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## **Does it Pay to Be Honest? The Effect of Retailer-Provided Negative Feedback on Consumers' Product Choice and Shopping Experience**

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## **Does it Pay to Be Honest? The Effects of Retailer-Provided Negative Feedback on Consumers' Product Choice and Shopping Experience**

When shopping online, consumers are frequently alone with no one to provide feedback. The absence of feedback can even exacerbate certain decisions, such as appearance-related product decisions (e.g., clothes and accessories, cosmetics), for which an external opinion can be helpful to consumers. Consequently, online retailers have an interest in assisting consumers in their decisions since it could reduce their product return rates which are 2-4 times greater than in brick-and-mortar stores (Absolunet, 2019). In addition, assisting them could ease their decision process and increase their experiential value. Thus, it is not surprising that online consumer feedback systems are becoming more common. For example, on the online Sephora's Beauty Talk platform, women can get advice from Sephora experts. This raises questions about the influence of negative feedback that advisors could give to help consumers in their choices. In brick-and-mortar stores, understanding the effect of negative feedback is also of interest. Research suggests that salespersons' honesty contributes to their trustworthiness (Hawes, Rao, & Baker, 1993) and that consumers value a brand that they perceive as transparent (Salesforce, 2019). Sales approaches have been developed to align with these characteristics. For instance, with the consultative selling approach, the salesperson serves as a consultant to work in cooperation with the customer, which in some instances may result in the product originally proposed turning out to be inappropriate with another product being finally purchased (Moncrief & Marshall, 2005). Similarly, the consumer advocacy literature suggests that both positive and negative information should be communicated to consumers as long as it is objective and helps them make better decisions (Roy, 2015). Urban (2005, p. 157) proposes that "if the company advocates for its customers, those customers will reciprocate with trust, purchases, and enduring loyalty."

Although these approaches argue that a salesperson should advise consumers objectively, prior research on a salesforce's feedback to consumers has mainly focused on the influence of positive feedback (Campbell & Kirmani, 2000; Chan & Sengupta, 2013; Main et al., 2007), mostly ignoring how consumers respond to negative feedback.

In this research, we address this gap in the feedback literature by exploring the influence of negative feedback on product choice change and on the utilitarian value of the shopping experience, patronage and WOM intentions, both in online and offline contexts and for different sources of retailer's feedback (human advisor and algorithmic advisor).

By analyzing the influence of negative feedback on choice change, our aim is to see whether negative feedback can alter the consumer's choice following an initial decision. By assessing the influence of this type of feedback on the utilitarian value of the shopping experience as well as on patronage and word-of-mouth (WOM) intentions, we wish to investigate if it can facilitate the consumer's decision-making process and be as beneficial as consultative selling and customer advocacy propose.

We suggest that negative feedback may lead to mixed consumer responses. Based on negativity bias (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001; Rozin & Royzman, 2001), which suggests that negative information is more useful than positive information, we argue that consumers receiving negative feedback following an initial product choice will reconsider and likely opt for another product whatever their choice uncertainty prior to the feedback. However, based on the cost-benefit framework (Payne, 1982), suggesting that consumers try to maximize their decision quality and minimize effort, we propose that negative feedback will also have a negative influence on the utilitarian value of the shopping experience, leading to lower patronage and WOM intentions. This negative influence is due to the increase in cognitive effort associated with processing the negative feedback. We also investigate one important potential

boundary condition related to choice uncertainty. People who are under choice uncertainty tend to postpone their decisions or take more time to make their decisions (Walker, Luque, Pelley and Beesley, 2019; Le Pelley, & Beesley, 2019), ; and this greatly influences their shopping experience. In addition, research suggests that consumers who have to make decisions under uncertainty are highly concerned with negative information or losses (Einborn and Hogart, 1981). Since compliance with external influence varies according to one's own certainty (Deutsch & Gerard, 1955; Huh, Vosgerau, & Morewedge, 2014), uncertainty about their initial product choice may affect how consumers react to negative feedback. Finally, we extend the external validity of our findings to several retail contexts (mobile application, website, and in-store) and to different sources of retailer feedback (human advisor vs. algorithmic advisor).

To test our hypotheses, three experimental studies were performed. Study 1 investigates the effect of negative feedback, compared to no feedback and to positive feedback, on choice change, utilitarian value of the shopping experience and future patronage and WOM intentions. Study 2 further investigates these relationships (1) in another online retail context and with different feedback sources (retailer's human advisor vs. retailer's algorithmic advisor), and (2) by analyzing the mediating effect of cognitive effort between feedback valence and utilitarian value. Study 3 extends previous studies by examining these relationships in an offline context and by comparing negative feedback with neutral feedback. It also tests the moderating effect of choice uncertainty.

Figure 1 summarizes the conceptual model which we test across these three studies.

*Insert Figure 1 about here*

This research makes four contributions to the literature. First, results highlight the impact of negative feedback on the consumer's final product choice whatever their level of choice uncertainty prior to receiving feedback. Second, results show that negative feedback can also

lead to negative consumer responses except when they are highly uncertain of their product choice prior to receiving feedback. This contributes to the customer advocacy literature (Urban, 2005) by showing that "honesty" (i.e., negative feedback) may also have short-term negative consequences in terms of shopping utilitarian value, and in terms of patronage and word-of-mouth intentions. Third, it furthers our understanding of the underlying mechanism at play when consumers process negative feedback, by showing the mediating role of cognitive effort and utilitarian value of the shopping experience and the moderating role of choice uncertainty. Finally, our results suggest that consumers change their product choice independently of the feedback source (human advisor or algorithmic advisor); this confirms the notion that consumers perceive algorithmic advice sources the same as human sources (Lee & Nass, 2010) even in an online consumer decision-making context.

## **Literature review**

### *The influence of feedback on choice in a retail context: Negativity bias and persuasion knowledge*

Advice-taking and decision-making have been studied generally using the "Judge-Advisor System" (JAS) framework in which the judge (here, the consumer) has the power to make the final decision having received advice from an expert advisor (here a brand online advisor or salesperson). The advisor "formulates judgments or recommends alternatives and communicates these to the person in the role of the judge" (Sniezek & Buckley, 1995, p. 159). Several types of advice can be given: recommending in favor of one alternative ("positive feedback") or against an alternative - which we call "negative feedback". Literature on JAS shows an overall egocentric discounting in how consumers use advice, i.e., people tend to underweight advice (Bonaccio & Dalal 2006; Yaniv & Kleinberger 2000).

