



Circumventing resistance to novel information: Piquing curiosity through strategic information revelation

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ABSTRACT

Individuals are repeatedly exposed to new information over time, yet adjustment is typically insufficient and people are generally unaffected by this type of exposure. To circumvent this resistance to novel information, the current research posits that the mere timing by which the same information is differentially-revealed can prompt re-evaluation by heightening individuals' curiosity in the new information. Three experiments show that strategically-revealing new information promotes re-evaluation by increasing curiosity in the new information. Importantly, the effect of curiosity on the re-evaluation process occurs irrespective of the valence of the new information yet only when the revealed information is diagnostic. Collectively, these results provide a unique lens into the impact of curiosity in circumventing resistance to novel information and, consequently, a novel catalyst for future research on judgment updating, resistance to persuasion, and omission neglect.

“The important thing is not to stop questioning. Curiosity has its own reason for existing.”

Albert Einstein

Individuals are constantly faced with new information (Chernev, Böckenholt, & Goodman, 2015). The question of interest to psychologists for decades is whether this new information alters *initial* judgments and evaluations. In other words, do individuals sufficiently adjust, update, or re-evaluate their initial evaluations to novel information? While one might expect the answer to be a clear yes, prior research rather paradoxically shows that the revelation of diagnostic information exerts a minimal impact on initial judgments (Loewenstein, Sunstein, & Golman, 2014; Walsh & Johnson-Laird, 2009; see Gilbert, 1991). That is, although individuals can integrate novel information into existing judgments (Anderson, 1971; see Petty & Cacioppo, 1986), they often fail to adequately do so (Epley & Gilovich, 2006; Gilbert, 2002). Indeed, one of the more intriguing findings in social psychology is *belief perseverance*, whereby initial judgments persist with minimal or no adjustment despite the original basis for the initial judgments being discredited (Ross, Lepper, & Hubbard, 1975).

Though surprising, the rationale for this insufficient adjustment or re-evaluation centers on the impact of existing information in the face of novel information. For instance, existing information can dilute the impact of new information (Nisbett, Zukier, & Lemley, 1981) and new information is often anchored and distorted by previous information

(Russo, Carlson, Meloy, & Yong, 2008). Thus, while one might expect individuals to update their preferences to novel information, individuals instead exhibit a general resistance to re-evaluation (Fransen, Smit, & Verlegh, 2015; Lord, Ross, & Lepper, 1979).

In light of this work, the present research posits an alternative perspective to circumvent this resistance—namely, invoking curiosity in novel information. Specifically, we test the hypothesis that revealing new information *after* an initial evaluation is formed invokes a curiosity toward novel information that heightens re-evaluation. This hypothesis stems from research demonstrating that individuals are motivated to strategically seek out information to satisfy curiosity when they detect a gap in their knowledge (Kashdan, Rose, & Fincham, 2004; Litman, Hutchins, & Russon, 2005; Loewenstein, 1994). Here, we propose that the act of revealing information *after* an initial evaluation has been formed prompts awareness of a knowledge gap in a manner similar to mystery ads that withhold information until the end of the advertisement to increase consumer engagement (Fazio, Herr, & Powell, 1992).

Importantly, this hypothesis presents two key predictions specific to curiosity prompting re-evaluation. First, rather than motivating a confirmatory information bias (Jonas, Schulz-Hardt, Frey, & Thelen, 2001; Lord et al., 1979), individuals are motivated to close this knowledge gap and thus should be open to either positive or negative information. Second, the revelation of diagnostic information should be most likely to abate curiosity, as curiosity motivates individuals to seek out information that resolves their knowledge gap with the most explanatory

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power (Berlyne, 1966; Loewenstein, 1994) and diagnostic information provides a strong basis for closing this knowledge gap (Herr, Kardes, & Kim, 1991).¹

1. Overview

This research proposes that the strategic-revelation of novel information impacts re-evaluation through heightened curiosity. Critically, then, this research seeks to provide specific contributions to literatures on curiosity, judgment updating, and resistance. Specifically, this conceptual model: (i) outlines a novel factor that increases individuals' awareness of knowledge gaps, (ii) details the role of information diagnosticity and thus information quality in abating curiosity, (iii) reveals a novel motivator of correction in curiosity, and (iv) identifies a new means to circumvent resistance to novel information and prompt re-evaluation.

