

The Feeling of Not Knowing It All

Haiyang Yang 
Johns Hopkins University

Ziv Carmon
INSEAD

Dan Ariely
Duke University

Michael I. Norton
Harvard University

Accepted by Anirban Mukhopadhyay and Priya Raghurir, Editors; Associate Editor, Manoj Thomas

How do consumers assess their mastery of knowledge they have learned? We explore this question by investigating a common knowledge consumption situation: encountering opportunities for further learning. We argue and show that such opportunities can trigger a feeling-of-not-knowing-it-all (FONKIA), which lowers consumers' confidence in their mastery of the knowledge they already possess. Specifically, listing optional follow-up readings at the conclusion of a course lowered students' confidence in their mastery of the course material they had already learned (Study 1). Encountering an optional learning opportunity increased the FONKIA, which mediated the decreased confidence (Studies 2 and 3). We also document two moderators consistent with our conceptualization. First, participants primed with mastery (vs. instrumental) motivation were more negatively impacted when they encountered optional learning opportunities. Second, the more related the optional opportunities were to the target topic, the lower participants' confidence in their mastery of what they had already learned. We conclude by discussing the implications of these findings, such as encouraging further learning or harming teaching evaluations.

Keywords Knowledge consumption; Consumption of learning; Judgment of knowledge; Feeling of knowing; Confidence in knowledge; WYSIATI; FONKIA

From how-to books to online tutorials to classroom-based lectures, people spend much money and time consuming knowledge (Ariely & Norton, 2009; Yang, Carmon, & Simonson, 2019). A key goal that people have in such consumption is to be confident that they have mastered what they learned (Bloom, 1968). Aside from being a major consumption outcome in and of itself, this type of confidence can impact many important downstream behaviors, from search and acquisition of more information to decisions using the knowledge learned (Bearden, Hardesty, & Rose, 2001; Bhargave, Mantonakis, & White, 2016; Kyung & Thomas, 2016; Lichtenstein & Bearden, 1989; Park & Lessig, 1981; Wood & Lynch, 2002). To shed light on what determines confidence in mastery of knowledge, this research investigates a common knowledge consumption phenomenon. Specifically, we study consequences

of learners encountering opportunities for further learning – such as a listing of optional follow-up readings that students often receive at the end of a course.

Our core proposition is that the experience of encountering (vs. not encountering) optional opportunities for furthering one's knowledge on a topic, can increase the feeling-of-not-knowing-it-all (FONKIA). In turn, this feeling about unlearned aspects of the target topic then decreases consumers' confidence in their mastery of the parts of the topic that they had learned. As a result, encountering (vs. not encountering) additional learning opportunities can reduce consumers' confidence in their mastery of what had been learned – even though their objective level of mastery remains the same.

Our findings add to the consumer psychology literature on knowledge consumption (Ariely & Norton, 2009; Krishna & Ünver, 2008; Punj & Staelin, 1978) by illustrating that the FONKIA can play an important role in driving consumers' assessments of

Received 4 April 2017; accepted 13 December 2018

Available online 8 January 2019

This paper has benefited from the comments of the JCP Editors, Associate Editor, and three anonymous reviewers.

Correspondence concerning this article can be addressed to Haiyang Yang, Johns Hopkins Carey Business School, Johns Hopkins University, 100 International Dr., Baltimore, MD 21202, USA. Electronic mail may be sent to haiyang.yang@jhu.edu

© 2019 Society for Consumer Psychology

All rights reserved. 1057-7408/2019/1532-7663/29(3)/455–462

DOI: 10.1002/jcpy.1089

what they have learned, and by identifying a means to alter the FONKIA and hence shape confidence in mastery of the knowledge learned. Moreover, our results complement the literature on metacognition, which has largely focused on situations in which people become overly confident about what they know (Brown, 1991; Hart, 1965; Nisbett & Wilson, 1977; Rozenblit & Keil, 2002). Our research identifies a common knowledge consumption context in which consumers can experience reduced confidence in their knowledge. Finally, our research findings add to the growing stream of research on metacognitive judgment of learning (Alter & Oppenheimer, 2009; Baumeister, Alquist, & Vohs, 2015; Koriat, 1993, 2007) by demonstrating that consumers' assessment of confidence in the knowledge they already learned can be driven by the FONKIA – a heuristic – independently of actual mastery of the knowledge learned.