The assumption that “bad is stronger than good”, which is called the negativity bias, is a general principle in psychology (Baumeister et al., 2001; Rozin & Royzman, 2001). Thus, the effects of negative information tend to outweigh those of comparable positive information. This framework has been widely applied in consumer online review research (e.g., Cui, Lui, & Guo, 2012; Chen & Lurie, 2013; Yang & Unnava, 2016).

Three main theoretical accounts of this bias have been proposed: An evolutionary account, a frequency-as-information account, and an attribution-based account (Baumeister et al., 2001; Chen & Lurie, 2013; Rozin & Royzman, 2001). First, the adaptive evolutionary perspective suggests that, to survive threats, people needed to be better attuned to bad things than to good things (Baumeister et al., 2001). Second, from the frequency-as-information perspective, negative information would be more diagnostic than positive information, i.e., more meaningful in helping to make an evaluation, due to its rarity (Chen & Lurie, 2013; Hilbig, 2009). Third, information receivers would make attributions about feedback (Chen & Lurie, 2013; Laczniak, DeCarlo, & Ramaswami, 2001) and others would have been expected to lie less when giving bad (*vs.* good) news (Hilbig, 2009).

In a retail context, in which feedback is given by a salesperson, attributions have been mainly analyzed for positive feedback (“flattery”) within the “Persuasion Knowledge Model” (PKM, Friestad & Wright, 1994). The basic assumption of this model is that consumers make inferences about marketing agents’ motives and use this “persuasion knowledge” in their evaluation. Research shows that flattery can have a negative effect on the perception of a salesperson’s sincerity, mainly before purchase (Campbell & Kirmani, 2000). Indeed, in this context, consumers have doubts about the true motives of the positive feedback (helping to make a good choice *vs.* selling the product). Main, Dahl & Darke (2007) also point out a “sinister attribution error,” where flattery from a salesperson results in negative effects even

after purchase. On the other hand, negative feedback could benefit from an “extra-credit” effect. The brand advisor could be perceived as resisting the temptation to praise the consumer in order to make the sale (Basso, dos Santos & Albornoz Gonçalves, 2014). Based on the PKM, Basso, dos Santos, and Albornoz Gonçalves (2014) show that negative feedback from a salesperson along with positive feedback reduces the consumer’s use of persuasion knowledge, therefore enhancing trust toward the salesperson. To our knowledge, no research has yet focused on the sole influence of negative feedback compared to positive, neutral, or no feedback in a retail context.

In addition, studies suggest that, depending on the level of self-esteem, a person could react differently to negative feedback (Hence Jussim et al. 1995). In the wake of a psychological threat as negative feedback, consumers with low self-esteem (vs. high) were much less likely to engage in compensatory behavior (VanDellen, Cambell, Hoyle and Bradfield, 2011) or compensatory consumption (Stuppy, Mead and Van Osselaer, 2020).

Based on the literature on negativity bias and on the PKM, we hypothesize that when negative feedback is provided after consumers have developed an initial preference for a product, they will change their choice more often than after having received no feedback, neutral feedback or positive feedback. Indeed, in this context, attributions should be made about the motives of the brand advisor, and negative feedback should benefit from an “extra-credit” effect.

**H1:** Once consumers have developed a preference for a given product (initial product choice), those who receive negative feedback from the retailer’s advisor about the given product will opt for another product (final product choice) more often than when receiving no feedback, neutral or positive feedback.

*The influence of feedback on shopping utilitarian value, WOM, and patronage intentions*



Customer experience “originates from a set of interactions between a customer and a product, a company or part of its organization which provoke a reaction” (Gentile, Spiller & Noci, 2007, p.397; Flacandji & Krey, 2020). An important component of customer experience is the customer’s shopping experience. Two fundamental components of the value of the shopping experience are: hedonic value and utilitarian value (Babin et al., 1994). Hedonic value is defined as the overall assessment of experiential benefits and sacrifices, such as entertainment; while utilitarian value is the “overall assessment of functional benefits and sacrifices” and is associated with judgments of convenience and time saving (Overby & Lee 2006, p. 1161).

The main objective of negative feedback is to help consumers in their choices and to ease their decision process. However, we suggest that receiving negative feedback following the consumer’s initial product choice could reduce, in the short run, the perception of utilitarian value. Indeed, receiving negative feedback after making an initial product choice requires consumers to elaborate on this advice, step backwards in their decision process and evaluate other alternatives, reducing functional benefits of the experience.

Furthermore, lower utilitarian value should have an impact on “the two key shopper reactions that should be of primary interest to retailers” (Inman & Nikolova, 2017, p. 17), namely retailer patronage and word-of-mouth intentions. Several scholars show that utilitarian value positively influences patronage (Jones, Reynolds & Arnold, 2006; Ryu, Han & Jang, 2010; Chiu et al., 2014) and WOM (Ryu, Han & Jang, 2010). Thus, we suggest the following hypothesis.

**H2:** The utilitarian value of the shopping experience mediates the influence of feedback valence on consumers’ patronage intentions towards the retailer and word-of-mouth intentions about the retailer. Specifically, compared to no feedback, neutral, or positive feedback, negative product feedback from the retailer advisor decreases the utilitarian value of the shopping

experience, which then reduces patronage intentions (H2a) and word-of-mouth intentions (H2b).

## **Study 1**

Study 1 tests: (a) Whether negative feedback leads to greater choice change than no feedback or positive feedback (H1) and, (b) more importantly, whether this feedback has, in parallel, detrimental effects on the utilitarian value of the shopping experience, leading to lower patronage (H2a) and WOM intentions (H2b).

### *Method*

#### *Design and participants*

We employed a one-factor (feedback valence: Negative vs. positive vs. control (i.e., no feedback)) between-subject design. A total of 185 female students [56% (18-24), 35% (25-34), 9% 35 +] volunteered to participate in a lab experiment using the Makeup Genius mobile application (app) by L'Oreal, in exchange for a \$10 compensation and a lipstick of their choice. This app allows participants to try lipsticks on their lips using Augmented Reality (AR) and to take a picture of themselves wearing the lipstick.

