Statements

In the syntactic math conditions, 369 of the 492 participants (75%) explicitly attended to the statements' influence and only 123 (25%) did not. In the syntactic terrorism conditions, 350

of the 492 participants (71%) cited the statements and only 142 (29%) did not.

We used identical regression models to those of Experiments 1 and 2. For the math scenario, there was a significant interaction between syntax and explicit awareness, $OR = .09$ [.03 to .23], $p < .001$. Of those who did not explicitly attend to the statements' influence, those in the *Girls=Boys* condition (85.5%, $SE = 3.8%$, $n = 69$) were more likely than those in the *Boys=Girls* condition (53.8%, $SE = 6.9%$, $n = 54$) to attribute greater math ability to boys, $OR = 5.48$ [2.3 to 12.9], $p < .001$ (see Figure 7). Of those who did explicitly attend to the statements' influence, those in the *Boys=Girls* condition (66.5%, $SE = 3.4%$, $n = 194$) were more likely than those in the *Girls=Boys* condition (48.3%, $SE = 3.8%$, $n = 174$) to attribute greater math ability to boys, $OR = .48$ [.31 to .73], $p = .001$. [We found the same pattern of results for the weighted responses, using analogous linear regression models. There was an interaction between syntactic condition and explicit awareness, $b = -64.05$ [-87.84 to -40.27], $p < .001$. Participants who did not cite the subject-complement statements as influential showed the expected syntactic framing effect, $b = 45.43$ [23.92 to 66.95], $p < .001$, but those who cited the statements showed a syntactic framing effect in the opposite direction, $b = -18.62$ [-30.33 to -6.91], $p = .002$.]

In the terrorism scenario, there was also an interaction between syntax and explicit awareness, $OR = .18$ [.07 to .43], $p < .001$. Of those who did not explicitly attend to the subject-complement statements' influence, those in the *Christians=Muslims* condition (70.6%, $SE = 5.3%$, $n = 75$) were descriptively (albeit not significantly) more likely than those in the *Muslims=Christians* condition (61.1%, $SE = 6.0%$, $n = 67$) to attribute greater likelihood of being a terrorist to Muslims, $OR = 1.96$ [.91 to 4.2], $p = .084$ (see Figure 8). Of those who did explicitly attend to the statements' influence, those in the *Muslims=Christians* condition (62.7%, $SE = 3.3%$, $n = 177$) were more likely than those in the *Christians=Muslims* condition (40.1%,

$SE = 3.7\%$, $n = 173$) to attribute greater likelihood of being a terrorist to Muslims, $OR = .35$ [.23 to .54], $p < .001$. [We found the same pattern of results for the weighted responses, using analogous linear regression models. There was an interaction between syntactic condition and explicit awareness, $b = -54.82$ [-78.47 to -31.17], $p < .001$. For participants who did not cite the statements as influential, the expected syntactic framing effect trended toward significance, $b = 20.51$ [-.14 to 41.15], $p = .051$, but for those who cited the statements, there was a syntactic framing effect in the opposite direction, $b = -34.31$ [-46.87 to -21.75], $p < .001$.]

As in Experiments 1 and 2, these results again indicate that only a small subset of participants in the syntactic conditions did not explicitly attend to the subject-complement statements' influence on their judgment, and that the expected syntactic framing effects were only observed in those participants.