Conceptual Background

Much research has examined consumers' knowledge of products, brands, and prices (see Alba & Hutchinson, 1987, 2000, for reviews), but consumer psychology research on the consumption of knowledge has been limited. Pioneering studies examined how consumer characteristics such as intelligence, race, and gender (Levine, 1976), as well as supply side factors such as education cost, quality, and location (Punj & Staelin, 1978) and course selection systems (Krishna & Ünver, 2008) affect learning-related decisions. However, even though the consumption of knowledge is prevalent (Ariely & Norton, 2009), the current understanding of this form of consumption is incomplete. Indeed, in our connected world, consumers are increasingly inundated with information and knowledge, making the investigation of the consumption of knowledge timely.

When consuming knowledge, one of people's primary goals is to be confident that they have mastered what they learned (Bloom, 1968). This type of confidence is not only an important consumption outcome in and of itself, but can also substantively impact a wide variety of subsequent behaviors (Kahneman, 2011), such as consumers' willingness to search for and acquire additional information, or consumers' use of the information they possess when making judgments (Bearden et al., 2001; Bhargave et al., 2016; Kyung & Thomas, 2016; Lichtenstein & Bearden, 1989; Park & Lessig, 1981; Wood & Lynch, 2002). Our research

adds to this literature by shedding light on the process by which consumers assess confidence in their mastery of knowledge learned.

Prior research has shown that people tend to be confident about the knowledge they have – often more confident than they should be – reflecting an Illusion of Knowing (Glenberg, Wilkinson, & Epstein, 1982). Indeed, people's subjective sense of knowledge has been shown to differ from their objective knowledge in numerous domains (Hart, 1965; Koriat, 1993, 2007; Park & Lessig, 1981) – from the conviction that they know something but cannot access it (e.g., the “tip of the tongue” phenomenon; Brown, 1991) to erroneously believing that they know the causes of their behavior or fully understand complex phenomena (Damasio, 1999; Fernbach, Rogers, Fox, & Sloman, 2013; Nisbett & Wilson, 1977; Rozenblit & Keil, 2002). Whereas much prior research investigates situations in which people become overconfident about what they know, our research complements this stream of literature by exploring situations in which people experience degraded confidence in the knowledge they already possess. Our research also adds to this literature by examining the extent to which consumers' assessment of confidence in knowledge learned is driven by their actual mastery of a body of knowledge versus heuristics associated with their learning experience.

We build on prior work suggesting that judgments often reflect the principle of what-you-see-is-all-there-is (WYSIATI, Kahneman, 2011, see also Slovic, 1972). That is, people tend to neglect all but the most salient information (Sanbonmatsu, Kardes, Houghton, Ho, & Posavac, 2003). For example, when making a purchase decision, people tend to neglect considerations such as opportunity costs that are important but less salient (Frederick, Novemsky, Wang, Dhar, & Nowlis, 2009). In our research context, we argue that people tend to focus on what they do know and neglect what they do not know – the parts of the knowledge topic they have not learned. As a result, encountering optional learning opportunities can lead to an increased feeling-of-not-knowing-it-all (FONKIA) about the topic. While this feeling of incompleteness regarding the unlearned parts should not alter people's actual mastery of the parts they have already learned, we propose that the FONKIA can contaminate assessments pertaining to the learned parts, leading to a reduction of, for example, confidence in performance on tasks assessing mastery of the learned parts. In short, the increased awareness that there is more to know about a topic can lead to

decreased confidence in the parts one already knows about that topic. We tested these propositions in three studies.