#### *Procedure and measures*

The session began with the experimenter explaining to participants that L'Oreal was testing a new tool on their Makeup Genius app. In the positive and negative feedback valence conditions, they were informed that they would interact with a cosmetic expert hired by L'Oreal to assist them in their choice. Participants in all three conditions had to complete a short questionnaire which measured two main control variables: Brand attitude toward L'Oreal and body-esteem (see Appendix A for measurement scales). These variables were used because the literature

indicates that they can influence dependent variables. Brand attitude, for example, influences WOM intentions and buying intentions (Chang & Tseng, 2013; Chu & Sung, 2015). Also, body-esteem can impact the way one reacts to feedback (Ashford, Blatt, & VandeWalle, 2003; Chan & Sengupta, 2010) and how one perceives appearance-related products in online contexts (Rosa, Garbarino, & Malter, 2006; Merle, Senecal, & St-Onge, 2012). Many studies have manipulated self-esteem when receiving negative feedback (Ilies and De Pater, 2007, Brown, 2010, Stuppy, Mead and Van Osselaer, 2020). Since there is a strong correlation between self-esteem and body-esteem (Henriques and Calhoun, 1999) and that feedback (negative or positive) used in this study is intimately related to the consumer's body image, we controlled for this effect by adding body-esteem as a control variable. Our results did not suffer any change when this variable was included in the statistical analysis, therefore body-esteem is not discussed further. Thus, only brand attitude was used as a covariate in the following analysis.

The experimenter then provided an instruction sheet and explained the tasks the participants had to perform. First, they had to open the mobile app on the iPod in front of them and calibrate the app by taking a picture of themselves. Then, to mimic real use of the app and choosing a product, participants were asked to find the lipstick they liked the most on the app by applying virtual lipsticks to their lips using AR. To increase ecological validity, participants were told that they would receive their lipstick of choice. We constrained the test set of lipsticks to L'Oreal's "Colour Rich Lip Collection". Once participants had identified their preferred lipstick (i.e., initial product choice), they were required to use the app to take a picture of themselves with the virtual lipstick on their lips. In the positive vs. negative feedback conditions, they were asked to send the picture to the Makeup Genius expert by email in order to receive feedback. A few minutes later, the experimenter, who had received the picture by email, randomly sent back either positive ("This lipstick color is magnificent, it suits you perfectly, it goes well with your skin tone") or negative feedback ("This lipstick color does not

look right for you, try a different color”) to participants. These messages were inspired by prior studies (Basso, dos Santos, & Albornoz Gonçalves, 2014; Main, Dahl, & Darke, 2007). All messages were signed by the L’Oreal Expert. To increase the credibility of the brand expert, who did not exist on the current app, a dedicated email address was created and the experimenter explained that this functionality was in a beta version of the Makeup Genius app.

After reading their brand expert feedback in the positive and negative feedback conditions, or just after taking a picture of themselves with the chosen lipstick in the control condition, participants had to complete a second questionnaire which began with two questions. First, a question asked which lipstick they would like to receive (i.e., final product choice), second, whether this lipstick was the same as the one for which they had taken a picture of themselves. The answer to this second question was retained as a measure of choice change (yes = keep their choice; no = change their choice). Then, patronage intentions, WOM intentions, utilitarian and hedonic values were assessed. Finally, in the positive and negative feedback conditions, perceived feedback valence was measured as a manipulation check question. We also wished to control for message believability since participants had already formed an initial preference before they received the feedback. One would expect that the negative feedback could be less trustworthy than the positive one, therefore, message trustworthiness was also measured. Measures were all adapted from the literature (see Appendix A for measurement scales and their psychometric properties). At the end of the study, participants who received negative feedback were debriefed and informed that feedback messages were being distributed randomly.

## *Results*

### *Manipulation check*

Feedback was perceived as significantly more negative in the negative feedback condition ( $M_{\text{negativeFB}} = 2.73$ ) than in the positive feedback condition ( $M_{\text{positiveFB}} = 6.00$ ;  $F(1, 121) = 348.87$ ;  $p < 0.001$ ), confirming the success of the feedback valence manipulation. In addition, there was no significant difference in terms of message trustworthiness between positive and negative feedback conditions ( $M_{\text{positiveFB}} = 4.26$ ,  $M_{\text{negativeFB}} = 4.04$ ,  $F(1, 122) = 1.26$ ,  $p > 0.1$ ).

### *Final product choice (H1)*

To test if feedback valence influences final product choice (H1), we assessed whether respondents changed their initial choice of lipstick having received negative vs. positive feedback, and also compared to the control condition where they did not receive any feedback. Participants were more likely to change their product choice after receiving negative feedback (28.6%,  $n=16$ ) than after receiving positive feedback (11.9%,  $n=8$ , Chi-square = 5.37;  $p = 0.02$ ) or after receiving no feedback (5.2%,  $n = 3$ ; Chi-square = 10.09); this supports Hypothesis 1. In addition, there was no significant difference in product choice when receiving a positive or no feedback (Chi-square = 1.774;  $p = 0.18$ ).

### *The mediating role of utilitarian value (H2)*

Even if a number of participants changed their choices after receiving negative feedback (H1), we suggest that negative feedback decreases utilitarian value of the online shopping experience, and thus patronage and WOM intentions (H2). Results revealed a main effect of feedback valence on utilitarian value ( $F(2, 184) = 3.4$ ;  $p = 0.035$ ). Contrast tests confirm that utilitarian value is lower after receiving negative feedback ( $M_{\text{negativeFB}} = 4.36$ ) than after receiving positive feedback ( $M_{\text{positiveFB}} = 4.72$ ;  $p = 0.018$ ) or after receiving no feedback ( $M_{\text{control noFB}} = 4.83$ ;  $p = 0.024$ ). In addition, there is no difference in utilitarian value when receiving positive feedback or when receiving no feedback ( $p > 0.1$ ); this further supports that the negative feedback leads the effect on utilitarian value.

Hypothesis 2a suggests that utilitarian value mediates the relationship between feedback valence and patronage intentions. To test this hypothesis, we ran a mediation analysis (Model 4 with 5000 bootstrapping; Hayes, 2013) entering feedback valence as the independent variable, utilitarian value as the mediator, brand attitude as the covariate, and patronage intentions as the dependent variable. Compared to the control condition, results show that the indirect effect of negative feedback on patronage intentions through utilitarian value is significant and negative ( $b = -0.45$ ,  $SE = 0.17$ ,  $CI_{95} = [-0.80, -0.10]$ ). In addition, there is no direct effect on patronage intentions ( $b = 0.09$ ,  $SE = 0.16$ ,  $CI_{95} = [-0.24, 0.41]$ ), suggesting a full mediation effect. Furthermore, compared to the control condition, neither the direct ( $b = -0.18$ ,  $SE = 0.16$ ,  $CI_{95} = [-0.49, 0.13]$ ), nor the indirect effect of the positive feedback on patronage intentions is significant ( $b = -0.02$ ,  $SE = 0.19$ ,  $CI_{95} = [-0.40, 0.35]$ ). These results support H2a: When receiving negative feedback, participants attribute less utilitarian value to the experience, leading to less patronage intentions than when receiving no feedback or positive feedback.