To test this model, all experiments consisted of two sessions to assess the process of re-evaluation. Additionally, the information presented to participants remained constant across sessions; only the timing with which part of that information is presented varies. Thus, our hypothesis is tested when information is revealed after the initial formation of an evaluation in comparison to when full information is presented initially. Lastly, to isolate the role of curiosity, we address alternative accounts related to recency bias (Hogarth & Einhorn, 1992), demand effects (Orne, 1962), omission sensitivity (Sanbonmatsu, Kardes, & Herr, 1992), and attitude strength (Petty & Krosnick, 1995). All measures, manipulations, and exclusions are disclosed.

2. Experiment 1

Experiment 1 tested the impact of the strategic revelation of new information on re-evaluation. Specifically, participants received information about a savings account, with one attribute revealed either immediately or following a week delay. Additionally, we varied the valence of the revealed attribute (i.e., positive or negative), as a curiosity perspective predicts that revealed information should influence re-evaluation irrespective of valence. Finally, we attempted to rule out alternative explanations related to recency biases and demand effects as well as attitude certainty or sensitivity to omissions during initial evaluation.

2.1. Method

Two hundred and thirty-eight online recruits completed an initial product evaluation and, a week later, re-evaluated the product. One hundred and twenty-six recruits (68% female; $M_{\text{age}} = 35.63$) completed both evaluations and were thus included in the analysis (a 52.94% retention rate).²

Participants were welcomed to a study on decision-making and informed of our interest in their reactions toward a savings account. The description of the savings account consisted of six attributes in total (i.e., insurance, minimum deposit amount, location, account access, annual percentage yield (APY), customer reviews, and cost). To manipulate *information valence*, one of the attributes (i.e., cost) was varied to be either positive (e.g., no annual fees; \$100 signing bonus) or negative (e.g., \$100 annual fee; No signing bonus).³ To manipulate

information presentation, we also varied the timing in which the cost attribute was presented. Specifically, the attribute was either initially presented along with the other five attributes (*control condition*) or presented during a second session following a week delay (*revelation condition*). Importantly, then, participants in both conditions received the same information; only the order in which the cost information was presented varied.

Participants next indicated their initial evaluation by reporting their likelihood to sign up for the savings account on a 7-point scale anchored at *Very unlikely*—*Very likely*. To address potential differences in sensitivity to missing information or certainty in participants' initial attitude, we also asked participants to indicate the extent to which they needed additional information about the savings account (Muthukrishnan & Ramaswami, 1999; Sanbonmatsu et al., 1992) and their certainty in their initial attitude (Clarkson, Tormala, & Rucker, 2008; Fazio & Zanna, 1978). Participants responded to both items on 9-point scales anchored at *No additional information needed*—*More information needed* and *Not at all confident*—*Extremely confident*.

A week following the initial evaluation, participants were contacted to complete a follow-up study on decision-making in which they re-evaluated the savings account. As noted, those in the *control* condition were presented with all six attributes associated with the savings account, whereas those in the *revelation* condition were provided with the five initial attributes as well as the omitted cost attribute. All participants then indicated their evaluation of the savings account on the same 7-pt scale used in the initial evaluation.⁴

Finally, participants reported several demographics before being thanked and compensated for their participation.

2.2. Results

Measures were submitted to a two-way Analysis of Variance (ANOVA), with information presentation and information valence as independent variables. Means for each measure are listed in Table 1.

2.2.1. Preliminary analyses

Analysis of participants' initial evaluation revealed a main effect of information valence ($F(1, 122) = 5.66, p = .02, \eta^2 = 0.04$) that was qualified by an unexpected information presentation \times information valence interaction ($F(1, 122) = 20.93, p < .001, \eta^2 = 0.15$). In the *positively-valenced* condition, participants' initial evaluations were higher in the control condition relative to the revelation condition ($t(52) = -2.63, p = .01, d = 0.94$). Conversely, in the *negatively-valenced* condition, participants' initial evaluations were lower in the control condition relative to the revelation condition ($t(70) = 3.96, p < .001, d = 0.94$).

Additionally, there was no effect of the manipulations on sensitivity to omissions ($ps > .24$) or attitude certainty ($ps > .31$).