Study 1

Design and Procedure

Study 1 tested, in a field context, our core proposition—encountering optional learning opportunities can dampen students' confidence in their mastery of the knowledge they already learned. We invited 149 students taking the same Marketing Strategy course in the same semester with the same instructor, to respond to a voluntary exit questionnaire 24 hr after the last session of the course. The 134 students who responded (89.93% response rate) were randomly assigned to either the control or optional-opportunity condition. Those in the optional-opportunity condition were provided a list of optional follow-up readings that could further their knowledge on marketing strategy beyond what they already learned in the course (see Appendix S1 for detail). On a separate page, they responded to a set of confidence measures pertaining to their mastery of the knowledge they learned in the course. Participants in the control condition, however, completed the confidence measures before encountering the list of optional follow-up readings.

Participants indicated how well they would score on a test of the knowledge taught in the course (0 = zero points, 10 = full points), how well they mastered the knowledge taught in the course (1 = not at all, 10 = very), and how well they would be able to apply the knowledge taught in the course in their future career (1 = not at all, 10 = very). Because a maximum likelihood factor analysis on these three measures yielded a single factor with an eigenvalue larger than 1 (eigenvalue = 1.94, accounting for 64.65% of the total variance), we standardized and averaged the measures into a single 10-point measure of confidence in mastery of the knowledge learned in the course ($\alpha = .72$).

Results

An ANOVA with the experimental conditions as the independent variable (0 = control, 1 = optional opportunity) and students' confidence in their mastery of the knowledge learned in the course as the dependent variable, revealed a significant effect of the experimental conditions ($M_{\text{control}} = 8.65$, $SD_{\text{control}} = .79$; $M_{\text{opportunity}} = 8.29$, $SD_{\text{opportunity}} = .78$; $F(1,132) = 6.84$,

$p = .01$, see Appendix S1 for additional analysis). That is, supporting our proposition, encountering a list of optional follow-up readings before (vs. after) assessing confidence, significantly decreased students' confidence in their mastery of the knowledge they had already learned in the course.

Study 2

Study 2 had three primary goals. To assess generalizability, Study 2 examined a different type of learning: whereas Study 1 investigated a learning situation in which learners took a semester long course delivered by an instructor, participants in Study 2 engaged in self-guided learning, mirroring consumers' use of many common categories of learning products (e.g., online tutorials, courseware). Furthermore, as results of Study 1 might have been affected by response substitution (Gal & Rucker, 2011), Study 2 (and Study 3) utilized a different, more explicit dependent measure. This helped reduce the likelihood that participants misconstrue the dependent measure as pertaining to all the knowledge on a topic, rather than just the knowledge they already learned about the topic. Study 2 also investigated our proposed mediator—the feeling-of-not-knowing-it-all (FONKIA). Finally, Study 2 explored a moderator of the effect. Prior research (e.g., Ryan & Deci, 2017) suggests that people can have different motivations for learning: some are primarily driven by instrumental motivations (e.g., learn enough to get by), whereas others may hold mastery motivations (e.g., know all there is about the topic). If the FONKIA plays an underlying role in our proposed effect, the former group (who are less focused on the extent to which parts of the topic remain unknown), should be less impacted than the latter group (who aim to acquire all there is to know about the topic). In other words, we expected consumers with more of mastery (vs. instrumental) motivations to be more adversely affected by encountering optional learning opportunities.

Design and Procedure

Seven hundred Amazon Mturk participants (54% women, $M_{\text{age}} = 38$) completed the study for monetary compensation (Mturk has often been utilized to study intrinsic versus extrinsic motivation, as well as task performance [e.g., Farrell, Grenier, & Leiby, 2016; Hahl, 2016]). All participants were asked to study a single-page of learning material on

how to identify consumers' unmet needs (content from the section on unmet needs in Chapter 2 of *Strategic Market Management* [Aaker, 2013], see Appendix S1 for detail). They were randomly assigned according to a 2(instrumental vs. mastery motivation prime) \times 2(control vs. optional opportunity) between-participant design.