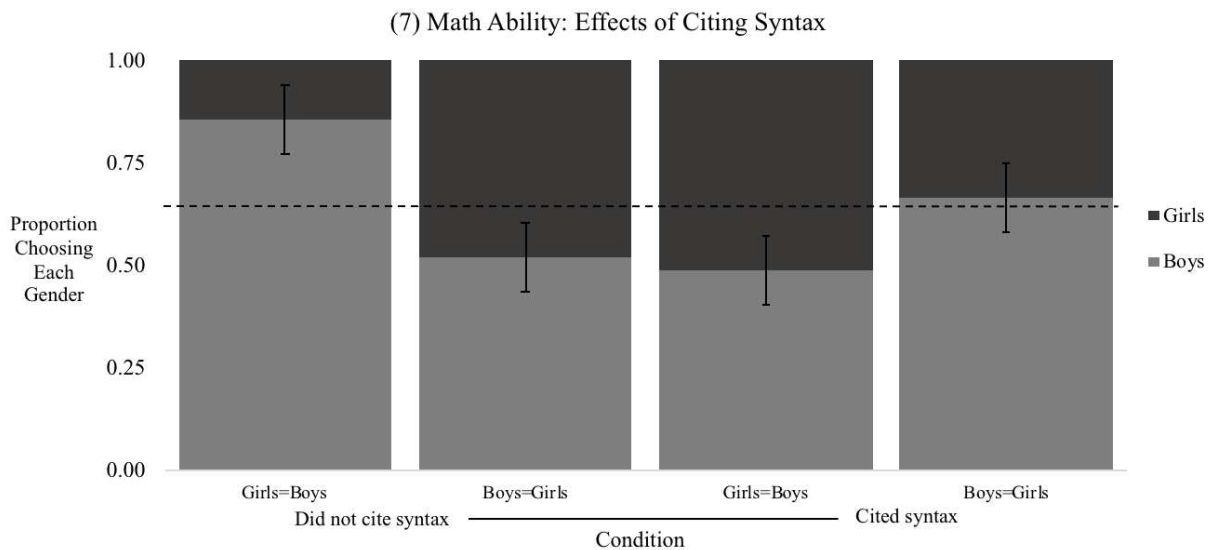


Figure 7. Participants' binary responses in Experiment 3 for those who did not cite the subject-complement statements as influential in their attributions (left) and cited the statements (right). Responses reflect the gender to whom participants attributed greater math ability. Error bars represent $\pm 1 SE$.

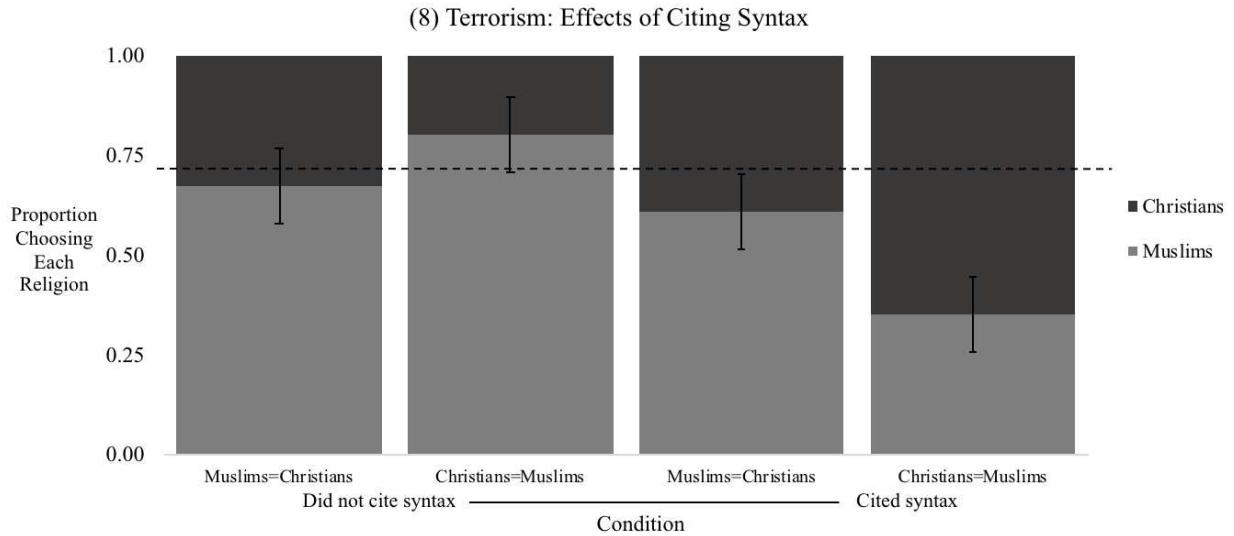


Figure 8. Participants' binary responses in Experiment 3 for those who did not cite the subject-complement statements as influential in their attributions (left) and cited the statements (right). Responses reflect the religious group to whom participants attributed greater likelihood of being a terrorist. Error bars represent $\pm 1 SE$.

