

Congeniality Biases are shaped by *de Facto* Order of Information Presentation

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Abstract

When people can decide what information to consume, they frequently select information that is attitude-consistent (or *congenial*). Furthermore, people view congenial information as more valid than attitude-inconsistent (or *uncongenial*) information. But are these tendencies independent, or do they operate in tandem to increase congeniality biases? And if so, is this because selected information appears first, even when uncongenial information is inevitably encountered later? Surprisingly, no prior research has investigated if people who select congenial information also view congenial information as more valid, and whether this is related to congenial information appearing first, *de facto*. Furthermore, no prior research has investigated if simply presenting uncongenial information first can be a strategy to reduce the tendency to view congenial information as more valid. Across four studies, participants rated the validity of congenial and uncongenial messages about gun control, a divisive political issue. Here we show that regardless of whether participants could select information, or whether information order was randomized, validation of congenial (versus uncongenial) information was lower when uncongenial information appeared first. In conclusion, *de facto*, contextual, placement of information may be a powerful antidote against bias, and is key for any field that utilizes communication to modify human attitudes and behavior.

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US Vice President Dick Cheney's hotel suite specifications included the television being preset to the comparatively supportive Fox News (The Smoking Gun, 2006), and US President Donald Trump likely set similar requirements (Palmeri, 2017; Pettypiece & Smith, 2017). In practice, however, these selections are imperfect defenses against information that contradicts their attitudes: Both Cheney and Trump are guaranteed to encounter reports opposing their administration. Nevertheless, such selections of information probably often ensured that they would encounter supportive information first. If so, what are the consequences of viewing attitude-consistent (or *congenial*) information, next considering that information, and later receiving attitude-inconsistent (or *uncongenial*) information? Is receiving congenial information first likely to make that information appear more valid than receiving congenial information after uncongenial information? Perhaps more importantly, will contexts that force an audience to receive uncongenial information before congenial information reduce the tendency to perceive congenial information as more valid than uncongenial information? Many contexts such as political debates, news reports and their online commentaries, and social media threads are likely to entail presentation of two competing views (often in arbitrary order). If order is important, these provocative findings would suggest that extant models of congeniality biases are incomplete, as current theorizing does not account for the role of context, as well as indicate an important practical consideration in many persuasive contexts.

Past work on congeniality biases indicates that people frequently select information that supports (versus challenges) their preexisting attitudes, labeled *selective exposure* (Hart, Albarracín, Eagly, Brechan, Lindberg, & Merrill, 2009). Furthermore, information that confirms preexisting views is perceived as more valid than disconfirming information, a phenomenon

identified by Lord, Ross, and Lepper (1979; see also Ditto & Lopez, 1992; Kahan, 2017; Kunda, 1990; Taber & Lodge, 2006), that we will label *congenial validation*.

Selective exposure to attitude-consistent information is one of the most successful strategies to protect an attitude (Brock & Balloun, 1967; Earl, Albarracín, Durantini, Gunnoe, Leeper, & Levitt, 2009; Earl & Nisson, 2015; Festinger, 1957; Hart et al., 2009). For instance, when given the option to choose among an array that contained both pro-life and pro-choice messages, people in favor of (against) legalized abortion were more likely to select pro-choice (pro-life) news articles than articles espousing an uncongenial position (Knobloch-Westerwick & Meng, 2009). Furthermore, people may protect their attitudes by engaging in *congenial validation*, a process by which messages are attributed strength and plausibility (Lord, Ross, & Lepper, 1979), often due to affective factors (Dillard & Shen, 2000; Weber, Huskey, Mangus, Westcott-Baker, & Turner, 2015). For instance, people may rate results and procedures that confirm their own attitudes about capital punishment as more “convincing” than opposing information (Lord, Ross, & Lepper, 1979), or rate attitude-consistent abortion messages as more “logical” and “plausible” than their attitude-inconsistent counterparts (Eagly, Kulesa, Brannon, Shaw, & Hutson-Comeaux, 2000)¹. Messages can be objectively valid if the premises are true, and the premises logically support the conclusion. However, what Lord and colleagues (1979)

¹ Beyond selective exposure and congenial validation, people may deploy other strategies to protect their attitudes (for a recent review see Earl & Hall, 2019). For instance, people may ignore attitude-threatening information (Brock & Balloun, 1967; Derricks & Earl, 2019; Earl, Crause, Vaid, & Albarracín, 2016; Johnson & Eagly, 1989; Sweeney & Gruber, 1984), as was the case for Nixon supporters at the height of the Watergate scandal, who reported less interest in and attention paid to Watergate-related matters than did George McGovern supporters or undecided voters (Sweeney & Gruber, 1984). People can bolster preexisting views by: selectively elaborating on congenial information (Lord et al., 1979; Petty & Cacioppo, 1986); choosing low-quality uncongenial information that undermines the opposing perspective (Festinger, 1957; Lowin, 1969); employing more stringent evaluative criteria for uncongenial conclusions (Ditto & Lopez, 1992; Kunda, 1990; Lord et al., 1979); and counter-arguing or derogating uncongenial information (Albarracín & Mitchell, 2004; Festinger & Maccoby, 1964).

identified is that subjective validity is dissociated: what we perceive to be strong is not just a function of objective validity, but also whether the message agrees with what we already believe. Although subjective validity and attitudes are moderately correlated ($r = .41$; Dillard, Weber, & Vail, 2007), subjective validity may be influenced by emotional and extraneous factors that have little to do with objective validity, and that ultimately influence responses to a message (Dillard & Peck, 2000). In the present research, *congenial selective exposure bias* suggests that people will select congenial (versus uncongenial) information and *congenial validation bias* suggests that congenial (versus uncongenial) information will be perceived as more valid.