2.2.2. Main analysis

We created a change index by subtracting time 1 evaluations from time 2 evaluations and submitted this index to analysis. The analysis revealed a main effect of information valence ($F(1, 122) = 31.89, p < .001, \eta^2 = 0.21$) that was qualified by the predicted information presentation \times information valence interaction ($F(1, 122) = 19.35, p < .001, \eta^2 = 0.14$; see Fig. 1). In the *positively-valenced* condition, attitudes increased when the attributes were revealed ($M = 1.10, SD = 1.87$) relative to the control ($M = 0.00, SD = 1.87; t(52) = 2.13, p = .04, d = 0.58$). Conversely, in the *negatively-valenced* condition,

(footnote continued)

valuable—*Very valuable*, and *Not at all beneficial*—*Very beneficial* ($\alpha = 0.95$; Dubois, Rucker, & Galinsky, 2016). Both the positive ($M = 7.93, SD = 1.34$) ($t(29) = 12.00, p < .001, d = 4.46$) and negative ($M = 7.68, SD = 1.49$) ($t(28) = 9.71, p < .001, d = 3.67$) attributes were significantly greater than the scalar midpoint.

⁴ Appendix B presents the materials and a visual flow of procedures for all experiments.

¹ See Appendix A for a direct test of this diagnosticity prediction.

² There was no differences in the attrition rate in either the information presentation ($\chi^2(1) = 0.29, p = .59$) or the information valence ($\chi^2(1) = 1.16, p = .28$) condition.

³ Attributes were separately rated for valence by a separate sample ($N = 49$) on a 9-pt scale anchored at *Very negative*—*Very positive*. The positive ($M = 8.48, SD = 0.79; t(28) = 23.90, p < .001, d = 9.03$) and negative ($M = 1.65, SD = 1.31; t(19) = -11.45, p < .001, d = 5.25$) ratings significantly differed from the scalar midpoint. Relatedly, attributes were separately rated for diagnosticity by a separate sample ($N = 59$) on a 9-pt scales anchored at *Not at all helpful*—*Very helpful*, *Not at all useful*—*Very useful*, *Not at all*

Table 1
Results of dependent measures in Experiment 1.

Measure	Revelation		Control	
	Positively valenced	Negatively valenced	Positively valenced	Negatively valenced
Initial evaluation	3.59 (1.55)	4.22 (1.62)	4.68 (1.49)	2.67 (1.71)
Attitude certainty	6.79 (1.59)	7.14 (1.40)	6.92 (1.55)	7.14 (1.68)
Sensitivity to omissions	5.59 (2.37)	4.81 (2.99)	5.28 (2.13)	5.61 (2.73)
Attitude change	1.10 (1.92)	−2.25 (2.16)	0.00 (1.87)	−0.42 (1.40)

Note—Standard deviations are in parentheses.

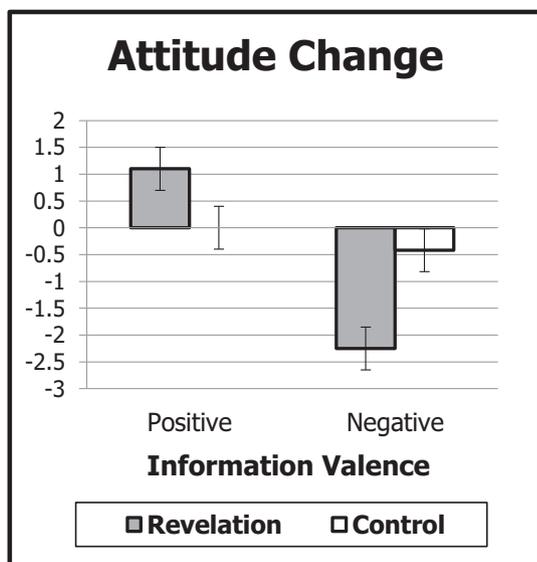


Fig. 1. Attitude change as a function of information presentation and information valence in Experiment 1. Bars reflect standard error.

attitudes decreased when the attributes were revealed ($M = -2.25$, $SD = 2.16$) relative to the control ($M = -0.42$, $SD = 1.40$; $t(70) = -4.28$, $p < .001$, $d = -1.01$). Results did not vary with sensitivity to omissions and attitude certainty included as covariates ($F(1,120) = 20.50$, $p < .001$, $\eta^2 = 0.15$).⁵

2.3. Discussion

Experiment 1 demonstrated that revealing new information after an initial evaluation heightens re-evaluation. Indeed, individuals were more likely to update their evaluations when novel information was revealed to them. Interestingly, this effect occurred regardless of whether the novel information was positive or negative and despite a week delay between evaluations. This latter effect is especially noteworthy as it suggests this effect is not due to a recency or demand bias given that the presentation of information remained constant across conditions following a week delay. Finally, this effect was not impacted by attitude certainty nor omission sensitivity.