To test H2b, suggesting that utilitarian value mediates the relationship between feedback valence and WOM intentions, we ran a second mediation analysis (Model 4, 5000 bootstrapping, Hayes 2013) entering feedback valence as the independent variable, utilitarian value as the mediator, brand attitude as the covariate, and WOM intentions as the dependent variable. Results indicate that, compared to the control condition, the negative feedback has a negative indirect influence on WOM through utilitarian value ( $b = -0.34$ ,  $SE = 0.13$ ,  $CI_{95} = [-0.61, -0.08]$ ), while its direct effect is non-significant ( $b = -0.01$ ,  $SE = 0.14$ ,  $CI_{95} = [-0.31, 0.25]$ ), again suggesting a full mediation. In addition, neither a significant direct ( $b = 0.11$ ,  $SE = 0.13$ ,  $CI_{95} = [-0.14, 0.38]$ ), nor a significant indirect effect ( $b = -0.01$ ,  $SE = 0.14$ ,  $CI_{95} = [-0.31, 0.25]$ ) of the positive feedback is found. These results support H2b: When receiving negative feedback, participants attribute less utilitarian value to the experience, leading to less WOM intentions than when receiving no feedback or positive feedback.

### *Alternative explanation*

One other important dimension of the shopping experience is its hedonic value (Babin et al., 2004). One could argue that hedonic value could lead the effect of negative feedback on patronage intentions and WOM intentions due to the negative emotions that could be associated with receiving this type of feedback. For instance, research in management shows that negative feedback can have an unfavorable effect on employees' attitudes and behaviors (Tata, 2002). We rule out this alternative explanation: There is no significant difference in hedonic value between the three feedback conditions ( $M_{\text{noFB}} = 5.02$ ,  $M_{\text{positiveFB}} = 4.69$ ,  $M_{\text{negativeFB}} = 4.75$ ,  $F(2,185) = 1.89$ ,  $p > 0.1$ ).

### *Discussion*

This first study confirms the double influence of negative feedback. First, when receiving online negative feedback from a retailer's expert after forming their initial product preference, consumers tend to change their choice more often than after having received positive feedback or no feedback at all (H1). This result confirms the strength of the negativity bias in an online retail environment, even if consumers tend overall to underweight advice (Bonaccio & Dalal, 2006). This underweighting is normal in our context in which they have already formed an initial product preference. Even in this context, 28.6% changed their initial choice after receiving negative feedback. However, in parallel, compared to no feedback or to positive feedback, negative feedback lowered the utilitarian value of the shopping experience, thus decreasing patronage (H2a) and positive WOM intentions (H2b).

## **Study 2**

The purpose of Study 2 was threefold. First, the objective was to replicate Study 1's results (H1 and H2) using more comparable feedback messages. Indeed, in Study 1, one could argue that

the positive feedback message was too positive compared to the negative feedback message. Second, it investigates the generalizability of our results by using a different digital context (website instead of mobile application) and, more importantly, different online feedback sources (retailer's human advisor and retailer's algorithmic advisor). Third, we wished to further investigate the proposed mechanism suggesting that the influence of negative feedback on utilitarian value is due to an increase in cognitive effort (H3).

#### *Feedback sources: Human vs. algorithmic advisor*

With the rise of artificial intelligence, consumers will encounter “algorithmic” advisors more often (Davenport & Ronanki, 2018). For instance, Estee Lauder's chatbot enables consumers to try on lipsticks virtually and receive feedback from such an algorithmic advisor. Thus, it is becoming important to understand their effectiveness. Research shows that individuals' reactions to interpersonal feedback are influenced by the feedback source (Fedor, 1991; Collins & Stukas, 2006). With the rise of big data, the superior accuracy of algorithms compared to human judgment (Dawes, Faust, & Meehl, 1989), and the lower costs of using an algorithmic advisor instead of a human one, retailers would prefer to assist their consumers by using algorithmic systems (Shankar, 2018). However, the debate is still open on consumer perceptions of algorithmic advice, ranging from “algorithm aversion” (Dietvorst, Simmons, & Massey, 2015; Prahla & Swol, 2017) to “algorithm appreciation” (Logg, Minson, & Moore, 2019). In the few empirical studies that have evaluated the acceptance of algorithmic compared to human advisors (Yeomans, Shah, Mullainathan, & Kleinberg, 2019), the human advisor is never presented as a brand expert or a brand sales representative but as “another participant” or “an experienced person” (e.g., Logg, Minson, & Moore, 2019; Önköl et al., 2009; Yeomans et al., 2019). Recent research has revealed that people have more confidence in algorithms than in themselves or other people (Logg, Minson, & Moore, 2019) in many domains of judgment



(e.g., finance, climate change, sports predictions). However, when the recommendation is related to subjective tastes such as books, movies, and jokes, people would prefer to receive recommendations from humans (Castelo, Bos, & Lehmann, 2019; Yeomans et al., 2019). Logg, Minson, & Moore (2019) also added that fashion advice from algorithms may face greater resistance since it is relatively new. Hence, we were interested in evaluating the generalizability of the negativity bias for the two sources of feedback: algorithmic and human advisors.

#### *The mediating role of cognitive effort*

Cognitive effort refers to “the perceived time, effort, and complexity required to complete the shopping task” (Mosteller, Donthu, & Eroglu, 2014, p. 2488) and is similar to the “decision convenience” concept proposed by Berry, Seiders & Grewal (2002) to evaluate the ability of a service to reduce or increase time and effort expenditures to make a decision. According to the cost-benefit framework developed by Payne (1982), consumers try to maximize their decision quality and minimize effort. These two objectives being conflictual, they make trade-offs in their decision tasks and attend more to effort reduction than to quality decision maximization (Johnson, Payne & Bettman, 1988; Payne, Bettman & Johnson, 1988).

When receiving negative feedback after making an initial product choice, customers will have to invest more effort (e.g., step backwards in the decision-making process) even though it could lead to higher accuracy. Since effort reduction is preferred to accuracy, we suggest that it will lead to a decrease in the overall utilitarian value of the experience due to an increased cognitive effort.

**H3:** The relationships between feedback valence and consumers’ patronage intentions and word-of-mouth intentions are mediated by both cognitive effort and utilitarian online shopping value. As such, negative feedback increases cognitive effort, which leads to lower utilitarian value, which in turn, decreases patronage intentions (H3a) and word-of-mouth intentions (H3b).

## *Method*

### *Design and participants*

We used a 2 (feedback valence: Negative vs. positive) x 2 (feedback source: Retailer's human advisor vs. retailer's algorithmic advisor) between-subject design. A total of 199 female students [71% (18-24), 25.5% (25-34), 2.5% 35 +] volunteered to participate in a lab experiment using My Sephora Virtual Artist website. The website allows consumers to try on lipsticks virtually and take a picture of themselves.