All participants first completed a task that primed either instrumental or mastery motivations. Following Ryan and Deci (2017), the task primed thoughts about extrinsic rewards from work versus masterful work: those in the instrumental condition were asked to describe how they could make more money, while those in the mastery condition were asked to describe how they could produce higher quality work. Thereafter, all participants studied the same learning material on identifying consumers' unmet needs. For those in the optional learning opportunity condition, the learning material listed an optional follow-up reading at the end of the page: "To learn more about the methods to identify consumers' unmet needs, see Part II and III of the textbook, *Marketing Research*." For those in the control condition, no recommendation was listed in the learning material.

On a separate page, participants in all conditions responded to an essay question, which assessed their actual mastery of the information they already learned (note that this task could help participants calibrate their mastery of that information before responding to the confidence measures). Specifically, they were asked: "Based on what you just studied from the learning material, please discuss how a firm should go about uncovering the unmet needs of its customers." On the next page, participants were asked: "When your answer is scored based on what was taught in the learning material, how well do you think it will score?" (1 = definitely not the full score, 7 = definitely the full score).

To measure the FONKIA, participants were asked to indicate, right after studying the learning material, the extent to which they thought their understanding of the topic of identifying unmet needs was complete (1 = very incomplete, 7 = very complete). Finally, participants completed basic demographic measures.

Results

Confidence. Responses to the confidence measure were analyzed using an ANOVA with motivation type and whether the optional learning opportunity information was listed in the learning material as between-participant factors. This

analysis revealed a significant interaction effect ($F(1,696) = 6.31, p = .01$), and a marginally significant main effect of encountering the optional learning information ($M_{\text{control}} = 5.07, SD_{\text{control}} = 1.40; M_{\text{opportunity}} = 4.89, SD_{\text{opportunity}} = 1.37; F(1,696) = 3.63, p = .057$). No other effect approached significance. Contrast analyses revealed that in the mastery condition, encountering the optional learning information significantly lowered participants' confidence in how well they performed on the task that assessed what they had already learned ($M_{\text{control}} = 5.30, SD_{\text{control}} = 1.32; M_{\text{opportunity}} = 4.84, SD_{\text{opportunity}} = 1.37; F(1,696) = 9.57, p = .002$). In the instrumental condition, however, the difference was not significant ($M_{\text{control}} = 4.88, SD_{\text{control}} = 1.44; M_{\text{opportunity}} = 4.94, SD_{\text{opportunity}} = 1.37; p > .6$).

FONKIA. An ANOVA on the FONKIA revealed a significant main effect of encountering the optional learning opportunity information ($M_{\text{control}} = 4.36, SD_{\text{control}} = 1.47; M_{\text{opportunity}} = 4.11, SD_{\text{opportunity}} = 1.45; F(1, 696) = 5.51, p < .02$), in addition to a marginally significant interaction effect between motivation type and optional learning information ($F(1,696) = 2.70, p = .1$). No other effect approached significance. Contrast analyses revealed that in the mastery condition, encountering the optional learning information significantly increased the FONKIA ($M_{\text{control}} = 4.53, SD_{\text{control}} = 1.41; M_{\text{opportunity}} = 4.09, SD_{\text{opportunity}} = 1.38; F(1,696) = 7.81, p = .005$). In the instrumental condition, however, the difference was not significant ($M_{\text{control}} = 4.20, SD_{\text{control}} = 1.51; M_{\text{opportunity}} = 4.12, SD_{\text{opportunity}} = 1.53; p > .6$).

Objective performance. Participants' responses on the objective assessment of learning measure were scored by two trained graders who were unaware of our hypotheses. The scores ranged from 0 (all incorrect) to 4 (all points covered in the learning material were listed), and discrepancies between the two coders (6%) were resolved through discussion. The objective performance scores were analyzed using the same ANOVA as above. This analysis did not yield any significant main effect or interaction effect (p 's $> .4$). That is, not surprisingly, participants' actual mastery of the information they already learned did not significantly differ in the mastery ($M_{\text{control}} = 1.90, SD_{\text{control}} = 1.11; M_{\text{opportunity}} = 1.98, SD_{\text{opportunity}} = 1.17; p > .4$) or instrumental conditions ($M_{\text{control}} = 1.86, SD_{\text{control}} = 1.12; M_{\text{opportunity}} = 1.92, SD_{\text{opportunity}} = 1.14; p > .6$).