It is worth noting that research shows that increasing the accessibility of ones' attitude can heighten information processing (Fabrigar, Priester, Petty, & Wegener, 1998). Importantly, however, participants formed attitudes in both conditions and thus would presumably hold

⁵ Given our interest in updating, we present the data as a change index. However, results do not vary with attitudes treated as a within-subjects factor ($F(1,122) = 6.10$, $p = .01$, $\eta^2 = 0.05$).

attitudes of equal accessibility across conditions (especially following a week delay). Relatedly, one could reasonably argue that individuals are overweighing new information in the revelation condition due to Gricean norms potentially associated with the mere act of revealing information (Grice, 1975). However, the findings of a separate study (see Appendix A) demonstrate that revelation increases re-evaluation only when information is diagnostic. This finding suggests that this effect is not a by-product of passive overweighing of new information but rather the result of active information search, a hallmark indicator of curiosity (Gottlieb, Oudeyer, Lopes, & Baranes, 2013).

3. Experiment 2

Experiment 2 tested our proposed framework for the heightened re-evaluation demonstrated in Experiment 1—namely, that individuals are motivated to seek out new information as a means of abating their curiosity in the target attitude object. We again manipulated the order in which product information was presented and the valence of that information. Here, however, we measured individuals' curiosity in the revealed attribute as well as the perceived diagnosticity of the information. This latter measure was included given that only information diagnostic to satisfying curiosity should influence re-evaluation (Herr et al., 1991; see Appendix). We predicted that information presentation should have a direct (main) effect on both curiosity and perceived diagnosticity, such that participants should report greater curiosity and increased diagnosticity in information that is strategically-revealed, and this difference should result in heightened re-evaluation as a function of information valence.

3.1. Method

Two hundred and twenty-five online recruits (64% Female; $M_{age} = 34.33$) were presented with a vacation package consisting of nine attributes. To manipulate *information presentation*, participants were presented with six attributes during their initial evaluation, and an additional three attributes was presented either before (control condition) or after (revelation condition) indicating their initial evaluations. To manipulate *information valence*, the three focal attributes were varied to be either positive or negative.⁶ Participants then indicated their initial evaluation by reporting the extent to which they liked the vacation package on a 7-point scale anchored at *Not at all—Extremely* prior to reporting the extent to which they needed additional information about the vacation package and their certainty in their attitude as in Experiment 1.

Afterward, participants were presented with all nine attributes and asked to indicate whether their likelihood of purchasing the vacation package had changed on three 11-point semantic differentials anchored at *More unlikely—More likely*, *Less possible—More possible*, and *Less willing—More willing* ($\alpha = 0.98$; see Hogarth & Einhorn, 1992; Russo et al., 2008). We then measured our proposed mediators, with the order of measures counterbalanced. To assess curiosity, participants indicated on 7-point scales their interest in, curiosity toward, and desire to learn about the three focal attributes ($\alpha = 0.84$). To assess diagnosticity, participants indicated on 9-point scales the extent to which the focal attributes were helpful/beneficial/useful/valuable ($\alpha = 0.98$).

Lastly, participants reported demographics before being thanked and compensated.

⁶ As in Experiment 1, attributes were rated for valence ($N = 64$) and diagnosticity ($N = 57$) as described in Footnote 3. The positive ($M = 7.13$, $SD = 2.36$; $t(30) = 5.02$, $p < .001$, $d = 1.83$) and negative ($M = 4.18$, $SD = 2.11$; $t(32) = -2.22$, $p = .03$, $d = -0.78$) attributes ratings significantly differed from the scalar midpoint. Additionally, both the positive ($M = 7.38$, $SD = 1.49$) ($t(27) = 8.48$, $p < .001$, $d = 3.26$) and negative ($M = 6.48$, $SD = 2.23$) ($t(28) = 3.58$, $p = .001$, $d = 1.35$) attributes were significantly greater than the scalar midpoint.

Table 2
Dependent measures in Experiment 2.

Measure	Revelation		Control	
	Positively valenced	Negatively valenced	Positively valenced	Negatively valenced
Initial evaluation	4.36 (1.30)	4.32 (1.34)	4.24 (1.51)	4.14 (1.50)
Attitude certainty	4.22 (2.21)	3.67 (2.39)	4.00 (2.34)	3.75 (2.23)
Sensitivity to omissions	7.20 (1.81)	7.02 (1.93)	6.50 (2.23)	6.71 (2.44)
Self-reported attitude change	1.71 (1.91)	-2.42 (2.06)	-0.10 (1.99)	-0.34 (1.67)
Curiosity	5.57 (0.91)	5.39 (1.30)	4.89 (1.48)	4.84 (1.38)
Diagnosticity	7.27 (1.49)	7.49 (1.48)	6.06 (2.26)	6.18 (2.00)

Note—Standard deviations are in parentheses.