Up to now, however, most research on congeniality biases has had two relevant limitations. First, the two biases have been studied in isolation. Therefore, we do not know if people who select congenial information are also likely to view that information as valid, and whether this is because its *de facto* position is first. Second, we do not know if we could use *de facto* placement of information in ways that reduce the tendency to view the congenial information as more valid. Just like the information seeker's motives (e.g., Chaiken, Giner-Sorolla, & Chen, 1996; Kahan, 2017) or the agent's attitude strength (e.g., Brannon, Tagler, & Eagly, 2007) influence validation, we propose that *de facto*, contextual, placement of information may be an important moderator of congenial validation.

Past research supports the notion that contextual factors can mimic agentic outcomes. For example, people receive congenial information *de facto*, for reasons unrelated to their own choices (Sears & Freedman, 1967), as in the case of echo chambers (Barberá, Jost, Nagler, Tucker, & Conneau, 2017). In line with a Lewinian interactionist approach (Lewin, 1936; see also Earl & Lewis, 2019), the present research explores how *de facto*, contextual factors (i.e., receiving congenial information first) influence agentic processes (i.e., validation of attitude-

consistent versus inconsistent information). Studying the role of context in congeniality biases may broaden theory and also generate novel strategies for reducing bias. For example, if the influence of selective exposure on congenial validation is due to *de facto* reception of congenial information first, strategically presenting uncongenial information first should reduce congenial validation. This paper addresses these timely theoretical and practical issues.

As mentioned before, a surprisingly understudied question is whether selective exposure and congenial validation are interrelated. For example, people might hold an attitude in favor of gun control, seek out information by choosing to read a pro-gun control article online, and ultimately also find it compelling because they receive it before noticing other contradictory articles linked to the first one. Thus, people may perceive the article they selected and read first as valid while they devalue the subsequent uncongenial material, in part because their selected information appeared first. This example assumes that selective exposure and congenial validation are interconnected because selective exposure ensures contact with congenial information *before* uncongenial information enters the picture. We investigated whether congenial validation is correlated with congenial selective exposure and influenced by order, and if so, whether contextual forms of controlling order can also amplify or attenuate the congenial validation bias. After all, primacy effects have been observed for both explicit evaluations (e.g., consumer products; Eisend, 2006) and implicit evaluations (e.g., impression formation; Fourakis & Cone, 2019). However, the deliberate use of order has not yet been investigated as a tool for reducing congeniality bias.

Even though we assume that *de facto*, contextual features like order of information presentation can produce congenial validation without selective exposure (i.e., people can still preferentially validate congenial compared to uncongenial information, whether or not they have

selected which information to view), there may also be conditions that increase the effects of selective exposure on congenial validation. For example, if people are reminded of their initial attitude and subsequently given an opportunity to think about it (Albarracín & Handley, 2011; Eagly & Chaiken, 1995; Fazio, 1989; Kunda, 1990), selective exposure may lead to stronger congenial validation compared to *de facto* presentation. The reason is that people are frequently motivated to defend their choices, by, for instance, increasing the perceived value of the chosen option yet devaluing unchosen options (Brehm, 1956; Okada, 2005). However, for choice justification to emerge, people must both have freedom to make a decision and foresee the consequences of their choice (Cooper 1971; Cooper & Fazio, 1984). Thus, giving people a choice about which information to view, and then allowing them the opportunity to think about their choice and the reasons for it, may heighten the link between selective exposure and congenial validation.

Across four studies, participants read arguments either in favor of (“pro”) or against (“anti”) gun control policy. Participants read messages about one side (pro or anti) before encountering messages arguing the opposite position. In Studies 1 and 2, participants selected the information, with the expectation that typical congeniality biases in both selection and validation of information would emerge. Study 3 investigated *de facto* order effects by assigning the presentational order of information, thereby decoupling order and selection to test if the context could reduce congenial validation. Study 4 added an elaboration manipulation to further probe the link between selective exposure and congenial validation. Giving people a choice, and then time to reflect on that choice, should heighten choice justification (Cooper 1971; Cooper & Fazio, 1984; Laran & Wilcox, 2011), thus exacerbating congenial validation following selective exposure compared to *de facto* order. The current report examined selection and validation of

gun control information. Gun control was ideal to test if context can shape congeniality biases: Strongly held, preexisting attitudes should be especially likely to evoke *both* selective exposure (Hart et al., 2009) and congenial validation (Ditto & Lopez, 1992); thus, finding ways of reducing congenial validation in particularly challenging and consequential.

Studies 1-3: Demonstration of Bias Reduction

Overview

Studies 1-3 examined the relative influences of selective exposure and presentational order on congenial validation. In each case, participants read messages about gun control, a highly divisive political topic in the present US cultural context. We anticipated most participants would have a preexisting attitude and would display congeniality bias in information selection and evaluation. In Study 1, participants could choose whether to read high-quality congenial or uncongenial gun control messages. Further, after receiving and reporting the perceived validity of the selected message, participants also saw and reported the perceived validity of the other version. Thus, we were able to determine if selecting congenial information predicted also validating the selected message compared to the unselected message. Study 2 involved the same procedure with low-quality messages to test generalizability. In Study 3, participants were randomly assigned to messages to determine if *de facto* presentation of a congenial message first led to increased congenial validation than *de facto* presentation of an uncongenial message first. Thus, Study 3 tested the effect of order on congenial validation when it is independent of selective exposure.

