What You See is What You Regret

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Abstract

Regret is a counterfactual emotion that arises when one judges that an outcome would have been better if one had acted differently. Classic accounts distinguish between commission regret (regretting an action) and omission regret (regretting an inaction). Here, we re-examine this distinction through the lens of attention and counterfactual salience. We find that externally highlighting subsets of options reliably increased omission and commission regret even after action. Increasing the size of the salient set attenuated regret intensity. When participants actively constructed their own consideration sets, the same patterns emerged. These findings suggest that commission–omission asymmetries may depend less on action versus inaction per se, and more on how attention shapes the space of salient counterfactuals, with implications for when regret might support adaptive learning or disrupt it.

Keywords: regret; emotion; affect; decision-making; attention

Introduction

Imagine you are buying tickets for a long international flight to attend a conference in Brazil. You want to arrive well-rested, so you briefly entertain the possibility of upgrading your assigned aisle seat to a window seat where you can sleep undisturbed. You ultimately decide against the upgrade. Weeks later, 40,000 ft in the air, you find yourself unable to sleep and tormented by regret—"If only I had gotten the upgrade!"

From a process perspective, emotions arise as individuals selectively attend to aspects of a situation and evaluate its meaning (i.e., appraise it) in light of their goals and values (Gross, 1998; Scherer, 2009). Regret is a counterfactual emotion that arises when one judges that an outcome of their decision would have been better if one had acted differently (Bell, 1982; Frijda et al., 1989; Loomes & Sugden, 1982; van Dijk & Zeelenberg, 2005; Zeelenberg et al., 2000). In the literature, the type of regret in the opening scenario is often described as *omission regret*—a feeling that results from inaction and that is often contrasted with *commission regret* (Gilovich & Medvec, 1995).

Past literature has focused largely on the distinction between omission and commission regret in the context of separate decisions. But now, consider a slightly different version of the same decision. This time, when booking your ticket, you are asked to choose between three options: an aisle, a middle, or a window seat. You select the aisle seat and, once again, find yourself regretting your decision as you struggle to sleep on your 15-hour flight. In this case, you clearly acted, making an explicit choice among the alternatives. And yet, the regret that you experience is still characterized by the undeniable flavor of omission: what you regret most is not choosing the window seat.

What these examples illustrate is that the distinction between omission regret and commission regret does not arise solely from whether an action was taken or not. Consider a classic example from Kahneman and Tversky, 1982: Mr. Paul does not switch from stock A to stock B and later finds out that stock B would have been more profitable, whereas Mr. George switches from stock B to stock A, only to find out that stock B went up. Both regret their decisions, yet participants reliably judge Mr. George's regret to be stronger than Mr. Paul's. Although this finding is often taken to reflect a fundamental asymmetry between action and inaction, it is worth noting that this interpretation reflects how the scenario is framed for the reader, rather than how the decision-makers themselves represent their choices. Both individuals in the vignette could plausibly frame their decision in terms of having "acted" or "not acted": Mr. Paul can regret actively choosing to stay with his current stock, whereas Mr. George can regret his failure to maintain status quo. In the present work, we directly examine this possibility.

We argue that whether a decision is framed as an omission or a commission depends upon which alternatives were brought into focus at the time of deliberation. Decision-making is widely understood to be a multi-stage process during which individuals narrow down the space of possibilities into a selective consideration set before making a decision (Goodman & Reczek, 2021; Payne et al., 1993; Phillips et al., 2019). Because regret is, by definition, a counterfactual emotion, the composition of such a consideration set, as well as the relative salience of the options within it, matters a great deal. Indeed, a large body of research shows that regret is felt most intensely when counterfactual courses of action are more perceptually salient (Bartlett & Brannon, 2006; Ferrell et al., 2009; Miller et al., 1990; Seta et al., 2015).

Taking an action is just one example of a precondition that renders the chosen option—the one that was not only considered but actively pursued—more salient than the non-chosen alternatives. In contrast, when no action is taken, the alternatives that were considered but ultimately not pursued remain the most salient elements of the decision context (see also Zeelenberg et al., 2002).