### *Procedure and measures*

First, participants were required to complete a short questionnaire which measured their attitude toward Sephora, body-esteem, and expertise in lipsticks. The latter was added as a control variable since people can react differently to positive and negative feedback based on their expertise in the product category (Finkelstein & Fishbach, 2012). Then, the experimenter explained that Sephora was testing a new tool on its website and asked participants to read the following instructions, in which we manipulated feedback source: "You will be trying a beta version of a Sephora brand's website, which enables you to try on lipsticks and receive advice provided by the brand's robotized recommendation system [retailers' algorithmic advisor condition] / provided by the brand's real cosmetic advisor [retailers' human advisor condition]. To do so, the expert system [retailers' algorithmic advisor condition] / the expert advisor [retailers' human advisor condition] will analyze your picture according to several features (form of your face, color / complexion fit, etc.). On the website, we will ask you to try on several lipsticks to find one that you like, and that you would buy for yourself. A personalized recommendation will be sent by the brand's recommendation system [retailers' algorithmic advisor condition] / the brand's cosmetic advisor [retailers' human advisor condition] to let you

know whether the lipstick is suitable or not. At the end of the experience, you could win your chosen lipstick (one chance out of 20 to win).”

Then, participants accessed the My Sephora Virtual Artist website and tried to find the lipstick they most liked by trying several lipsticks on their “virtual” lips using AR. We limited the set of lipsticks from which to choose in the “Sephora Collection.” Once they had tried on some lipsticks and chosen the one they liked the most, they were required to take a picture of themselves with the virtual lipstick on their lips by using the computer webcam. Next, participants were asked to send the picture to either Sephora’s cosmetic expert (retailers’ human advisor) or Sephora’s recommendation agent (retailer’s algorithmic advisor) by email to receive feedback corresponding to their randomly assigned condition. A few minutes later, the experimenter, who received the pictures by email, randomly sent either positive (“*This lipstick color goes very well with your skin tone. We recommend it to you.*”) or negative (“*This lipstick color does not go very well with your skin tone. We recommend you try a different color.*”) feedback to each participant. The feedback messages were also adapted from previous research. We used more comparable feedback messages than in Study 1 by adding a recommendation in both cases and including a less flattering message in the positive feedback condition. To increase their involvement in the final product choice, participants were told that they had been automatically entered into a draw and had a chance of winning their final product choice.

Thus, after receiving either positive or negative feedback, respondents had to fill out a second questionnaire which began with two questions: The first one asked which lipstick they had used to take their picture (initial product choice) and the second one asked which lipstick they would like to receive if they were to win the draw (final product choice). These were used as a measure of choice change after reading the feedback message (no difference between the two choices = keeping their choice; difference between the two choices = changing their choice). Then,

questions about patronage intentions, WOM intentions, cognitive effort, and utilitarian value were asked. Finally, manipulation checks and demographic questions had to be completed (See Appendix A for measurement scales and their psychometric properties).

## *Results*

### *Manipulation checks*

We first performed an ANOVA with feedback valence and feedback source as the independent variables, and feedback valence perception as the dependent variable. As expected, feedback was perceived as significantly more positive in the positive feedback condition ( $M_{\text{positiveFB}} = 5.68$ ) than in the negative feedback condition ( $M_{\text{negativeFB}} = 3.08$ ;  $F(1, 195) = 528.32$ ;  $p < 0.001$ ), indicating that our feedback valence manipulation was successful. Further, we did not find any interaction between feedback valence and feedback source ( $F(1, 195) = 1.53$ ;  $p > 0.1$ ), nor a main effect of the feedback source condition ( $F(1, 195) = 0.03$ ;  $p > 0.1$ ) on feedback valence perception. Ninety-three percent (93%) of participants in the human expert condition said that the feedback was sent by a human employee (Chi-square = 76.45,  $p < 0.001$ ), whereas 79.5% of the participants in the recommendation agent condition said that the feedback was sent by an information system (Chi-square = 27.04,  $p < 0.001$ ). Thus, our feedback source manipulation was also successful.

### *Choice change (H1)*

We first ran a binary logistic regression of choice change (0 = no change from initial product choice; 1 = change from initial product choice) on feedback valence (-1 = positive; 1 = negative), feedback source (-1 = algorithmic advisor; 1 = human advisor), and their interactions. We found a significant effect of feedback valence on choice change ( $B = 2.50$ ; Wald Chi-Square = 7.41;  $p = 0.006$ ;  $\text{Exp}(B) = 6.27$ ). Participants were significantly more likely to modify their

initial product choice after receiving negative feedback (38.4%) than after receiving positive feedback (5%). In addition, neither the main effect of feedback source was significant ( $p = 0.65$ ), nor the interaction between feedback valence and source ( $p = 0.22$ ). These results provide additional support for H1 and extend the generalizability of our findings to several types of retailer advisors – showing the strength of the negativity bias.

### *The mediating role of utilitarian value (H2)*

To examine the effect of feedback valence and feedback source on the utilitarian value of the shopping experience, we ran an ANOVA with feedback valence and feedback source as the independent variables and utilitarian value as the dependent variable. Results reveal a main effect of feedback valence on utilitarian value ( $F(1,195) = 9.85; p = 0.02$ ). Participants perceived that the utilitarian value of the experience was lower in the negative feedback condition ( $M_{\text{negativeFB}} = 4.41$ ) than in the positive feedback condition ( $M_{\text{positiveFB}} = 5.02$ ). To test whether utilitarian value mediated the effects of feedback valence on patronage intentions (H2a), we ran a moderated mediation analysis (Model 7, 5000 bootstrapping; Hayes, 2013), using feedback valence as the independent variable, utilitarian value as the mediator, feedback source as the moderator, and patronage intentions as the dependent variable. The conditional indirect effect of feedback valence on patronage intentions through utilitarian value was significant both when the feedback message was sent by a retailer's algorithmic advisor ( $B_{\text{conditional indirect}} = -0.23; SE = 0.10; 95\% \text{ C.I.} = [-0.45; -0.04]$ ) and when it was sent by a retailer's human advisor ( $B_{\text{conditional indirect}} = -0.25; SE = 0.11; 95\% \text{ C.I.} = [-0.46; -0.03]$ ). In addition, the C.I. of the moderated mediation index excludes zero. In other words, negative feedback lowers utilitarian value, which reduces patronage intentions, again supporting H2a, and this independently of the feedback source.