3.2. Results

Means for each measure are listed in Table 2.

3.2.1. Preliminary analyses

A series of two-way ANOVAs, with information presentation and information valence as independent variables, revealed no effects on initial evaluations ($ps > .28$), sensitivity to omissions ($ps > .08$), or attitude certainty ($ps > .18$).

3.2.2. Main analyses

3.2.2.1. *Re-evaluation.* Given the re-evaluation index was self-reported attitude change, we conducted a two-way Analyses of Covariance (ANCOVA), with information presentation and information valence as independent variables and participants' initial evaluation as a covariate. This analysis revealed main effects of attribute valence ($F(1,120) = 76.67, p < .001, \eta^2 = 0.26$) and initial evaluations ($F(1,120) = 15.58, p < .001, \eta^2 = 0.07$) that was qualified by the predicted information presentation \times information valence interaction ($F(1, 220) = 63.63, p < .001, \eta^2 = 0.22$). In the *positively-valenced* condition, evaluations were more positive when the attributes were revealed relative to the control ($t(113) = 4.97, p < .001, d = 0.94$). Conversely, in the *negatively-valenced* condition, evaluations were more negative when the attributes were revealed relative to the control ($t(108) = -5.87, p < .001, d = -1.13$). Results did not vary with sensitivity to omissions and attitude certainty included as covariates ($F(1,218) = 62.22, p < .001, \eta^2 = 0.22$).

3.2.2.2. *Curiosity.* The same analysis revealed a main effect of information presentation ($F(1, 220) = 11.59, p = .001, \eta^2 = 0.05$); those in the revelation condition reported greater curiosity than did those in the control condition ($t(223) = 3.64, p < .001, d = 0.49$). No other effect was significant ($F_s < 1$).

3.2.2.3. *Diagnosticity.* Similarly, the same analysis also revealed a main effect of information presentation ($F(1, 220) = 24.63, p < .001, \eta^2 = 0.10$); paralleling the curiosity data, those in the revelation

condition reported the attributes as more diagnostic than did those in the control condition ($t(223) = 5.08, p < .001, d = 0.68$). Again, no other effect was significant ($F_s < 1$).

3.2.3. Mediation analysis

We recoded the re-evaluation index such that higher scores indicated greater perceived change in the direction consistent with the valence of the attributes and conducted a serial mediation analysis with information presentation ($0 = Control; 1 = Revelation$) as the independent variable, re-evaluations as the dependent variable, information curiosity as the first mediator, information diagnosticity as the second mediator, and initial evaluations as a covariate (Model 6; Hayes, 2013). The findings revealed a significant serial pathway, such that the effect of information presentation on re-evaluation was driven first through curiosity and then through diagnosticity (95% CI: 0.05, 0.25; see Fig. 2). Importantly, the effect does not hold when the order of diagnosticity and curiosity were switched (95% CI: -0.13, 0.06).

3.3. Discussion

Experiment 2 demonstrated that the act of revelation increased curiosity in novel information which, in turn, emphasized its diagnosticity and heightened re-evaluation. Moreover, as in Experiment 1, this effect was irrespective of the valence of the novel information and could not be explained by differential levels of sensitivity to missing information or attitude certainty. Thus, curiosity appears to play an important role in this re-evaluation effect.

It is important to note that our key dependent measure in Experiment 2 was self-reported attitude change. As such, one could argue this type of self-report measure is open to demand effects. Thus, in the subsequent experiment, we seek further support for our mediation hypotheses using the repeated measures paradigm from Experiment 1.

4. Experiment 3

Experiment 3 sought convergent support for the curiosity hypothesis. Specifically, we attempted to generate further evidence that the findings are not due to disproportionate weighting of recently-presented information or demand effects related to the information presentation manipulation by assessing individuals' trait curiosity. Here, we expected the re-evaluation of novel information to be heightened for those who express an inherent motivation to eliminate knowledge gaps through new knowledge acquisition (Berlyne, 1954; Loewenstein, 1994).