Importantly, counterfactual salience is shaped by many fac-

tors beyond action versus inaction. The decision-maker's goals, the number and familiarity of available options, and even their perceptual prominence can all play a role in determining which options enter into the consideration set (Goodman & Reczek, 2021; Hauser, 2014; Jarvenpaa, 1990). Some of these factors are related to the decision at hand; others are incidental. Omission regret, in particular, is often treated as a learning signal that motivates individuals to adjust their future behavior by adopting a course of action in their consideration set that they previously chose to omit (Büchel et al., 2011; Feeney et al., 2018). However, this process is only adaptive when the omission in question is salient because it reflects a genuine flaw in the decision process and because it would plausibly have led to a better outcome. In contrast, when such an omission is salient due to incidental properties, the experience of regret may instead become a liability.

Consistent with this idea, when highly salient counterfactuals are uninformative or misleading—such as when they arise as a result of flawed reasoning, incomplete information, or chance occurrences—the resulting regret may disrupt learning by drawing attention away from the actual outcomes that do constitute valuable learning signals (Petrocelli & Harris, 2011; Petrocelli et al., 2013; Petrova et al., 2025). This highlights an important implication: if omission regret can be induced simply by manipulating what information is attended to at the time a decision is made, then such regret may sometimes reflect artifacts of attention allocation rather than being a reliable learning signal. Clarifying this distinction is essential for distinguishing instances of regret that can promote adaptive learning from those that impose psychological and behavioral costs (e.g., rumination; Sijtsema et al., 2022) without the corresponding informational benefits.

The present work offers a complementary account of the omission–commission distinction through the lens of counterfactual salience. First, we ask whether omission regret can be induced in the presence of an action by selectively amplifying the salience of unchosen alternatives in the environment (RQ1). Second, to clarify the role of attention in counterfactual salience, we test whether expanding the set of salient alternatives reduces their salience, thereby attenuating regret intensity (RQ2). Finally, we examine whether these effects generalize when salient counterfactuals are not externally cued but are instead endogenously constructed by decision-makers during choice (RQ3).[1]

Method

Participants

Across three studies (1a, 1b, and 2), we recruited adult participants on Prolific. Participants who resided in the United States, were fluent in English, had completed at least 100 prior submissions on Prolific, and maintained a 100% approval rate were eligible to participate. Participants in Study 2 were additionally screened for gaming experience to ensure familiarity with the gamified framing of the task. In all studies, participants completed a five-question comprehension check following the instructions. Participants who failed to pass the comprehension check within two attempts were excluded from all analyses. Participant demographics are reported in Table 1.

Table 1: Participant demographics by study.

Characteristic	**Study 1a** (N = 52)	**Study 1b** (N = 98)	**Study 2** (N = 48)
Age (years)	45 (12.8)	43 (12.18)	41 (11.8)
Gender			
Female	27 (51.9%)	46 (46.9%)	20 (41.7%)
Male	24 (46.2%)	49 (50.0%)	25 (52.1%)
Non-binary	1 (1.9%)	3 (3.1%)	3 (6.3%)
Race			
White	42 (82.4%)	84 (85.7%)	35 (74.5%)
Black	5 (9.8%)	4 (4.1%)	5 (10.6%)
Asian	2 (3.9%)	5 (5.1%)	3 (6.4%)
Multiracial	2 (3.9%)	3 (3.1%)	4 (8.5%)
Other	1 (1.9%)	2 (2.0%)	1 (2.1%)
Ethnicity			
Hispanic	1 (1.9%)	4 (4.3%)	5 (10.6%)
Non-Hispanic	51 (98.1%)	90 (95.7%)	42 (89.4%)

Note. Age is reported as mean (standard deviation). Four participants in Study 1b and 1 participant in Study 2 did not report their ethnicity.

Procedure

All experiments were programmed using `jsPsych` (De Leeuw et al., 2023) and administered online. After providing informed consent and reading task instructions, participants completed a series of decision-making trials (4 trials in Study 1a; 24 trials in Studies 1b and 2). Participants rated their regret after each trial. Demographic information was collected at the end of each experiment. Across studies, participants' objective was to make choices that maximized their rewards. On each trial, participants chose among 36 options. We used 36 options to mirror the structure of a standard roulette wheel, providing an ecologically grounded choice environment. This also allowed us to manipulate the size of salient subsets (e.g., 1–16 options) while keeping the overall choice set constant across trials.