We also tested whether utilitarian value mediated the effect of feedback valence on WOM (H2b) with a similar procedure. Again, the conditional indirect effect of feedback valence on WOM through utilitarian value was significant both when the message was sent by an algorithmic advisor ( $B_{\text{conditional indirect}} = -0.21$ ;  $SE = 0.09$ ; 95% C.I. = [-0.41; - 0.03]) and when it was sent by a human advisor ( $B_{\text{conditional indirect}} = -0.23$ ;  $SE = 0.10$  ; 95% C.I. = [-0.45 ; - 0.03]). In addition, the C.I. of the moderated mediation index excludes zero. In other words, negative feedback lowers utilitarian value, which lowers WOM intentions, giving further support to H2b, again independently of the feedback source.

### *The mediating role of cognitive effort (H3)*

To test our cognitive effort-based explanation, we ran an ANOVA using feedback valence and feedback source as the independent variables and cognitive effort as the dependent variable. Participants perceived the shopping task as more effortful in the negative feedback condition than in the positive feedback condition ( $M_{\text{negativeFB}} = 4.2$ ;  $M_{\text{positiveFB}} = 5$ ;  $F(1, 195) = 21.68$  ;  $p < 0.001$ ). In addition, there was no main effect of feedback source ( $p = 0.97$ ) nor interaction effect ( $p = 0.76$ ).

We also conducted two serial mediation analyses to examine whether cognitive effort and utilitarian value mediated the relationship between feedback valence and, first, patronage intentions (H3a) and, second, positive WOM (H3b) (Model 6, 5000 bootstrapping, Hayes 2013). We controlled for brand attitude, though excluding this variable does not change the results. Results show the expected serial mediational paths. The first path (feedback valence  $\Rightarrow$  cognitive effort  $\Rightarrow$  utilitarian value  $\Rightarrow$  patronage intentions) was validated at the 95% confidence interval. Negative feedback increases cognitive effort ( $B = - 0.41$ ,  $SE = 0.08$ ,  $CI_{95} = [-0.57, - 0.24]$ ). Moreover, the results related to utilitarian value confirmed our serial mediation pathway. Increased cognitive effort decreases utilitarian value of the experience ( $B = 0.84$ ,  $SE = 0.06$ ,  $p$

< 0.001,  $CI_{95\%} = [0.72, 0.96]$ ) while accounting for the effect of feedback valence on utilitarian value ( $B = 0.02$ ,  $SE = 0.07$ ,  $p = 0.74$ ). When cognitive effort and utilitarian value are included in the model, feedback valence does not have a significant direct effect on patronage intentions ( $B = -0.03$ ,  $SE = 0.06$ ,  $p = 0.59$ ). More importantly, the 95% C.I. for the indirect effect revealed a significant indirect effect of feedback valence on patronage intentions through the cognitive effort  $\Rightarrow$  utilitarian value pathway (95% C.I. =  $[-0.32; -0.12]$ ). Thus, H3a is supported.

The second path (feedback valence  $\Rightarrow$  cognitive effort  $\Rightarrow$  utilitarian value  $\Rightarrow$  WOM intentions) is also validated at the 95% confidence interval. When cognitive effort and utilitarian value are included in the model, feedback valence does not have a significant direct effect on WOM ( $B = -0.03$ ,  $SE = 0.06$ ,  $p = 0.56$ ). More importantly, the 95% CI for the indirect effect revealed a significant indirect effect of feedback valence on WOM intentions through the cognitive effort  $\Rightarrow$  utilitarian value pathway ( $CI_{95\%} = [-0.32; -0.11]$ ). Thus, H3b is supported.

#### *Alternative explanation*

To rule out the hedonic value explanation, we ran a parallel model with feedback valence as the independent variable and utilitarian and hedonic values as mediators predicting patronage intentions. As in Study 1, we found a significant effect of utilitarian value ( $ab = -.21$ ,  $CI_{95\%} = [-0.35; -0.08]$ ), but no significant effect of hedonic value ( $ab = -.02$ ,  $CI_{95\%} = [-0.07; 0.007]$ ).

#### *Discussion*

Using a different online context and different retailer's feedback sources, Study 2 replicates (H1 and H2) and extends (H3) Study 1. First, it provides further support for the double influence of negative feedback: a) It influences the consumers' final product choice (H1) and b) it lowers their patronage and WOM intentions, independently of the retailer's feedback source (human

advisor vs. algorithmic advisor). Second, Study 2 provides evidence of the underlying process (increase in cognitive effort and decrease in utilitarian value associated with the negative feedback) and the chain of events that links feedback valence to patronage and WOM intentions (H3).

### **Study 3**

The purpose of Study 3 was threefold. First, we wished to assess an important boundary condition: Choice uncertainty prior to the feedback. The second objective was to replicate prior studies' results (H1 and H2) by comparing the effects of negative feedback with neutral feedback. Third, we wished to test our model in an offline context and on another product category to extend its external validity.

#### *The moderating role of choice uncertainty*

Choice uncertainty is defined as the “uncertainty regarding which alternative to choose” (Urbany, Dickson, & Wilkie, 1989, p. 208). When consumers are uncertain about a product choice, it negatively affects their purchase intention, but it also increases their product search intention (Urbany et al., 1989). Eventually, this additional search leads to purchase intention (Shiu, Walsh, Hassan, & Shaw, 2011). Hence, when uncertain, consumers tend to continue their information search, thus spending additional cognitive effort. To reduce the discomfort associated with purchasing a product under uncertainty, different strategies can be used by retailers. For example, encouraging consumers to delegate their decision-making to another person (Steffel and Williams (2018), disseminating consumer reviews about products (Changchit and Klaus, 2020), communicating relevant information in ads (Ku, 2021), or providing feedback (Butler and Roediger, 2008).



Feedback acts as additional information that can be used by consumers to reduce choice uncertainty, and Einborn and Hogart (1981) suggest that negative information matters more when the decision-making process is performed under uncertainty. We thus suggest that when consumers are quite certain about their initial product choice, negative feedback acts as incongruent additional information which will trigger additional cognitive effort. However, when consumers are more uncertain about their initial product choice, they already expect to perform additional information search. In this case, negative feedback has no impact on perceived additional cognitive effort since it is already what consumers expect to do. We proposed the following hypothesis.

**H4:** Choice uncertainty moderates the effect of negative feedback (vs. neutral feedback) on cognitive effort. When consumers are highly uncertain of their choice, negative feedback will have no effect on cognitive effort, while when consumers' choice uncertainty is moderate or low, negative feedback will increase cognitive effort.