Method

Procedure

Studies 1-3 follow similar procedures. Participants completed the study at individual computer workstations running MediaLab (Jarvis, 2010). First, participants reported their attitudes on gun control, defined as “various enacted or proposed laws that restrict the unfettered ownership, transport, and usage of personal firearms, including rifles and handguns.” Participants then viewed two sets of arguments either favoring or opposing gun control, and completed dependent measures after each set. Studies 1 and 3 utilized high-quality messages, and Study 2 utilized low-quality messages. Message quality was signaled by source (a college professor versus local high school student) prior to selection, as well as presentation of messages that were pilot tested to be judged as high- versus low-quality. Using low-quality messages could impact exposure and validation because choosing and attending to weak, uncongenial information can bolster one’s attitude (Hart et al., 2009; Lowin, 1969), but may be undermining if the information is unconvincing. In this context of low-quality information, presentational order may not influence validation.

Participants

Participants were undergraduates enrolled in an Introduction to Psychology course participating for course credit. Data were collected per subject pool availability and concluded at the end of the academic semester. After exclusions, $n_{\text{Study 1}} = 100$; $n_{\text{Study 2}} = 107$; $n_{\text{Study 3}} = 95$. Post-hoc analyses using G*Power (Faul, Erdfelder, Lang, & Buchner, 2007) suggest that all studies achieved sufficient power to detect the order by congeniality interaction (Study 1 Achieved Power: 100%; Study 2 Achieved Power: 90%; Study 3 Achieved Power: 96%), and, furthermore, sensitivity analyses suggest that all studies were powered to detect partial eta-squared of 0.05 or higher with 80% power.

Measures

Baseline attitude measures. Participants' initial gun control attitudes were calculated by averaging responses to six semantic differential scales (*desirable-undesirable*, *foolish-wise*, *good-bad*, *harmful-beneficial*, *necessary-unnecessary*, and *positive-negative*), from 1 to 9 ($\alpha_{\text{Study 1}} = .97$; $\alpha_{\text{Study 2}} = .93$; $\alpha_{\text{Study 3}} = .96$).

Selective exposure. In Studies 1 and 2, participants were given the option to select either *pro* or *anti* gun control messages. In Study 3 messages were randomly assigned.

Validation. For both sets of messages, participants rated each message on several subjective validity dimensions ("strong", "well-written", and "convincing") using 9-point scales from 1 (*not at all*) to 9 (*extremely*). For both sets of messages, these items were highly intercorrelated (first message: $\alpha = .88$; second message: $\alpha = .88$) and were averaged.

Analytic strategy

Labeling information as congenial or uncongenial is only meaningful in the context of a preexisting attitude (Brock & Balloun, 1967; Hart et al., 2009). Therefore, participants who reported a neutral attitude (i.e., mean attitude responses at 5.0, the scale midpoint) were excluded from analyses because it is not possible to determine if the selected information is congenial or uncongenial ($n_{\text{Study 1}} = 3$; $n_{\text{Study 2}} = 3$; $n_{\text{Study 3}} = 1$). Participants reporting a mean attitude below (above) the scale midpoint were considered anti- (pro-) gun control. Thus, for those with an anti- (or pro-) gun control stance, messages against (or in favor) were coded as congenial information (*I*), whereas pro- (or anti-) information was coded as uncongenial (*-I*).²

Results & Discussion: Study 1 (Selective Exposure with High-Quality Messages)

Congenial Selective Exposure

² Results conducted with the linear variables replicate all categorical analyses in the main text and are available in the supplemental materials. Categorical results are presented for ease of interpretation.

Binary logistic regression indicated that participants were more likely to select congenial over uncongenial messages ($B = 0.85$, $SE = 0.42$, Wald $\chi^2 = 4.07$, $p = .044$, $\beta = 2.35$, 95% CI [1.03, 5.38])³. The direction of a participant's initial gun control attitude (pro versus anti) did not influence the extent of selective exposure ($B = -0.25$, $SE = 0.42$, Wald $\chi^2 = 0.33$, $p = .56$, $\beta = 0.78$, 95% CI [0.34, 1.79]).

Congenial Validation

Analyses involved a mixed-model analysis of variance (ANOVA), with first message congeniality as a between-subjects factor and validation of congenial and uncongenial messages as within-subjects factors. First, there was a main effect of congeniality: Participants judged congenial messages as more valid ($M = 6.54$, $SD = 1.67$) than uncongenial messages ($M = 5.59$, $SD = 1.94$; $F_{1, 95} = 12.87$, $p < .001$, $d = 0.52$, 95% CI of difference score [0.42, 1.47]).

However, the main effect of congeniality was qualified by a significant order by congeniality interaction, suggesting that the congenial validation bias depended on presentation order, as predicted, $F_{1, 95} = 12.81$, $p = .001$, $\eta_p^2 = 0.12$. Participants who selected congenial messages, and thus saw those messages first, displayed a congenial validation bias, rating congenial messages as more valid than uncongenial messages ($M_{\text{Bias}} = 1.97$, $SD_{\text{Bias}} = 2.46$; $F_{1, 95} = 40.71$, $p < .001$, $d = 1.10$, 95% CI [1.36, 2.58]). In contrast, participants who selected uncongenial messages, and thus saw those messages first, did not differentially assess the validity of the congenial and uncongenial messages ($M_{\text{Bias}} = -0.07$, $SD_{\text{Bias}} = 2.48$; $F_{1, 95} = 0.03$, $p = .87$, $d = 0.04$, 95% CI [-0.92, 0.78]; See Figure 1 and Table 1). Thus, choosing uncongenial information eliminated the congenial validation bias.