Studies 1a and 1b: Externally Cued Consideration Sets

To test RQ1 and RQ2, we manipulated whether a subset of counterfactual options was made salient (CF+) vs. not (CF-). In Study 1a, participants completed four trials of a roulette-style decision-making task. At the beginning of the experiment, participants were endowed with \$0.10 and were instructed that on each trial they would place a fixed bet of one cent on a single number between 1 and 36 (Figure 1a). We manipulated counterfactual salience as a way of influencing how

[1] All materials and data can be found at https://github.com/kateptrv/you-see-you-regret-cogsci26.

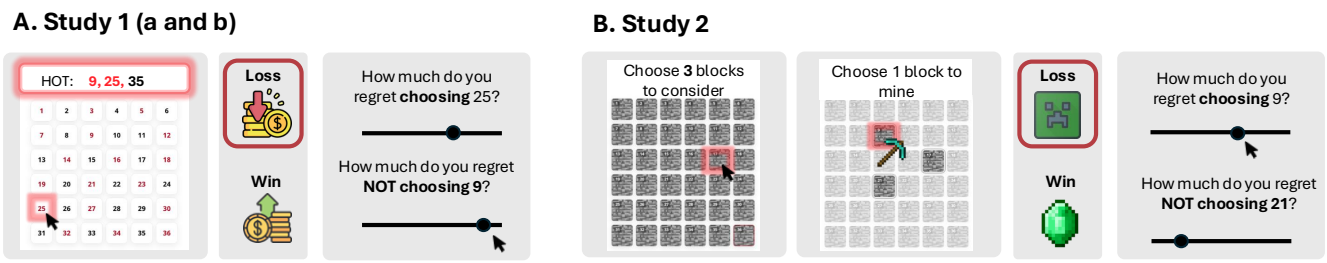

Figure 1: **Example trials from Study 1 (a and b) and Study 2**. (A) Example of a salient losing trial (CF+) sequence from Studies 1a (hot set sizes of 2 or 16) and 1b (hot set sizes of 1, 2, 3, 8, or 16). The "HOT" banner above the number grid in the first panel was absent on non-salient trials (CF-). In this example, the participant chose number 25 from the hot set, which ultimately lost. Another hot number 9 won. The third panel shows how self-reported commission (top) and omission (bottom) regret were measured. (B) Example of a salient losing trial (CF+) sequence from Study 2. The progression from choosing a subset of the blocks to picking one to mine (from the top left to the top right panel) was absent on non-salient trials (CF-), on which participants picked a block to mine right away, analogous to Studies 1 and 2. In this example, the participant considered three blocks (number 9, 17, and 21) and mined block 9, which ultimately lost. Another considered block number 21 won. The fourth panel shows how self-reported commission (top) and omission (bottom) regret were measured.

attention is allocated across options during decision-making. Participants were informed that on some trials (counterfactually salient trials; CF+) they would see "hot" (i.e., lucky) numbers displayed above the 36-number roulette grid. A hot set consisting of two numbers was presented on two of the trials, and a hot set of 16 numbers was presented on one of the trials. The remaining trial had no hot set (non-counterfactually salient trials; CF-). On trials with a hot set, the winning number was always contained within the hot set. Exactly one of the four trials for each participant was randomly assigned to serve as the winning trial. Participants were informed that they would take home the money they earned during the game, resulting in a fixed bonus of $0.42 for each participant.

Following each loss, participants reported both commission regret ("How much do you regret choosing [chosen number]?") and omission regret ("How much do you regret not choosing [winning number]?") using continuous slider scales ranging from 0 ("Not at all") to 100 ("Extremely"). The order in which the two questions were presented was counterbalanced within participants.

In Study 1b, participants completed 24 trials, including exactly four winning trials. Winning trials were evenly distributed across the task, with one win occurring in each block of six trials. As in Study 1a, on each trial participants selected one option from a set of 36 numbered alternatives displayed in a roulette grid. Of the 20 losing trials, 10 were CF+ trials, which means they featured a banner listing a set of "hot" (i.e., lucky) numbers above the grid. The size of this hot set varied across trials and could include 1, 2, 3, 8, or 16 numbers. For set sizes greater than one (in which the single hot number always lost), one trial featured a winning number inside the hot set and one featured a winning number outside the hot set. The remaining 10 loss trials had no hot numbers (CF-).