### *Method*

We used a 2 (feedback valence: Negative feedback vs. neutral feedback) x 3 (choice uncertainty: High, medium, or low) between-subject design. A total of 294 consumers ( $M_{age}=35$ ; 56.5% women) volunteered to participate in an online experiment. Participants were asked to read an in-store apparel shopping scenario (see Appendix B), in which they had to find a new shirt for an important job interview. After trying on the shirt in the fitting room, which was the right size and was reasonably priced, they were asked to imagine looking at themselves in the mirror. We manipulated the level of choice uncertainty at this point (low choice uncertainty: "You love it. At this point, your choice confidence level is at 90%" / medium choice uncertainty: "You like it. At this point, your choice confidence level is at 75%" / high uncertainty: "You are not sure if you like it or not. At this point, your choice confidence level

is at 50%”). The perceived uncertainty difference between the three conditions was confirmed in a pre-test. Next, participants were asked to imagine explaining to the salesperson that they were looking for a shirt for an important job interview and receiving one of the two following answers, manipulating feedback: “Do not hesitate to let me know if you need help” (neutral feedback) vs. “I think this shirt is not well suited for a job interview. I recommend you try other shirts” (negative feedback).

Then, we measured choice change intentions, followed by patronage intentions, WOM intentions, cognitive effort, and utilitarian value. To measure choice change intentions, we asked respondents the probability that they would buy the shirt they have tried on. Other constructs were measured with the same scales as in Study 2 (See Appendix A). Again, we controlled for expertise and body-esteem; the results did not suffer any change when these variables were included, hence they are not discussed further.

## *Results*

### *Manipulation check*

We first performed an ANOVA with feedback valence and choice uncertainty as the independent variables, and feedback perception as the independent variable. As expected, feedback was perceived as significantly more negative in the negative feedback condition ( $M_{\text{negativeFB}} = 3.14$ ) than in the neutral feedback condition ( $M_{\text{neutralFB}} = 5.06$ ;  $F(1, 288) = 121.48$ ;  $p < 0.001$ ), indicating that our feedback manipulation was successful.

### *Negative feedback and choice (H1)*

To examine the effect of feedback valence and choice uncertainty on choice change, we ran an ANOVA with feedback valence and choice uncertainty as the independent variables and the

probability that they would buy the shirt they have tried on as the dependent variable. Results suggest two main effects, but no interaction effect between feedback valence and choice uncertainty on choice change ( $F = 0.241, p > 0.10$ ). Further supporting H1, we find a main effect of feedback valence on choice change ( $F(1,195) = 9.85; p = 0.02$ ). Participants are less willing to choose the shirt they previously tried on after receiving negative feedback ( $M_{\text{negativeFB}} = 4.41$ ), compared to a neutral one ( $M_{\text{neutralFB}} = 5.02; F(288,1) = 24.74, p < 0.001$ ), whatever their level of uncertainty prior to the feedback. Results also suggest a main effect of choice uncertainty on choice change: More uncertainty leads to more choice change ( $F(2,288) = 106.4, p < 0.001$ ).

#### *Cognitive effort and choice uncertainty (H2-H4)*

To test H4, we ran an ANOVA using feedback valence and choice uncertainty as the independent variables and cognitive effort as the independent variable. Results reveal a main effect of choice uncertainty ( $F(2,288) = 24.25, p < 0.001$ ), a marginally significant main effect of feedback valence ( $F(1,288) = 3.08, p = 0.08$ ) and, more interestingly, a significant interaction effect ( $F = 4.53, p = 0.012$ ). Negative feedback leads to significant higher perceived cognitive effort in a low uncertainty context ( $F(1,99) = 5.43, p = 0.022; M_{\text{negativeFB}} = 4.98; M_{\text{neutralFB}} = 5.52$ ) and in a medium uncertainty context ( $F(1,93) = 6.39, p = 0.013; M_{\text{negativeFB}} = 4.84; M_{\text{neutralFB}} = 5.44$ ) compared to neutral feedback. In the high uncertainty condition, no significant difference is found between neutral or negative feedback ( $F(1,96) = 1.6, p > 0.10$ ). Thus, results support H4, suggesting that negative feedback triggers more cognitive effort, but not when consumers are highly uncertain of their choice.

A moderated mediation analysis using feedback valence as the independent variable, cognitive effort as the mediator, choice uncertainty as the moderator, and utilitarian value as the dependent variable was also performed. The conditional indirect effect of feedback valence on utilitarian value through cognitive effort was significant both in the low uncertainty condition

( $B_{\text{conditional indirect}} = -0.31$ ;  $SE = 0.14$ ; 95% C.I. =  $[-0.59; -0.05]$ ) and in the moderated uncertainty condition ( $B_{\text{conditional indirect}} = -0.35$ ;  $SE = 0.14$ ; 95% C.I. =  $[-0.63; -0.08]$ ). The conditional effect for the high uncertainty condition is non-significant (C.I. =  $[-1.13; 0.55]$ ). In other words, negative feedback increases cognitive effort, which reduces utilitarian value for consumers with low and moderated levels of uncertainty but not for consumers with high level of uncertainty prior to the advice. This further confirms H4.

### *Discussion*

Results of this study, which compared negative feedback to neutral feedback in a physical retail setting, suggest that negative feedback leads to more product change whatever the level of choice uncertainty, further supporting H1 and the strength of the negativity bias. Furthermore, results suggest that negative feedback leads to greater cognitive effort, but only in low and moderate uncertainty contexts (H4). In high uncertainty contexts, it seems that consumers already expect to spend more cognitive effort to find the right product, thus negative feedback has no effect on their cognitive effort. However, in low and moderate uncertainty contexts, negative feedback may be less expected, thus leading to increased cognitive effort perception.

### **General discussion**

The advocacy literature suggests that brands need to be honest with their customers, even if it means not always pleasing them, arguing that this can have a positive impact on behavioral reactions (Urban, 2005). This axiom shows the importance of studying how negative feedback can influence consumer choice, retail experience, and behavioral reactions. In addition, with the rise of artificial intelligence and augmented reality, more and more opportunities exist in digital and phygital contexts to provide feedback to consumers, notably negative feedback, after the consumer makes an initial product choice. On the one hand, our results show that negative

feedback does tend to make consumers change their initial product choice (H1), independently of (a) the retail channel (online or offline), (b) the type of advisor (algorithmic advisor or human advisor) and (c) their level of uncertainty toward their initial choice. On the other hand, negative feedback can lead to lower patronage and WOM intentions, contrary to what is proposed by the advocacy literature (Roy, 2015; Urban, 2005) and what could be hypothesized at first glance (feedback, as a decision aid tool, aims at helping choice and easing the decision process). Indeed, in both online and offline contexts, and for different products, we show that negative feedback increases cognitive effort, which lowers the utilitarian value of the shopping experience, leading to lower patronage intentions and WOM intentions (H2-3). In addition, results suggest that negative feedback increases cognitive effort when consumers have low to moderate uncertainty about their initial product choice but not when they have high uncertainty (H4).