4.1. Method

Four hundred and forty-five online recruits (65% Female; $M_{age} = 35.90$) were exposed to the same procedure as Experiment 2 with two amendments. First, we assessed trait curiosity using the Epistemic Curiosity Scale ($\alpha = 0.90$; Litman & Spielberger, 2003). Second, we obtained a direct measure of re-evaluation through repeated assessments of participants' evaluations (using the same scale as

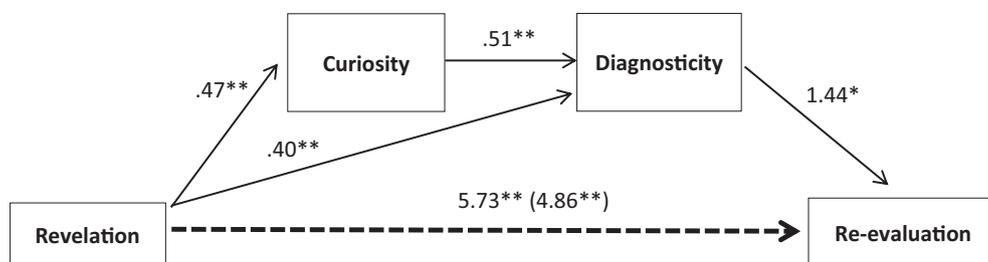


Fig. 2. Serial mediation analysis in Experiment 2. Note. * = significant at 0.01 level; ** = significant at 0.001 level.

Experiment 1).

4.2. Results

Measures were submitted to a hierarchical regression, with information presentation (0 = control, 1 = revelation), information valence (0 = negative, 1 = positive), and trait curiosity (continuous, mean-centered) as independent variables (Cohen, Cohen, West, & Aiken, 2013).

4.3. Preliminary analyses

There was no effect of the analysis on initial evaluations ($ps > .13$), sensitivity to omissions ($ps > .13$), or attitude certainty ($ps > .41$).

4.3.1. Main analysis

As in Experiment 1, we created an attitude change index by subtracting time 1 evaluations from time 2 evaluations. Analysis of the change index revealed the information presentation \times information valence interaction demonstrated in Experiment 1 ($\beta = 0.93$, $t(439) = 4.23$, $p < .001$) that was qualified by trait curiosity ($\beta = 0.54$, $t(438) = 3.07$, $p = .002$; see Fig. 3). For those low in trait curiosity (-1 SD), the information presentation \times information valence interaction was not significant ($\beta = 0.24$, $t(437) = 0.78$, $p = .44$). However, for those high in trait curiosity ($+1$ SD), we observed a significant information presentation \times information valence interaction ($\beta = 1.58$, $t(437) = 5.15$, $p < .001$). In the *positive-valenced* condition, evaluations increased when the attributes were revealed relative to the control ($\beta = 0.71$, $t(437) = 3.27$, $p = .001$). Conversely, in the *negative-valenced* condition, evaluations decreased when the attributes were revealed relative to the control ($\beta = -0.87$, $t(437) = -4.02$, $p < .001$). Results did not vary with sensitivity to omissions and attitude certainty included as covariates ($\beta = 0.45$, $t(436) = 2.99$, $p = .003$).

4.4. Discussion

Experiment 3 provided convergent support for the role of curiosity in updating initial evaluations in the face of novel information. Consistent with the previous two experiments, revealing information (rather than presenting all information at once) resulted in greater re-evaluation. Here, however, this effect held only for those with a dispositional need to satisfy their curiosity. This finding provides convergent support for the mediating role of curiosity while offering further

evidence against alternative explanations related to recency and demand effects.

5. General discussion

The present research explored the importance of curiosity as a means of circumventing resistance to novel information. Specifically, we proposed and demonstrated that revealing new information once an initial evaluation is formed can substantially impact re-evaluations. Moreover, this adjustment stems from heightened curiosity in the revealed information, occurs only for diagnostic information (see Appendix), is not bound by the valence of the information, is independent of sensitivity to missing information and attitude certainty, and cannot be accounted for by recency or demand effects. Thus, curiosity is critical to re-evaluation and judgment updating in the face of novel information.

Collectively, these findings contribute to literatures on curiosity, judgment updating, resistance, and omission neglect. As noted, individuals demonstrate a robust tendency to insufficiently adjust their evaluations to new information (see Gilbert, 1991). The present findings detail the role of curiosity as a novel motivator of correction as well as outline a novel factor that increases individuals' awareness of knowledge gaps (i.e., information presentation) and the role of information diagnosticity and thus information quality in abating curiosity. Additionally, despite research demonstrating an implicit resistance to new information once an initial evaluation has been made (Fransen et al., 2015; Friestad & Wright, 1994), the present research identifies curiosity as a new means to circumvent resistance to novel information and prompt re-evaluation. Lastly, though individuals exhibit an insensitivity toward missing information (Muthukrishnan & Ramaswami, 1999), revelation can counter this robust insensitivity during re-evaluation.