³ Calculated using the categorical Time 1 gun control attitude, which excludes those at the midpoint of the scale. When using the continuous measure, the effect is weaker ($B = 0.22$, $SE = 0.13$, Wald $\chi^2 = 3.02$, $p = .08$, $\beta = 1.25$, 95% CI [0.97, 1.61]).

Further analyses revealed that the perceived validity of both the congenial and uncongenial messages was contingent on order: Selected uncongenial information, which came first, was perceived as more valid than uncongenial information presented second ($M_{\text{Difference}} = 1.19$, $SD_{\text{Difference}} = 3.87$; $F_{1, 95} = 9.10$, $p = .003$, $d = 0.68$, 95% CI [0.41, 1.97]). The same happened with selected congenial information, which appeared first, relative to congenial information presented second ($M_{\text{Difference}} = 0.85$, $SD_{\text{Difference}} = 3.36$; $F_{1, 95} = 6.26$, $p = .014$, $d = 0.52$, 95% CI [0.18, 1.53]). Finally, the main effect of the congeniality of the first message on message validation was non-significant ($F_{1, 95} = 0.43$, $p = .52$), suggesting that receiving a congenial (versus uncongenial) message first did not impact validation of all messages. Rather, receiving a congenial (versus uncongenial) message increased the discrepancy between congenial and uncongenial message validation (i.e., congenial validation).

Study 1 participants selected which information to read, and displayed both congenial selective exposure and congenial validation. However, the type of information selected affected congenial validation. Participants who selected congenial information viewed congenial (versus uncongenial) information as more valid. Participants who selected uncongenial information viewed both information sets similarly. Study 1 thus suggests that congenial validation operates in tandem with selective exposure: When uncongenial information was selected, the congenial validation bias was eliminated.

Results & Discussion: Study 2 (Selective Exposure with Low-Quality Messages)

Congenial Selective Exposure

A binary logistic regression indicated that participants were significantly more likely to select congenial over uncongenial messages ($B = 0.75$, $SE = 0.29$, Wald $\chi^2 = 6.87$, $p = .009$, $\beta =$

2.11, 95% CI [1.21, 3.68])⁴. Selective exposure did not differ by participants' initial gun control attitudes ($B = 0.12$, $SE = 0.12$, Wald $\chi^2 = 0.94$, $p = .33$, $\beta = 1.12$, 95% CI [0.89, 1.42]).

Congenial validation

Analyses entailed a mixed-model ANOVA, with the congeniality of the first message as a between-subjects factor and validation of the congenial and uncongenial messages as within-subjects factors. Like Study 1, there was a significant congeniality effect: Participants perceived the congenial message as more valid ($M = 6.09$, $SD = 1.72$) than the uncongenial ($M = 4.42$, $SD = 2.03$; $F_{1, 102} = 40.05$, $p < .001$, $d = 0.89$, 95% CI of difference score [1.15, 2.19]). Furthermore, like Study 1, the congenial validation bias depended on what information appeared first ($F_{1, 102} = 5.42$, $p = .022$, $\eta_p^2 = 0.05$). Participants who selected congenial messages again displayed a significantly greater congeniality bias ($M_{\text{Bias}} = 2.29$, $SD_{\text{Bias}} = 2.89$; $F_{1, 102} = 64.96$, $p < .001$, $d = 1.39$, 95% CI [1.72, 2.85]) than those who selected uncongenial messages ($M_{\text{Bias}} = 1.05$, $SD_{\text{Bias}} = 4.54$; $F_{1, 102} = 5.62$, $p = .020$, $d = 0.57$, 95% CI [0.17, 1.94]; See Figure 1 and Table 1). Further analyses revealed that, unlike participants in Study 1 who shifted validation of both congenial and uncongenial messages as a function of order, Study 2 participants primarily shifted validation of uncongenial messages as a function of order: Selecting uncongenial information led to increased validation of those messages compared to viewing uncongenial information second ($M_{\text{Difference}} = 0.87$, $SD_{\text{Difference}} = 4.07$; $F_{1, 102} = 4.70$, $p = .032$, $d = 0.67$, 95% CI [0.07, 1.66]), whereas validation of congenial messages did not change as a function of order ($M_{\text{Difference}} = 0.37$, $SD_{\text{Difference}} = 3.46$; $F_{1, 102} = 1.16$, $p = .28$, $d = 0.20$, 95% CI [-0.31, 1.66]). Finally, like Study 1, there was again no main effect of first message congeniality on message validation ($F_{1, 102} = 0.93$, $p = .34$), suggesting that receiving a congenial (versus uncongenial) message first did not

⁴ This effect also replicated when using the continuous gun control attitude measure ($B = 0.29$, $SE = 0.12$, Wald $\chi^2 = 6.16$, $p = .013$, $\beta = 1.34$, 95% CI [1.06, 1.69]).

impact validation of all messages. Rather, receiving a congenial (versus uncongenial) message increased the discrepancy between congenial and uncongenial message validation.

Study 2 replicated key effects of Study 1 using weak messages. Participants exhibited congeniality biases, but only when selective exposure led to reception of congenial information first: Seeing uncongenial information first led to reduced congenial validation. Thus, the effects of selection on congenial validation replicate with different information quality.