Discussion

Experiment 3 replicated the findings in Experiments 1 and 2 that roughly the 30% of participants who did not cite the subject-complement statements as influential in their judgments showed the expected syntactic framing effect. We found a reverse syntactic framing effect in those who did cite the statements as influential (i.e., participants judged the group in the subject position as more skilled at math or more likely to be terrorists). These participants may have been aware of the bias implied by the statements and thus consciously resisted it.

General Discussion

In three experiments, one assessing attributions of math ability, one assessing attributions of the likelihood of being a terrorist, and the third assessing both, we replicated the effects of subject-complement syntax first documented by Chestnut and Markman (2018) and identified a

key moderator of such effects. Specifically, we found that the syntactic framing effect, though unaffected by the genericness of the subject-complement statements, depends crucially on not explicitly attending to the influence of such statements on one's judgments. Only the relatively small subset of participants who did not cite the statements as influential in their attributions were affected by them in the expected direction.

In Experiment 1, participants read a passage about a large-scale math study that contained subject-complement statements (i.e., "girls are as good as boys at math" or "boys are as good as girls at math"), judged which gender they thought was naturally more skilled at math, and then indicated which part of the passage was most influential in their judgment. Overall, participants in the *Girls=Boys* conditions attributed more natural math ability to boys, suggesting that the subject-complement statements reinforced the *Baseline* stereotype that boys are naturally more skilled at math than girls. In contrast, those in the *Boys=Girls* conditions attributed more natural math ability to girls, reversing the stereotype. However, our exploratory analyses revealed that this effect was driven exclusively by the 24% of participants who did not cite the statements as influential. That is, only those who did not attend to a statement such as "girls are as good as boys at math" attributed greater math ability to boys than girls.

The results of Experiment 2 replicated this general pattern. Participants read a passage about a large-scale terrorism study, analogous to that of Experiment 1, judged whether Muslims or Christians were more likely to be terrorists, and cited which part of the passage was most influential in their attributions. Although we found no overall syntactic framing effect in this experiment, our exploratory analyses again showed that this effect was moderated by explicit awareness of the subject-complement statements' influence. Only the 32% of participants who did not cite the statements as influential showed the syntactic framing effect in the expected

direction. That is, only those who did not explicitly attend to the influence of a statement such as “Christians are just as likely as Muslims to commit terrorist acts” attributed greater likelihood of being a terrorist to Muslims than Christians.

Even though the math and terrorism domains are vastly different, they gave rise to strikingly similar results: subject-complement statements yielded a syntactic framing effect only when participants did not recognize the statements as influential. In Experiment 3, a high-powered within-subjects replication of Experiments 1 and 2, we again found that those who did not explicitly attend to subject-complement statements’ influence showed syntactic framing effects in the expected direction. These results suggest that when people explicitly attend to the influence of subject-complement statements on their judgment, they do not necessarily treat the group in the complement position as having greater ability or being more typical of the category in question. Our analyses, then, place some limits on Chestnut and Markman’s (2018) conclusions: the effects of subject-complement syntax are not as pervasive as previously acknowledged. Given that Experiment 1 was a near-direct replication of Chestnut and Markman’s Experiment 1, it is likely that their effects were also driven by the small group of participants who did not recognize the statements’ influence on their judgment.

Those who did cite the statements as influential may have shown a different syntactic framing effect because they either interpreted the statements as unbiased, taking them at face value, or indeed were aware of the biases and consciously resisted them. If they were aware of the biases, these participants may have chosen the group that the statements were biased against (in the subject position) as a way of demonstrating their sensitivity to the implicit biases and countering them in their judgments. These participants may be more sensitive to the implicit biases than those who do not cite the statements as influential. A follow-up study (as in Chestnut

& Markman, 2018) could further investigate the reason for participants' differing judgments by explicitly asking whether such subject-complement statements are biased against a certain group. Even though Chestnut and Markman found that participants consider these statements to be relatively unbiased overall, those who cite the statements as influential may be more likely to detect bias in the statements than those who do not.