Moderated mediation. We ran a moderated mediation analysis (Model 8, Hayes, 2013) with encountering optional learning information as the independent variable (0 = control, 1 = opportunity), confidence as the dependent variable, motivation

manipulation as the moderator, the FONKIA as the mediator, and objective test performance score as a covariate. This analysis revealed that the conditional indirect effect through the FONKIA was not significant in the instrumental conditions ($\beta = -.03$, $SE = .06$, $95\%CI[-.15, .08]$). In the mastery conditions, however, the conditional indirect effect through the FONKIA was significant ($\beta = -.16$, $SE = .06$, $95\%CI[-.28, -.05]$). That is, the FONKIA mediated the negative effect of encountering optional learning information on perceived mastery of the knowledge that had already been learned, when mastery motivation was primed but not when instrumental motivation was primed. These findings further support our account, and highlight learning motivation as a theoretically relevant moderator (see Appendix S1 for additional discussion).

Study 3

Study 3 had three primary goals. To further support for our proposed process and to further assess generalizability, Study 3 utilized a different measure of the FONKIA and a different set of learning materials. Study 3 also explored another moderator of our proposed effect: relatedness of the optional learning opportunity to the initial topic. Specifically, the more consumers construe the content of an optional learning opportunity as relating to the knowledge topic they studied, the more diagnostic the opportunity would be of the incompleteness of their understanding of that topic. This should thus lead to a higher level of the FONKIA, resulting in more degradation of their confidence in mastery of the information they had already learned.

Design and Procedure

Six hundred Amazon Mturk participants (51% women, $M_{age} = 37$) completed the study for monetary compensation. All participants were asked to study a single-page of learning material on the cardiovascular system of snakes (see Appendix S1 for detail). They were randomly assigned to one of three conditions: For those in the control condition, the learning material did not include additional information. For those in the closely related condition, the learning material listed an optional follow-up reading at the end of the page: "To learn more about the cardiovascular system of snakes, see Part II of the textbook, *An Introduction to Biology of*

Snakes." For those in the distally related condition, a different optional follow-up reading was listed: "To learn more about the cardiovascular system of other animals, see Part II of the textbook, *An Introduction to Biology of Animals.*" (A pretest with participants from the same population as the main study [$N = 200$] confirmed that, compared to the distally related recommendation, the closely related recommendation was construed as significantly more related to the topic covered in the learning material, $p < .01$).

On a separate page, participants in all conditions responded to an essay question, which assessed their actual mastery of the content on the cardiovascular system of snakes that they had just studied. Specifically, they were asked: "Based on what you just studied from the learning material, what are the pros and cons for a snake to have its heart close to its head? Please briefly describe." On the next page, participants were asked: "When your answer is scored based on what was taught in the learning material, how well do you think it will score?" (1 = definitely not the full score, 7 = definitely the full score). To assess the FONKIA, participants were asked to indicate, after studying the learning material, how much they thought about what they still did not know about the cardiovascular system of snakes (1 = not at all, 7 = very much). Finally, participants completed basic demographic measures.

Results

Confidence. An ANOVA yielded a significant effect of the experimental conditions on confidence ($F(2,597) = 4.67$, $p = .01$). Contrast analyses revealed that, compared to those in the closely related condition, participants in the control condition had significantly greater confidence in performing well on the assessment of their mastery of the information they had learned ($M_{control} = 4.16$, $SD_{control} = 1.55$; $M_{close} = 3.76$, $SD_{close} = 1.72$; $F(1,597) = 5.85$, $p = .016$). Participants in the control condition did not differ from those in the distally related condition ($M_{distal} = 4.22$, $SD_{distal} = 1.58$; $F(1,597) = .15$, $p = .7$), but participants in the closely related condition had significantly lower confidence than those in the distally related condition ($F(1,597) = 8.02$, $p = .005$).