Results & Discussion: Study 3 (*de facto* Order with High-Quality Messages)

Congenial Validation

Analyses involved a mixed-model ANOVA, with message congeniality as a between-subjects factor and validation of congenial and uncongenial messages as within-subjects factors. Like Studies 1 and 2, there was a significant congeniality effect: Participants perceived the congenial message as more valid ($M = 7.10$, $SD = 1.44$) than the uncongenial ($M = 4.78$, $SD = 1.82$); $F_{1, 92} = 90.52$, $p < .001$, $d = 1.41$, 95% CI of difference score [1.89, 2.89]). Also in line with Studies 1 and 2, there was a significant order by congeniality interaction ($F_{1, 92} = 8.40$, $p = .005$, $\eta_p^2 = 0.08$). Participants who were presented with congenial messages first showed significantly more congenial validation ($M_{\text{Bias}} = 3.11$; $SD_{\text{Bias}} = 3.59$; $F_{1, 91} = 71.00$, $p < .001$, $d = 2.03$, 95% CI [2.38, 3.85]) than those who were presented with uncongenial messages first ($M_{\text{Bias}} = 1.66$; $SD_{\text{Bias}} = 3.30$; $F_{1, 92} = 23.92$, $p < .001$, $d = 1.01$, 95% CI [0.99, 2.34]; See Figure 1 and Table 1). Furthermore, like Study 2, participants primarily shifted validation of uncongenial messages as a function of order ($M_{\text{Difference}} = 1.16$, $SD_{\text{Difference}} = 3.48$; $F_{1, 92} = 10.45$, $p = .002$, $d = 0.67$, 95% CI [0.45, 1.87]), whereas congenial information validation did not change as a function of order ($M_{\text{Difference}} = 0.30$, $SD_{\text{Difference}} = 2.89$; $F_{1, 92} = 0.99$, $p = .32$, $d = 0.20$, 95% CI [-0.30, 0.89]).

Unlike Studies 1 and 2, in Study 3 there was a main effect of first message congeniality: Participants rated all messages as more valid when they saw uncongenial messages first ($M = 6.14$, $SD = 1.41$) compared to congenial first ($M = 5.71$, $SD = 1.53$; $F_{1,92} = 4.08$, $p = .046$, $d = 0.29$).

Study 3 found a significant interaction of message order and congeniality on congenial validation, indicating that order effects are not limited to contexts in which selective exposure also occurs. Instead, *de facto* order can increase or decrease congeniality biases; Participants showed bias reduction even when they did not select uncongenial information.

Discussion: Studies 1-3

Studies 1-3 demonstrated differential selection of congenial versus uncongenial messages (Studies 1-2), as well as differential validation of congenial versus uncongenial messages (Studies 1-3). Congenial validation decreased when uncongenial information preceded congenial information, for both high-quality and low-quality messages, as well as in the presence or absence of selective exposure. Taken together, congenial selective exposure and congenial validation appear to work in tandem to produce preferential validation of congenial (versus uncongenial) information. It is possible that different cognitive mechanisms came into play depending on whether participants chose which type of information to view, but Study 3's results importantly demonstrate that these reductions in validation bias are not limited to the relatively rare circumstance in which individuals preferentially seek uncongenial information, and are not necessarily dependent on the motivational underpinnings of such a choice.

Study 4

Studies 1-3 suggested that either choosing or receiving uncongenial information first reduced congenial validation biases. Are there conditions under which selective exposure may

heighten congenial validation? To address this question, Study 4 added a manipulation that allowed half of participants to elaborate on their attitude prior to exposure. Selective exposure should heighten congenial validation if participants both have a choice about what information to view and elaborate on their choices (Cooper, 1971; Cooper & Fazio, 1984; Laran & Wilcox, 2011). Thus, we predicted the strongest link between selective exposure and congenial validation to occur in the selective exposure-plus-elaboration condition.

Study 4 also included a condition in which participants knew what information they were going to view, but did not select information. This condition allowed us to disentangle choice justification effects from other effects, such as biased elaboration in line with the information one is about to view (Wood & Quinn, 2003).

Method

Design and Power Analyses

Study 4 manipulated elaboration by allowing participants time to think about their attitudes toward gun control (or not) before exposure to information. Study 4 also included a three-level selection variable: selective exposure, *de facto* order, and a third condition in which participants knew (but did not select) what information they would view prior to presentation (known, *de facto* order). As such, Study 4 was a 3 (choice condition: selective exposure; *de facto* order; known, *de facto* order) by 2 (elaboration: yes, no) by 2 (order of information presentation: congenial first, uncongenial first) by 2 (information type: congenial, uncongenial) mixed design.

The previous studies suggested a medium effect size for the order by congeniality interaction ($\eta_p^2 = 0.08$), and power analyses (G*Power; Faul et al., 2007) recommended a minimum of 52 participants per cell given the average correlation between validation of congenial and uncongenial messages $r = -0.07$. However, given the transition from subject pool

to MTurk, we over-recruited knowing that some participants would be excluded (total $n = 964$). Participants were excluded for neutral gun control attitudes ($n = 22$) or failing attention-check items ($n = 102$), leaving $n = 840$ in the final sample. Post-hoc analyses using G*Power (Faul et al., 2007) suggest that Study 4 achieved sufficient power to detect the order by congeniality interaction (Achieved Power: 100%), and, furthermore, sensitivity analyses suggest that Study 4 was powered to detect partial eta-squared of 0.005 or higher with 80% power.