Study 2: Endogenously Constructed Consideration Sets

To test RQ3, participants actively constructed their own consideration sets prior to choice. In Study 2, participants completed a multi-trial decision-making task framed as a Minecraft-style mining game. Minecraft (Mojang Studios, 2011) is a popular sandbox video game in which players explore a block-based environment and mine resources. Participants were instructed that their goal was to mine as many emeralds as possible and that they would receive a bonus of $0.25 for each emerald they collected.

On each of the 24 trials, participants selected one option from 36 blocks displayed in a grid (Figure 1b). Unlike Studies 1a and 1b, where consideration sets (i.e., hot numbers) were set externally, Study 2 required participants to actively construct their own consideration sets prior to making a choice. To this end, on 10 out of the 20 losing trials (CF+), participants were first instructed to select a subset of 1, 2, 3, 8, or 16 blocks to consider more carefully before deciding which one to mine. The distribution of winning and losing blocks followed the same pattern as in Study 1b, and participants' selection of a consideration set had no effect on the probability that any block within or outside the set would contain an emerald.

After making their final choice, participants learned whether the block they chose contained an emerald and reported their feelings of omission and commission regret.

Results

RQ1: Salient Counterfactuals Induce Both Omission and Commission Regret After Action

Results of RQ1 are shown in Figure 2A. To test whether regret can be amplified following an action in the presence of salient counterfactual alternatives, we fit a Bayesian linear

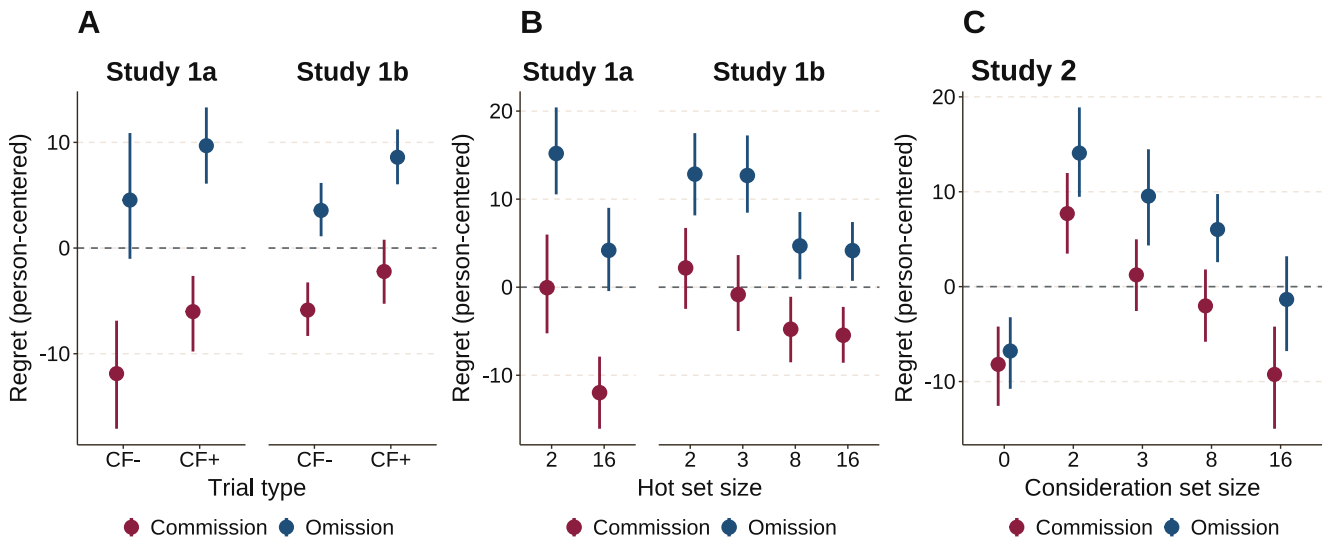

Figure 2: **Mean person-centered regret on loss trials as a function of counterfactual salience.** (A) Omission and commission regret in Studies 1a and 1b on trials when salient counterfactual set was present (CF+) versus absent (CF-), collapsed across hot-set sizes. (B) Omission and commission regret in studies 1a and 1b on CF+ trials, as a function of hot-set size. (C) Omission and commission regret in Study 2 as a function of consideration set sizes from 0 to 16. Error bars represent 95% confidence intervals. Dashed line represents participants' mean regret across trials.

mixed-effects model using `brms` (Bürkner, 2017). The model predicted regret intensity as a function of (B1) whether a salient counterfactual set was present, (B2) regret type (omission vs. commission), and (B3) their interaction. To account for repeated measures within participants, the model included a random intercept for each participant. All models were fit using four parallel chains of 4,000 iterations each, with the first 1,000 iterations discarded as warm-up.