Finally, we hope these findings motivate future research. For instance, the present research focused on epistemic curiosity and our findings are consistent with state-trait theories of curiosity (e.g., Litman et al., 2005; Spielberger & Starr, 1994). Yet curiosity can be categorized into different types (e.g., *deprivation* vs. *interest*: Litman & Jimerson, 2004) that may be cued by different knowledge gaps (e.g., broad versus narrow: Litman et al., 2005) and thus abated by different information (Litman, 2005). Additionally, though we controlled for attitude certainty across experiments, factors related to attitude strength (e.g., *issue importance*) might offer unique predictions regarding when individuals are paradoxically less resistant to updating existing attitudes in the face of novel information. For instance, while low importance issues might

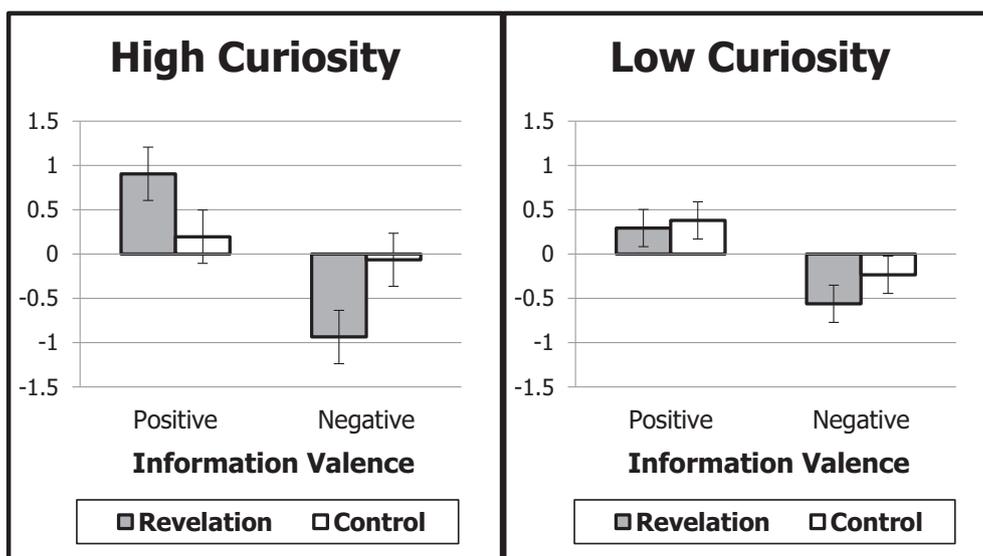


Fig. 3. Attitude change as a function of information presentation and information valence for high (right-panel) and low (left-panel) curiosity in Experiment 3.

stimulate greater curiosity in novel information as a means of increasing one's knowledge (Wood, Kallgren, & Preisler, 1985), high importance issues might stimulate greater curiosity in novel information as a means of increasing understanding about an issue of personal consequence (Lo, Wei, Lu, & Hou, 2015; see also Blankenship & Wegener, 2008). Lastly, though revealing novel information stimulates curiosity (see Experiment 2), some individuals may view novel information as inherently threatening to their existing attitudes (Kruglanski & Webster, 1996) and thus maintain resistance despite the heightened awareness of a knowledge gap.

Appendix A. Empirical test of diagnosticity on re-evaluation

We conducted an experiment to directly assess the role of diagnosticity in altering the re-evaluation process. One hundred and five online recruits (69% Female; $M_{\text{age}} = 34.53$) were informed of our interest in their reaction toward two mobile applications promoted to strengthen cognitive abilities (*CogniFit Brain Fitness* and *Fit Brains Trainer*). Participants read the description of both apps before indicating which app they would download on a binary scale anchored at *CogniFit Brain Fitness—Fit Brains Trainer*.

The description of each app consisted of the same four attributes (i.e., description, compatibility, cost, and product features). To manipulate *information presentation*, participants were presented with all four attributes during their initial evaluation, and an additional attribute was presented either before (control condition) or after (revelation condition) participants indicated their initial choice. Critically, then, participants in both conditions received the same information (Chakravarti, Janiszewski, & Ülkümen, 2006; Muthukrishnan & Ramaswami, 1999); only whether the information was presented before or after the initial choice was manipulated. To manipulate *information diagnosticity*, we altered whether the additional attribute was the app's ability to track performance (diagnostic condition) or the app's ability to sync with social media (non-diagnostic condition).