Participants

After exclusions, 840 US participants were recruited from Amazon Mechanical Turk and participated for compensation of \$1.00. Participants were 49% female identifying, 50% male identifying, and 1% reported another gender identity. 77% of participants were White, 5% were Black, 5% were Asian, 3% were Latinx, and 10% identified as another race or as multiracial. Mean age was 37.1 years old, ranging from 18-79 years old.

Procedure

Participants were randomly assigned to a “selective exposure,” “*de facto* order,” or “known, *de facto* order” condition: Those in the “selective exposure” ($n = 279$) condition could select which gun control information to read, whereas those in the “*de facto* order” ($n = 278$) condition were constrained to reading gun control messages in a randomly assigned order. Participants in the “known, *de facto* order” ($n = 283$) condition were told in advance what information they would read but did not have the opportunity to select it. Analyses to verify that there was not differential attrition by condition (Zhou & Fishbach, 2016) found no significant differences ($B = -0.05$, $SE = 1.31$, Wald $\chi^2 = 0.001$, $p = .971$, $\beta = 0.95$, 95% CI [0.07, 12.38]).

All participants first reported their attitudes about gun control. Next, participants were presented with the first argument, after which they judged the argument along several dependent

measures. Next, participants were shown the second argument, followed by the same dependent measures.

Measures

Study 4 measured baseline gun control attitudes and message validation using the same procedures from our prior studies.

Results & Discussion

Congenial selective exposure

Participants in the selective exposure conditions were significantly more likely to select congenial over uncongenial messages ($B = 0.46$, $SE = 0.14$, Wald $\chi^2 = 10.89$, $p = .001$, $\beta = 1.59$, 95% CI [1.21, 2.09])⁵, and the direction of participants' initial gun control attitudes (pro versus anti) did not influence selective exposure ($B = 0.13$, $SE = 0.14$, Wald $\chi^2 = 0.80$, $p = .372$, $\beta = 1.13$, 95% CI [0.86, 1.49])⁶.

Congenial validation

We conducted mixed-model analyses on evaluations of both message sets as a function of selection condition, elaboration, congeniality, and order. Like Studies 1-3, there was a significant congeniality effect: Participants perceived the congenial messages as more valid ($M = 7.34$, $SD = 1.62$) than the uncongenial ($M = 5.36$, $SD = 2.14$; $F_{1, 828} = 486.05$, $p < .001$, $d = 1.60$, 95% CI of difference score [1.80, 2.16]). Also in line with Studies 1-3, there was a significant order by congeniality interaction ($F_{1, 828} = 59.86$, $p < .001$, $\eta_p^2 = 0.07$). Participants who read congenial messages first showed more congenial validation ($M_{\text{Bias}} = 2.67$; $SD_{\text{Bias}} = 3.45$; $F_{1, 828} = 507.99$, p

⁵ This effect was replicated when using the continuous gun control attitude measure as well ($B = 0.21$, $SE = 0.05$, Wald $\chi^2 = 18.41$, $p < .001$, $\beta = 1.23$, 95% CI [1.12, 1.35]).

⁶ This null effect was replicated when using the continuous gun control attitude measure as well ($B = 0.67$, $SE = 0.05$, Wald $\chi^2 = 2.10$, $p = .148$, $\beta = 1.07$, 95% CI [0.98, 1.17]).

< .001, $d = 1.07$, 95% CI of the difference score [2.44, 2.91]) than those who read uncongenial messages first ($M_{\text{Bias}} = 1.29$; $SD_{\text{Bias}} = 3.91$; $F_{1, 828} = 90.86$, $p < .001$, $d = 0.45$, 95% CI of the difference score [1.02, 1.55]; see Figure 2 and Table 2). Furthermore, in Study 4, participants shifted validation of both the congenial messages as a function of order ($M_{\text{Difference}} = 0.75$, $SD_{\text{Difference}} = 3.22$; $F_{1, 828} = 46.11$, $p < .001$, $d = 0.33$, 95% CI [0.54, 0.97]), as well as validation of uncongenial information as a function of order ($M_{\text{Difference}} = 0.64$, $SD_{\text{Difference}} = 4.29$; $F_{1, 828} = 18.37$, $p < .001$, $d = 0.20$, 95% CI [0.34, 0.93]).

We predicted differences across conditions in which participants elaborate on their own attitude. In particular, because we expected choice justification effects to only emerge when people could both select information and elaborate on their selection, we predicted the strongest link between selective exposure and congenial validation in the selective exposure-plus-elaboration condition. Consistent with these predictions, the effects above were modulated by a significant three-way interaction of selection condition, order, and congeniality ($F_{2, 828} = 3.71$, $p = .025$, $\eta_p^2 = 0.01$), a significant three-way interaction of elaboration, order, and congeniality ($F_{1, 828} = 6.04$, $p = .014$, $\eta_p^2 = 0.01$), and a significant four-way interaction between selection condition, elaboration, order, and congeniality ($F_{2, 828} = 5.52$, $p = .004$, $\eta_p^2 = 0.01$). As presented in Figure 2 and Table 2, mimicking previous studies, in the low-elaboration conditions, congenial validation increased when congenial information was presented before uncongenial information, regardless of selective exposure or *de facto* order. In contrast, in the high-elaboration conditions, selective exposure had greater congenial validation than *de facto* order.

There was also a significant main effect of selection condition and a marginal two-way selection condition by order interaction that were not of theoretical interest; details can be found in Supplemental Material. Furthermore, as an exploratory step, we also coded the content of

what people in the elaboration conditions generated. Details are available in Supplemental Materials, and suggest that participants in the selective exposure-plus-elaboration condition were more likely to report hot/emotional elaboration in response to messages than participants in either of the *de facto* conditions.