For this analysis, we adopted a deliberately coarse-grained approach by collapsing across several dimensions of trial structure. Specifically, in Study 1a we collapsed across hot-set sizes 2 and 16, and in Study 1b we collapsed across all hot-set sizes from 1 to 16, yielding a single binary variable (CF+ vs. CF-) indicating whether a salient set of any size was present (1) or absent (1). For trials with a hot set, only trials on which a non-chosen number from the hot set won were included in the analyses. In addition, we did not distinguish between whether participants chose a hot versus a non-hot number on a given trial. This approach allowed us to test the most basic question of interest—whether the mere presence of salient counterfactual alternatives amplifies regret following an action—without relying on finer-grained assumptions about how participants used the salience cues.

To isolate within-participant differences in regret across trials independently of individual differences in emotional reactivity or scale use, we used person-mean-centered (PMC) regret ratings in all analyses. If counterfactual salience amplifies regret, we should observe higher omission and commission regret on CF+ trials relative to CF- trials. Across Studies 1a and 1b (Figure 2A), participants reported higher omission and commission regret on CF+ trials compared to CF- trials (Study 1a: $B_{1a} = 5.53$, 95% CrI $[-0.75, 11.77]$; Study 1b: $B_{1b} = 3.65$, 95% CrI $[1.38, 5.92]$). In addition, contrary to previous findings showing that people judge commissions to be more regrettable than omissions, omission regret was higher than commission regret across trials (Study 1a: $B_{2a} = 15.70$, 95% CrI $[10.42, 20.78]$; Study 1b: $B_{2b} = 10.81$, 95% CrI $[8.10, 13.52]$). The interaction between regret type and salience set presence was small and not credibly different from zero in either study (Study 1a: $B_{3a} = 0.84$, 95% CrI $[-8.03, 9.68]$; Study 1b: $B_{3b} = -1.38$, 95% CrI $[-4.59, 1.82]$).

RQ2: Expanding the Set of Salient Counterfactuals Attenuates Intensity of Both Omission and Commission Regret

Results of RQ2 are shown in Figure 2B. To examine whether expanding the size of the salient counterfactual set attenuates regret intensity, we fit a Bayesian linear mixed-effects model predicting person-mean-centered regret from hot-set size (B1), regret type (omission vs. commission; B2), and their interaction (B3). As in Q1, the model included a random intercept for each participant and was fit using a Student-t likelihood to accommodate the heavy-tailed distribution of person-centered regret ratings.

If increasing the number of salient alternatives dilutes counterfactual impact, regret should decrease as set size increases. Across Studies 1a and 1b Figure 2B, increasing the number of salient counterfactuals highlighted in the hot set led to a reliable reduction in the intensity of both omission and commis-

sion regret (Study 1a: $B_{1a} = -0.83$, 95% CrI $[-1.29, -0.36]$; Study 1b: $B_{1b} = -0.48$, 95% CrI $[-0.81, -0.15]$). Omission regret nevertheless remained higher on average than commission regret (Study 1a: $B_{2a} = 15.10$, 95% CrI $[7.56, 22.63]$; Study 1b: $B_{2b} = 12.12$, 95% CrI $[7.85, 16.40]$). The interaction between hot-set size and regret type was small and not credibly different from zero in either study (Study 1a: $B_{3a} = 0.06$, 95% CrI $[-0.60, 0.72]$; Study 1b: $B_{3b} = -0.18$, 95% CrI $[-0.65, 0.29]$), indicating that increasing the size of the salient set attenuated regret similarly for omission and commission.

RQ3: Effects of Counterfactual Salience Generalize to Endogenously Constructed Consideration Sets

Results of RQ3 are shown in Figure 2C. Study 2 tested whether the effects observed in Studies 1a and 1b generalize when salient counterfactuals are not externally cued but are instead endogenously constructed by decision-makers during choice. If internally generated salience operates similarly to external cues, constructing a consideration set should increase regret, with larger sets attenuating this effect. Using analyses analogous to those described in RQ1 and RQ2, we found that when participants were required to construct a consideration set prior to making their final decision, they experienced higher regret compared to trials on which no consideration set was constructed ($B_1 = 6.97$, 95% CrI $[4.72, 9.22]$).