FONKIA. An ANOVA yielded a significant effect of the experimental conditions on the FONKIA ($F(2,597) = 6.46$, $p = .002$). Contrast analyses revealed that participants in the control condition experienced a significantly lower level of the

FONKIA than those in the closely related condition ($M_{\text{control}} = 4.38$, $SD_{\text{control}} = 1.92$; $M_{\text{close}} = 5.03$, $SD_{\text{close}} = 1.83$; $F(1, 597) = 11.92$, $p = .001$), but did not differ from those in the distally related condition ($M_{\text{distal}} = 4.54$, $SD_{\text{distal}} = 1.82$; $F(1, 597) = .78$, $p = .38$). Compared to those in the closely related condition, participants in the distally related condition also experienced a significantly lower level of the FONKIA ($F(1, 597) = 6.76$, $p = .01$).

Objective performance. Two trained graders who were unaware of our hypotheses scored responses on the objective assessment of learning measure. Scores ranged from 0 (all incorrect) to 2 (all points covered in the learning material were listed), and discrepancies (7%) between the coders were resolved through discussion. Not surprisingly, participants' performance on the objective assessment of learning measure did not significantly differ across the conditions ($M_{\text{control}} = 1.32$, $SD_{\text{control}} = .71$; $M_{\text{close}} = 1.25$, $SD_{\text{close}} = .76$; $M_{\text{distal}} = 1.34$, $SD_{\text{distal}} = .72$; p 's $> .2$).

Mediation. Two dummy variables were created to represent the closely and distally related conditions (zero values on the two dummies thus represented the control condition). We ran a multicategorical mediation analysis (Model 4, Hayes, 2013) with confidence as the dependent variable, the two dummies as the independent variables, the FONKIA as the mediator, and objective performance score as a covariate. This analysis yielded a mediation pattern supporting our propositions: For the distally related condition dummy, the indirect effect through the FONKIA was non-significant ($\beta = -.01$, $SE = .02$, 95%CI $[-.05, .02]$). However, for the closely related condition dummy, the indirect effect through the FONKIA was significant ($\beta = -.05$, $SE = .03$, 95%CI $[-.11, -.01]$). Further, when this significant indirect effect was controlled for, the otherwise significant direct effect became non-significant ($\beta = -.30$, $SE = .16$, 95%CI $[-.62, .01]$). Taken together, the results of Study 3 are consistent with our conceptual account that a higher level of the FONKIA can lead to decreased confidence in mastery of knowledge learned, and that perceived relatedness is another conceptually linked moderator.

General Discussion

When consuming knowledge, people seek to be confident in their mastery of what they have learned (Bloom, 1968). Aiming to provide insight into what underlies this sense of mastery, we

investigate a common knowledge consumption context—learners encountering opportunities for further learning. We propose that encountering such information can heighten the feeling-of-not-knowing-it-all (FONKIA) about the learning topic. This feeling of incompleteness regarding unlearned aspects of the topic can, in turn, undermine confidence in one's mastery of the parts of the topic that had already been learned.

We tested these propositions in three studies utilizing different operationalizations. In a field setting, Study 1 showed that providing students with optional follow-up readings after they completed a course lowered perceived mastery of the course material that they had already learned. Studies 2 and 3 demonstrated that encountering (vs. not encountering) information on optional learning opportunities led to an increased level of the FONKIA, which mediated the negative impact on participants' confidence in their mastery of the information about the topic they had already learned. We also explored two moderators of the effect: participants with mastery (vs. instrumental) motivation were more negatively impacted (Study 2); and the more that subsequent learning opportunities could be construed as relating to the topic that participants had learned, the lower their confidence for a task assessing their mastery of what had been learned (Study 3). Importantly, the FONKIA did not alter actual mastery: participants demonstrated equal mastery of what they had learned whether or not they encountered optional learning opportunities.

Our research yields important implications. For instructors and authors of learning materials, offering less – for example, not referring to optional learning opportunities such as follow-up readings – may lead learners to experience greater confidence in their mastery of what they learned. This may also mean that learners will be less inclined to further expand their learning of the target topic. On the other hand, when educators do provide information on optional learning opportunities, learners may have a lower level of confidence in their mastery of the knowledge learned. While this lowered confidence may drive learners to seek more knowledge about the topic, it may also lead to negative inferences about the quality of learning materials/experiences and even the competency of the source of that knowledge – such as instructors and authors.