When presented with congenial messages first—regardless of selection or elaboration—participants exhibited a stronger congenial validation bias. Study 4 also demonstrated that elaboration exacerbated the effects of selective exposure on congenial validation but did not impact the effect of *de facto* order on congenial validation. The largest effect on congenial validation was in the selective exposure-plus-elaboration condition. Moreover, this combination of conditions produced both the most *and* the least congenial validation, as a function of which information participants initially selected. This suggests a potent role of selective exposure on congenial validation, particularly when participants have time to elaborate on their attitude and information selection. However, regardless of elaboration or selection conditions, congenial validation was higher when participants were presented with congenial information prior to uncongenial information.

General Discussion

Across four studies, participants consistently reported *less* congenial validation after first viewing uncongenial information. This effect occurred following selective exposure (Studies 1, 2, and 4) and *de facto* order (Studies 3 and 4) conditions, and across high-quality (Studies 1, 3, and 4) and low-quality (Study 2) messages. By identifying the effect of presentational order on congenial validation, the present studies shed light on contextual moderators of congeniality biases. In particular, *de facto* contextual factors operating outside of agentic control can reduce validation biases even for a divisive political issue about which many hold strong attitudes.

Furthermore, the link between selective exposure and congenial validation can be heightened under conditions that exacerbate choice justification, namely when participants select which information to view and have the opportunity to elaborate on their choice.

Social networks typically contain more heterogenous information than expected (Bakshy, Messing, & Adamic, 2015; Barberá et al., 2015). Thus, people are exposed to both congenial and uncongenial messages. One of the most important remaining issues is how to construct information environments that facilitate exposure to uncongenial information first. Facilitating selection of uncongenial information may be one route to this end, however it is likely not the only one. Although our results showed congenial selective exposure, results also indicated that presenting uncongenial information first is a promising strategy for bias reduction, suggesting that people do not need to be intrinsically motivated to consider opposing information for such reduction to occur. Thus, facilitating information environments that present uncongenial information first could achieve the same benefits (reduced congeniality bias) without having to rely upon individual selection of uncongenial information.

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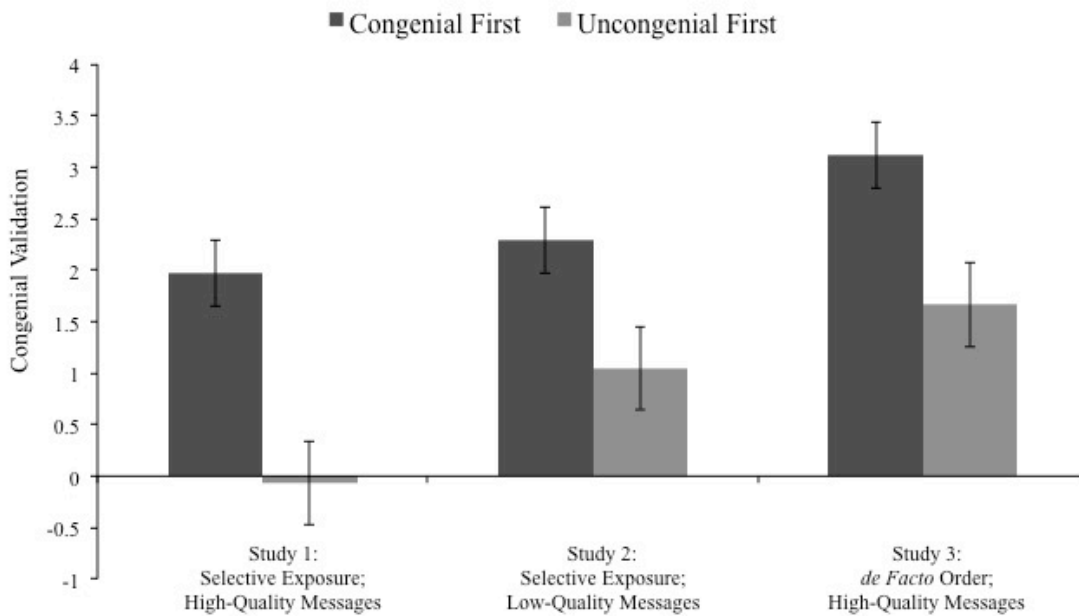


Figure 1. The effect of selective exposure and *de facto* order on congenial validation. Bars represent the difference in mean message validation of congenial minus uncongenial messages; higher numbers indicate greater validation of congenial compared to uncongenial messages, labeled *congenial validation bias*. Error bars represent standard errors.