As in Studies 1a and 1b, omission regret was higher than commission regret ($B_2 = 7.52$, 95% CrI $[5.74, 9.40]$). Unlike in the externally cued studies, omission regret in Study 2 showed a larger increase relative to commission regret when a consideration set was constructed ($B_3 = 5.93$, 95% CrI $[2.75, 9.12]$), suggesting that endogenously generated salience may differentially amplify omission regret.

Consistent with the dilution effect observed in RQ2, increasing the number of options participants considered prior to choice was associated with lower omission and commission regret overall ($B_1 = -0.89$, 95% CrI $[-1.17, -0.60]$), with no interaction between set size and regret type ($B_3 = -0.04$, 95% CrI $[-0.44, 0.36]$).

Additional Exploratory Analyses

In a set of additional exploratory analyses of Study 1b, we examined whether the relationship between salient set size and regret intensity depended on two additional factors: (1) whether the winning option was contained within the salient set and (2) whether participants themselves selected an option from the salient set on a given trial. Results are shown in Figure 3. Several patterns are noteworthy.

First, the reduction in regret associated with larger salient sets was most pronounced on trials in which participants chose an option from the hot set but a different hot option won. On these trials, increasing the size of the hot set markedly attenuated both kinds of regret, consistent with the idea that distributing attention across many alternatives weakens the pull of any single unchosen option.

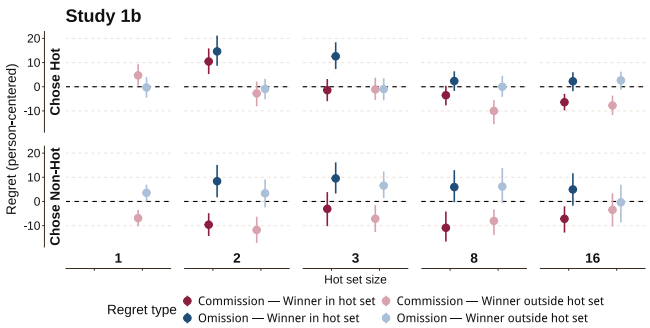

Figure 3: **Exploratory analyses.** Mean person-centered regret as a function of hot-set size, regret type, and whether participants chose a hot or non-hot option, restricted to loss trials. Darker shades indicate trials on which participants chose a hot option; lighter shades indicate trials on which they chose a non-hot option. Error bars represent 95% confidence intervals. Dashed line represents participants' mean regret across trials.

Second, both kinds of regret were low on trials in which participants chose a hot option but the winning option fell outside the hot set. In these cases, the outcome did not favor any of the salient alternatives, and overall regret appeared muted. A more counterintuitive pattern emerged on trials where participants chose an option outside the hot set while a hot option ultimately won. On these trials, participants reported low commission regret but elevated omission regret. That is, participants appeared to show little regret for having deviated from the salient cue itself, yet strongly regretted failing to select the winning option from the salient set.

Finally, we examined whether the closeness of the chosen option to the winning alternative (in terms of numerical distance and spatial proximity on the grid) predicted omission or commission regret. Across studies, these analyses revealed no reliable effects of closeness on regret intensity.

Discussion

The present work makes three primary contributions. First, it demonstrates that people consistently report higher omission regret than commission regret following an overt action when unchosen alternatives are made salient. Second, it shows that regret intensity tracks how selectively attention is allocated across the different options during choice. Third, our work establishes that these effects of counterfactual salience generalize to situations in which no externally imposed salience cues are present, but instead emerge as a result of decision-makers themselves selectively allocating attention to different options during choice.