Our instantiation – encountering optional follow-up readings – is but one of a variety of common contexts that can affect the FONKIA. Future research can explore others that are likely to cause

similar effects. For example, learning materials that include an excerpt of a book, or naming a course “Introduction to Marketing Management” (vs. “Marketing Management”), may drive students to ponder about what is unknown, reducing their confidence in what they learned. As another example, the wide use of qualifying statements by scholars (e.g., “these results are likely moderated by consumers’ affective state”) – that convey additional information and are more accurate – may similarly undermine confidence in the mastery of what was taught, by increasing the FONKIA. Moreover, processes associated with the FONKIA could also be more robustly assessed via better measures. Future research could explore, for example, whether our effects may be attenuated when people are a priori well-informed about how much knowledge on a topic there is to master.

People’s reactions to what remains unknown may also vary across cultures. According to Confucius, “to know that we know what we know, and that we do not know what we do not know, that is true knowledge.” For individuals from cultures with Confucianist values, the unknowns may be less demotivating. Indeed, East Asians and North Americans differ in the related construct of Need for Closure (Chiu, Morris, Hong, & Menon, 2000) and in holistic and dialectical cognitive styles (holistic consideration of facts and acceptance of contradictions, Monga & Roedder John, 2008; Wang, Batra, & Chen, 2016), which may affect their responses to further learning opportunities. Future research should explore such moderators to inform theory, offer further insight for designers of learning experiences and products (e.g., authors, developers, instructors), and promote learning.

References

- Aaker, D. A. (2013). *Strategic market management* (10th ed.). New York, NY: John Wiley & Sons.
- Alba, J. W., & Hutchinson, J. W. (1987). Dimensions of consumer expertise. *Journal of Consumer Research*, 13, 411–454.
- Alba, J. W., & Hutchinson, J. W. (2000). Knowledge calibration: What consumers know and what they think they know. *Journal of Consumer Research*, 27, 123–156.
- Alter, A. L., & Oppenheimer, D. M. (2009). Uniting the tribes of fluency to form a metacognitive nation. *Personality and Social Psychology Review*, 13, 219–235.
- Ariely, D., & Norton, M. I. (2009). Conceptual consumption. *Annual Review of Psychology*, 60, 475–499.
- Baumeister, R. F., Alquist, J. L., & Vohs, K. D. (2015). Illusions of learning: Irrelevant emotions inflate judgments of learning. *Journal of Behavioral Decision Making*, 28, 149–158.
- Bearden, W. O., Hardesty, D. M., & Rose, R. L. (2001). Consumer self-confidence: Refinements in conceptualization and measurement. *Journal of Consumer Research*, 28, 121–134.
- Bhargave, R., Mantonakis, A., & White, K. (2016). The cue-of-the-cloud effect: When reminders of online information availability increase purchase intentions and choice. *Journal of Marketing Research*, 53, 699–711.
- Bloom, B. S. (1968). Learning for mastery. *Evaluation Comment*, 1, 1–12.
- Brown, A. S. (1991). A review of the tip-of-the-tongue experience. *Psychological Bulletin*, 109, 204–223.
- Chiu, C. Y., Morris, M. W., Hong, Y. Y., & Menon, T. (2000). Motivated cultural cognition: The impact of implicit cultural theories on dispositional attribution varies as a function of need for closure. *Journal of Personality and Social Psychology*, 78, 247.
- Damasio, A. R. (1999). *The feeling of what happens: Body and emotion in the making of consciousness*. New York, NY: Harcourt.
- Farrell, A. M., Grenier, J. H., & Leiby, J. (2016). Scoundrels or stars? Theory and evidence on the quality of workers in online labor markets. *The Accounting Review*, 92, 93–114.
- Fernbach, P. M., Rogers, T., Fox, C. R., & Sloman, S. A. (2013). Political extremism is supported by an illusion of understanding. *Psychological Science*, 24, 939–946.
- Frederick, S., Novemsky, N., Wang, J., Dhar, R., & Nowlis, S. (2009). Opportunity cost neglect. *Journal of Consumer Research*, 36, 553–561.
- Gal, D., & Rucker, D. D. (2011). Answering the unasked question: Response substitution in consumer surveys. *Journal of Marketing Research*, 48, 185–195.
- Glenberg, A. M., Wilkinson, A. C., & Epstein, W. (1982). The illusion of knowing: Failure in the self-assessment of comprehension. *Memory & Cognition*, 10, 597–602.
- Hahl, O. (2016). Turning back the clock in baseball: The increased prominence of extrinsic rewards and demand for authenticity. *Organization Science*, 27, 929–953.
- Hart, J. T. (1965). Memory and the feeling-of-knowing experience. *Journal of Educational Psychology*, 56, 208.
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York, NY: Guilford Publications.
- Kahneman, D. (2011). *Thinking, fast and slow*. London, UK: Macmillan.
- Koriat, A. (1993). How do we know that we know? The accessibility model of the feeling of knowing. *Psychological Review*, 100, 609.
- Koriat, A. (2007). Metacognition and consciousness. In P. D. Zelazo, M. Moscovitch, & E. Thompson (Eds.), *The Cambridge handbook of consciousness* (pp. 289–325). New York, NY: Cambridge University Press.
- Krishna, A., & Ünver, M. U. (2008). Improving the efficiency of course bidding at business schools: Field and laboratory studies. *Marketing Science*, 27, 262–282.