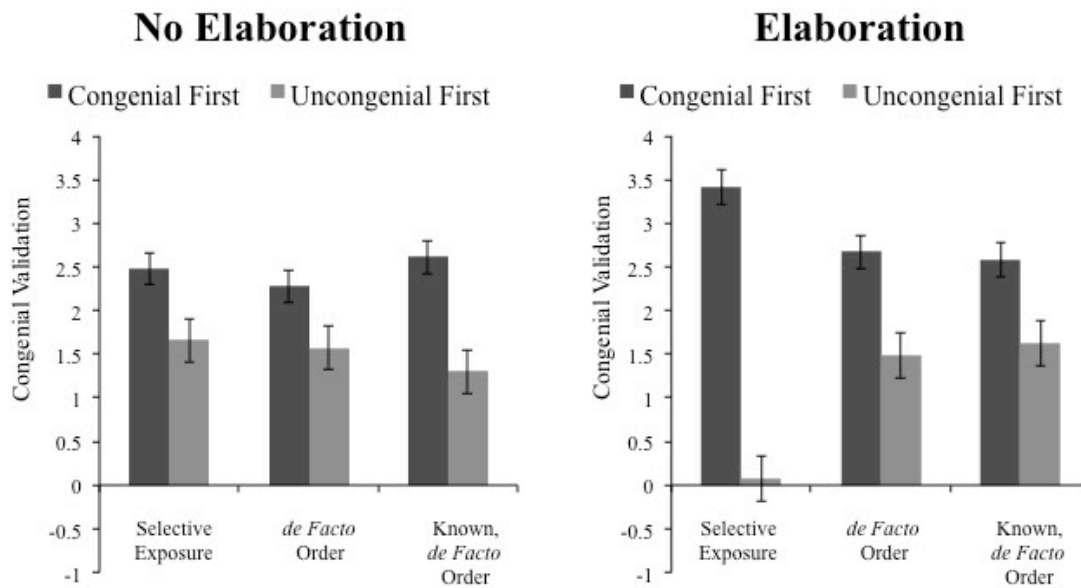


Figure 2. The effect of selective exposure and *de facto* order on congenial validation, as a function of elaboration. Bars represent the difference in mean message validation of congenial minus uncongenial messages; higher numbers indicate greater validation of congenial compared to uncongenial messages, labeled *congenial validation bias*. Error bars represent standard errors. Panel 2A are conditions under which participants did not have time to elaborate on their attitude prior to viewing messages. Panel 2B are conditions under which participants did have time to elaborate on their attitude prior to viewing message.

Table 1

Means and Standard Deviations for Congenial Validation, Studies 1-3

Study and first message congeniality	<u>Congenial</u>		<u>Uncongenial</u>		<u>Congenial Validation</u>	<i>F</i>	<u>Simple effects</u> <i>p</i>	<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>				
Study 1 (Selective Exposure; High-Quality Messages)								
Congenial presented first	6.96	1.50	4.99	2.02	1.97	40.71	< .001	1.10
Uncongenial presented first	6.11	1.75	6.18	1.39	-0.07	0.03	.87	-0.04
	<i>d</i> = 0.52		<i>d</i> = -0.69					
Study 2 (Selective Exposure; Low-Quality Messages)								
Congenial presented first	6.28	1.52	3.99	1.77	2.29	64.96	< .001	1.39
Uncongenial presented first	5.91	1.66	4.86	2.01	1.05	5.62	.02	0.57
	<i>d</i> = 0.23		<i>d</i> = -0.46					
Study 3 (<i>de facto</i> Order; High-Quality Messages)								
Congenial presented first	7.26	1.28	4.15	1.75	3.11	71.00	< .001	2.03
Uncongenial presented first	6.97	1.56	5.31	1.72	1.66	23.92	< .001	1.01
	<i>d</i> = 0.18		<i>d</i> = -0.67					

Note: Cell means represent the mean message validation (composite of *convincing*, *well-written*, and *strong*) of each set of

messages, evaluated on a 9-point scale; higher numbers indicate greater message validation. Inferential statistics are derived from the simple effects tests on the difference between the two means in each row.

Condition and first message congeniality	Congenial		Uncongenial		Congenial Validation		Simple effects	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i> _{1, 828}	<i>p</i>	<i>d</i>	
No Elaboration								
Selective Exposure								
Congenial presented first	7.73	1.26	5.25	2.13	2.48	79.24	< .001	1.42
Uncongenial presented first	7.06	1.59	5.40	2.26	1.66	24.54	< .001	0.85
	<i>d</i> = 0.47		<i>d</i> = -0.07					
de facto Order								
Congenial presented first	7.56	1.55	4.95	2.10	2.61	79.91	< .001	1.41
Uncongenial presented first	6.94	1.88	5.64	2.20	1.30	16.64	< .001	0.64
	<i>d</i> = 0.36		<i>d</i> = -0.32					
Known, de facto Order								
Congenial presented first	7.59	1.47	5.31	1.95	2.28	63.13	< .001	1.32
Uncongenial presented first	7.35	1.67	5.78	2.18	1.57	25.82	< .001	0.81
	<i>d</i> = 0.15		<i>d</i> = -0.23					
Elaboration								
Selective Exposure								
Congenial presented first	8.03	1.29	4.62	2.00	3.41	162.29	< .001	2.03
Uncongenial presented first	5.97	1.88	5.90	1.90	0.07	0.04	.85	0.04
	<i>d</i> = 1.28		<i>d</i> = -0.66					
de facto Order								
Congenial presented first	7.54	1.40	4.96	2.08	2.58	61.40	< .001	1.46
Uncongenial presented first	6.84	1.83	5.22	2.05	1.62	31.21	< .001	0.83
	<i>d</i> = 0.43		<i>d</i> = -0.13					
Known, de facto Order								
Congenial presented first	7.82	1.57	5.15	2.26	2.67	88.60	< .001	1.37
Uncongenial presented first	7.58	1.66	6.10	2.15	1.48	18.60	< .001	0.77
	<i>d</i> = 0.15		<i>d</i> = -0.43					

Note: Cell means represent the mean message validation (composite of *convincing*, *well-written*, and *strong*) of each set of messages, evaluated on a 9-point scale; higher numbers indicate greater message validation. Inferential statistics are derived from the simple effects tests on the difference between the two means in each row.