The diagnosticity manipulation was based on a pretest in which a separate sample ($N = 51$) rated both the diagnosticity and importance of eighteen randomly-ordered attributes specific to apps that train and strengthen cognitive abilities. Attributes were rated on 9-point scales anchored at *Not at all useful—Very useful* and *Not at all important—Very important*. Our goal was to identify attributes equal in importance but that varied in diagnosticity (Norman, 1976). A paired samples *t*-tests revealed that the ability to track performance was perceived as more diagnostic ($M = 7.20$, $SD = 2.19$) than the ability to sync with social media ($M = 4.10$, $SD = 2.90$; $t(50) = 6.67$, $p < .001$, $d = 1.89$). However, both the ability to track performance ($M = 4.86$, $SD = 2.59$) and to sync with social media ($M = 4.37$, $SD = 2.76$) were perceived as equally important ($t(50) = 1.56$, $p = .13$, $d = 0.44$).

Pretest results for attribute diagnosticity

Attribute	Information diagnosticity	Information importance
Usability	8.16 (1.22)	8.18 (1.14)
Compatibility with phone	8.10 (1.30)	8.00 (1.65)
Price	7.7 (1.65)	8.10 (1.24)
Performance tracking	7.20 (2.19)	4.86 (2.59)
Security	7.08 (2.57)	7.76 (1.80)
Consumer reviews	6.98 (2.20)	6.86 (2.25)
Customer ratings	6.94 (2.24)	7.22 (2.13)
Graphic quality	6.43 (2.48)	6.94 (2.02)
Popularity	5.69 (2.60)	5.39 (2.46)
Customizability	5.67 (2.73)	5.59 (2.36)
Application size	5.35 (2.68)	5.84 (2.42)
Download time	4.84 (2.76)	5.12 (2.82)
Age appropriateness ratings	4.57 (2.80)	4.06 (2.75)
Developer	4.55 (2.60)	4.37 (2.31)
Revision date	4.51 (2.93)	4.67 (2.56)
Ability to sync with social media	4.10 (2.90)	4.37 (2.76)
Version number	4.08 (2.53)	3.98 (2.36)
Offers in-app purchases	3.88 (2.57)	3.82 (2.54)

Note—Standard deviations are in parentheses.

The items in bold were carried forward to the main experiment to represent the diagnostic (performance tracking) and non-diagnostic (ability to sync with social media) attributes.

Moreover, pretesting revealed no differences in initial preference between apps, so only one used the revelation technique (*Fit Brains Trainer*) whereas the other presented all information at once (*CogniFit Brain Fitness*).

Following their initial choice, participants were presented with all five attributes. Key, however, is that the focal attribute (i.e., performance tracking or social media syncing) was presented for the first time in the revelation condition. After the opportunity for re-evaluation, participants were again prompted to choose which application to download on the same binary scale as the initial choice. Upon indicating their choice, participants reported demographics before being thanked and compensated for their participation.

All dependent measures were submitted to an information presentation (0 = Control, 1 = Revelation) by information diagnosticity (0 = Non-

diagnostic, 1 = Diagnostic) logit loglinear analysis. Importantly, analysis of the initial choice data revealed no main effects or interaction (all p s > .24). Consistent with pretesting, then, initial choices did not differ according to the conditions.

However, analysis of the re-evaluation data revealed a main effect of information presentation ($Z = 3.02, p = .003, 95\% \text{ CI: } 0.71 \text{ to } 3.31$); participants were more likely to choose the app in which the attribute was revealed (73.08%) than the app in which the attribute was presented initially (48.00%). More importantly, however, the analysis revealed a significant information presentation \times information diagnosticity interaction ($Z = -1.74, p = .04, 95\% \text{ CI: } -3.43 \text{ to } -0.05$). In short, those in the *diagnostic* condition significantly chose to download the app where the attribute was revealed relative to the control ($\chi^2(1) = 10.54, p = .001, \text{ Fisher's } Z_r = 0.51$). Those in the *non-diagnostic* condition showed no effect of information presentation on their choice of app ($\chi^2(1) = 0.25, p = .62, \text{ Fisher's } Z_r = 0.07$).

Despite being exposed to the same product information, individuals' re-evaluations significantly varied as a function of the timing in which that information was revealed. In particular, though individuals showed no initial difference in their choice of apps, they were significantly more likely to choose the app in which an attribute was revealed upon re-evaluation. Moreover, this effect only occurred when the attribute was diagnostic. This latter finding is critical as it demonstrates this revelation effect is specific to relevant information and thus not a by-product of making new information more salient (Tversky, Sattath, & Slovic, 1988) or a recency bias (Hogarth & Einhorn, 1992).

Appendix B. Supplementary materials

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jesp.2017.12.010>.

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