- Kyung, E. J., & Thomas, M. (2016). When remembering disrupts knowing: Blocking implicit price memory. *Journal of Marketing Research*, 53, 937–953.
- Levine, A. (1976). Educational and occupational choice: A synthesis of literature from sociology and psychology. *Journal of Consumer Research*, 2, 276–289.
- Lichtenstein, D. R., & Bearden, W. R. (1989). Contextual influences on perceptions of merchant-supplied reference prices. *Journal of Consumer Research*, 16, 55–66.
- Monga, A. B., & Roedder John, D. (2008). When does negative brand publicity hurt? The moderating influence of analytic versus holistic thinking. *Journal of Consumer Psychology*, 18, 320–332.
- Nisbett, R. E., & Wilson, T. D. (1977). Telling more than we can know: Verbal reports on mental processes. *Psychological Review*, 84, 231.
- Park, C. W., & Lessig, V. P. (1981). Familiarity and its impact on consumer biases and heuristics. *Journal of Consumer Research*, 8, 223–230.
- Punj, G. N., & Staelin, R. (1978). The choice process for graduate business schools. *Journal of Marketing Research*, 15, 588–598.
- Rozenblit, L., & Keil, F. (2002). The misunderstood limits of folk science: An illusion of explanatory depth. *Cognitive Science*, 26, 521–562.
- Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. New York, NY: Guilford Publications.
- Sanbonmatsu, D. M., Kardes, F. R., Houghton, D. C., Ho, E. A., & Posavac, S. S. (2003). Overestimating the importance of the given information in multiattribute consumer judgment. *Journal of Consumer Psychology*, 13, 289–300.
- Slovic, P. (1972). From Shakespeare to Simon: Speculations—and some evidence—about man’s ability to process information. *Oregon Research Institute Research Monograph*, 12, 10–23.
- Wang, H., Batra, R., & Chen, Z. (2016). The moderating role of dialecticism in consumer responses to product information. *Journal of Consumer Psychology*, 26, 381–394.
- Wood, S. L., & Lynch Jr., J. G. (2002). Prior knowledge and complacency in new product learning. *Journal of Consumer Research*, 29, 416–426.
- Yang, H., Carmon, Z., & Simonson, I. (2019). Preference for practical versus theoretical knowledge: Conceptualization and consumer behavior predictions. *Review of Marketing Research*. In press.

Supporting Information

Additional supporting information may be found in the online version of this article at the publisher’s website:

Appendix S1. Methodological Detail Appendix.