We interpret these results as being broadly consistent with process models of emotion (Gross, 1998; Scherer, 2009), which conceptualize emotions as arising from dynamic interactions between attention and appraisal. Within this framework, regret depends not only on what decision was made, but on how that decision is mentally represented at the time its

outcome is evaluated. Attention allocation during decision-making constrains which aspects of the situation—including representations of viable courses of action—are encoded. In turn, these representations shape whether regret is experienced as reflecting a poor action choice or a missed opportunity. When many alternatives are made salient, no single unchosen option strongly captures attention, reducing the counterfactual pull of any particular alternative and attenuating regret as a result. In contrast, when attention is narrowly focused on a small set of alternatives, those alternatives can become salient reference points and amplify omission regret even when an action was taken. Importantly, our findings show that when salient alternatives are endogenously determined, constructing any consideration set (relative to none) selectively increases omission regret relative to commission regret. This suggests that internally generated alternatives may carry a stronger sense of personal responsibility and missed opportunity, making this pattern highly consistent with appraisal accounts of regret that emphasize the importance of perceived agency (Zeelenberg et al., 1998).

These findings have important implications for understanding the functional role of regret in decision-making (O'Connor et al., 2015; Roese, 1997). Omission regret is often treated as a learning signal that motivates behavioral adjustment by encouraging individuals to adopt courses of action they previously failed to take (Büchel et al., 2011; Feeney et al., 2018). This function is adaptive when the omitted alternative was genuinely better, and when its omission reflects a flaw in the original decision process. However, our results suggest that omission regret can also be induced by incidental features of the decision environment that can amplify counterfactual salience without providing meaningful information about decision quality. In such cases, regret may reflect artifacts of attentional framing rather than reliable diagnostic signals.

This interpretation aligns with prior work showing that regret is especially sensitive to "almost" counterfactuals—outcomes that are perceived as close to having occurred, such as missing a flight by a few minutes or losing a game by a single point (Doan et al., 2021; Medvec et al., 1995). From this perspective, smaller consideration sets may function similarly to "near-miss" situations, in which a single alternative is especially salient and therefore exerts a strong counterfactual pull. Related work further suggests that hindsight biases can retrospectively inflate the perceived plausibility of unchosen alternatives, even when they were not salient or even actionable at the time of choice (Fischhoff, 1975; Hawkins & Hastie, 1990). Together, this work raises the possibility that regret may sometimes misdirect learning by highlighting counterfactuals that were compelling only in hindsight. This possibility is further supported by our exploratory analyses, which provide initial evidence for a dissociation between experienced regret and the decision process that generated the outcome. From a normative perspective, selecting a non-salient option constitutes an off-policy decision and should, if anything, amplify commission regret. At the same time, because the winning option was not part of the salient set at the time of choice, omission regret should be attenuated, as the alternative could not have been reasonably considered. Instead, participants frequently showed the opposite pattern, largely sparing their chosen action from regret while strongly regretting the unchosen winning alternative. Strikingly, this pattern persisted even when participants actively constructed their own consideration sets, suggesting that hindsight-driven counterfactuals can override the constraints of the original decision process. Additional work is needed to clarify how attentional dynamics during choice interact with hindsight processes in shaping regret and its behavioral sequelae.

Limitations and Future Directions

The present work bridges cognitive and affective science to advance our understanding of regret, but several limitations must also be acknowledged. First, asking participants to report both commission and omission regret on the same trial may increase counterfactual thinking and obscure the difference between the two construals. Future studies should employ between-participant designs to assess whether similar asymmetries emerge when regret types are not explicitly juxtaposed. Second, selectively highlighting options during choice does not guarantee that participants actually attend to those options, which could obscure the true magnitude of attentional effects on regret. Third, in Study 2, the options that participants chose to consider were arbitrary with respect to the reward structure of the task. Future work should examine richer, multi-attribute decision environments with learnable option features. Combining such designs with eye-tracking or other measures to directly assess attention allocation would be especially informative (see Bault et al., 2016 for related work). Fourth, the present designs involve many contrasts and relatively small sample sizes for some conditions. Larger samples and more continuous manipulations of salience would allow for stronger tests of dose–response relationships between counterfactual salience and regret. Large choice sets composed of perceptually identical options are also less common in everyday decision-making. Future work should examine how these effects generalize to smaller, attribute-rich decision contexts. Finally, while our findings are consistent with an attentional account of regret, we do not yet offer a mechanistic model of how attention, appraisal, and behavior interact. Developing computational models that link these processes represents an important next step.

Conclusion

The present work highlights the role of representational and attentional dynamics in shaping regret, complementing existing accounts that emphasize agents' actions and reward structures in their environment. In doing so, our findings point toward integrative models of decision-making and emotion in which affect is treated not as a by-product, but instead as a core signal arising from the same cognitive processes that guide learning and decision-making.

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