Other linguistic frames have also been shown to affect judgments when they go unnoticed. For example, in Thibodeau and Boroditsky's (2011) study of crime metaphors, participants' preference for crime mitigation strategies depended on the metaphor they were presented with (crime as a beast or virus), yet only 3% of participants explicitly attended to the frame. Our syntactic framing effect was similarly covert, but in our case, the majority of participants (over two-thirds) explicitly attended to the framing statements. Our frame likely captured participants' attention because the subject-complement statements carried the key information in the passage (e.g., the finding that boys and girls perform equally well at math), while Thibodeau and Boroditsky's (2011) metaphors were incidental to the key information presented (i.e., the crime statistics). In our study, however, we cannot conclude that participants attended to the frame's influence as a whole; our measures indicate that participants recognized the influence of specific statements. For those who cited the subject-complement statements as influential, we cannot conclude which particular aspects of the sentences they were explicitly aware of. Although the subject-complement statements contained the key information in our passages' frames, we do not know if participants were explicitly aware of the syntax itself.

In another recent study, the linguistic frame similarly carried the key information of the passage but was only effective in participants who *did* explicitly attend to it. Holmes, Husney, Pollard, and Flusberg (2019) presented participants with a passage describing sexual assault

allegations in which either the female character (the accuser) or the male character (the alleged perpetrator) was framed as the “real” victim, and then asked them to rate their support for each character. Participants who cited the victim language as influential were more likely to support the character framed as the victim, while those who cited other parts of the passage were unaffected by the frame. Our results likely differ from those of Holmes et al. because of the differing properties of the frame: ours subtly implied differences, while their frame could be understood at face-value. Saying “she’s the real victim here” unequivocally expresses that the woman is the victim, whereas “girls are as good as boys at math” appears to express equality. Thus, frames with a single straightforward interpretation may be more persuasive when people explicitly attend to them, but frames that carry subtle biases may be more persuasive when people read them more superficially. Future research could explore this possibility more directly by varying the number of ways a certain frame could be interpreted within a single domain.

In the first two experiments, we also explored the effects of the genericness of the subject-complement statements by varying their tense and scope, and found that the syntactic framing effect did not depend on this factor. Previous research suggests that when scientific findings are phrased generically, people perceive them to be more important and generalizable than when phrased non-generically. This is likely because generics imply broad, timeless conclusions rather than describing specific findings or events (DeJesus, Callanan, Solis, & Gelman, 2019), a distinction to which even children are sensitive (Hollander, Gelman, & Raman, 2009). In light of such findings, we hypothesized that generic language may be a prerequisite for subject-complement statements to elicit syntactic framing effects. However, across both experiments, we did not find any effects of genericness on participants’ attributions, suggesting that subject-complement statements can be persuasive regardless of whether they are phrased

generically or non-generically.

Our experiments and those of Chestnut and Markman (2018) examined syntactic framing effects when the items in the subject and complement positions were social groups, for which there are common stereotypes. It would also be interesting to explore whether the same syntactic structure affects people's attitudes when the items are individuals. For example, a future study could use subject-complement statements to describe a Supreme Court case involving two individuals with legal arguments of relatively equal validity. A case such as *Masterpiece Cakeshop v. Colorado Civil Rights Commission*, for example, would allow us to study individuals rather than groups, and would provide a scenario in which people may be able to see the validity of both arguments. Also, by exploring domains in which people do not necessarily hold stereotypes, future research could identify even more limits to or extensions of the syntactic framing effect.

Chestnut and Markman (2018) concluded that subject-complement statements that intend to express equality can backfire by implying that boys are naturally more skilled than girls at math, and in our case, that Muslims are more likely than Christians to be terrorists. However, we have shown that subject-complement statements will only backfire when people do not think about them carefully. If people pause to think about the implications of such statements, they may not be susceptible to perpetuating the stereotypes that the statements can imply.

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