#### *Theoretical contributions*

By showing the double-edged sword effect of negative feedback in a retail context, and the influence of one important potential boundary condition, i.e., choice uncertainty prior to the feedback, this research makes four main contributions.

First, by showing the impact of negative feedback on consumers' online and offline final product choice, results contribute to the marketing literature on reactions to retailers' feedback. Thus far, research has mainly focused on positive feedback in offline settings, where salespeople would provide feedback before or after the consumer's final product choice (Campbell & Kirmani, 2000; Chan & Sengupta, 2010; Main, Dahl, & Darke, 2007).

Second, our results show that advising consumers by providing negative feedback can lead to negative consumer responses, which contributes to the customer advocacy literature. The latter suggests that honesty is the best policy when it comes to providing information to consumers,

thus negative feedback could be beneficial for building consumer trust, for instance (Urban, 2005). Our results show that, at least in the short run, providing negative feedback can have a negative effect on the consumer's intention to shop at the online retailer and to spread positive word of mouth about it, when not highly uncertain of her choice.

Third, results contribute to the marketing literature by furthering our understanding of the underlying mechanism at play when consumers process negative feedback. Our findings suggest that negative feedback increases cognitive effort, which in turn, decreases the utilitarian value of the shopping experience, which finally negatively affects the consumer's intentions. Negative feedback from a retailer may come as an unexpected response, which forces the consumer to reconsider her/his initial product choice, increasing effort, time, and lowering convenience. In addition, our results suggest that the impact of negative feedback on cognitive effort is present when consumers are highly certain, what could have been expected at first glance, but also when they are doubtful about their choice (moderately certain).

Finally, we contribute to the literature dealing with how people react to information provided by algorithms (Dietvorst, Simmons, & Massey, 2018; Prahla & Swol, 2017; Logg, Minson, & Moore, 2019) by investigating the use of algorithms in a consumer decision-making context and for appearance-related products. Logg, Minson, and Moore (2019) suggest that we need to better understand how people incorporate information from algorithms into their decisions, otherwise organizations run the risk of misusing the opportunities presented by these technological advances. In this context, our results tend to support the absence of algorithm aversion when either positive or negative feedback is given. This finding aligns with the Computer-As-Social-Actor paradigm (Nass & Moon 2000; Reeves & Nass, 1998), which suggests that when people interact with computers they apply social rules similar to those that they use in interpersonal relationships (Lee & Nass, 2010).

### *Managerial implications*

These findings also have implications for marketing managers. Even if negative feedback can make consumers reconsider their initial product choice and potentially help them in their choice, results suggest that there is a potential price to pay in terms of short-term utilitarian shopping value and, in turn, in terms of patronage and WOM intentions. Thus, retailers need to consider all these elements before espousing the consumer advocacy approach for their activities. For instance, if retailers opt not to provide negative feedback, this can lower consumer product satisfaction, potentially resulting in more customer service calls, complaints, and product returns. However, if retailers do provide negative feedback, they should be precocious. Our results suggest that in specific situations where consumers are highly uncertain about their initial product choice, negative feedback does not have adverse consequences on consumer responses. Thus, salespeople could use negative feedback in these situations and refrain from using negative feedback when consumers are more certain about their initial product choice. Detecting the level of uncertainty of consumers, through a dialogue with the salesperson in stores or through consumers' online behaviors (e.g., longer time on a product page or multiple visits to a limited number of product pages) could help in selecting the type of feedback to use. In addition, finding ways to decrease the cognitive effort required in making additional information search following negative feedback is another means to decrease the adverse effects of negative feedback. For instance, when negative feedback is provided, it should be coupled with a more suitable alternative in order to minimize the cognitive effort for consumers.

### *Limitations and research avenues*

As with any research endeavor, this research has limitations that need to be outlined. First, we focused on product choice, more precisely on whether consumers change their initial product

choice after receiving feedback, to investigate the influence of feedback on the consumer's final product choice. Future studies could use additional dependent variables to assess the effect of feedback messages. Measures such as confidence in choice (Bonaccio & Dalal, 2006) could be used to gain a deeper understanding of the effect of negative feedback in a retail context. In addition, future studies could assess what consumers naturally do after receiving negative feedback information. For instance, they could move on and make their final product choice, they could go back and search for another product, or they could terminate their search and leave the retailer's app, website, or store. Finally, from a salesperson perspective, negative feedback has the objective of helping consumers in their decision-making process, hoping they will make "better" choices. In this research, we investigated whether consumers change their product choice after receiving feedback. Since in Studies 1 and 2, participants could win the product they finally chose, it can be argued that they perceived their final product choice as optimal. An interesting avenue would be to examine consumers' satisfaction and perception about this choice at different moments during the process, for example right after the choice and also when receiving the product to empirically assess if the final choice is better, even after receiving negative feedback.

Second, these studies focused on the initial reactions of consumers to feedback information from a retailer. Future research could focus on the relational aspects of the consumer-advisor relationship. For instance, research suggests that people are less tolerant of an algorithm's mistakes than human's mistakes (Dietvorst, Simmons, & Massey, 2015; Prahla & Swol, 2017), thus it would be of interest to investigate how consumers react over time to multiple instances of product advice from different types of advisors.

Third, in this research, we focused on appearance-related products, i.e., lipstick and shirts, for which choices are quite personal and subjective. Since consumer reaction to feedback



information may vary across product categories (Park & Lee, 2009) and different product choices may require different cognitive effort (Heller et al., 2019), future research could focus on other appearance-related products and more broadly on other types of products, for instance search and credence products, to increase the external validity of our findings.

Fourth, a further step will be to understand what retailers can do to circumvent the negative effects of negative feedback, by focusing on the type of negative feedback. For instance, research investigating the difference between empathetic (e.g., “I understand how this choice is important”) and supportive feedback (e.g., “You are on the right track and I am sure that you will find the right shirt”!) could potentially help reduce these negative effects (Young et al.; 2017).

Finally, although no difference was found between the human and the algorithmic feedback sources in terms of the effect on consumers’ choices, perception, and intentions, additional research should be performed. In our context, consumers only interacted with the human advisor by email (i.e., asynchronous and low richness communication). A richer and synchronous communication mode may have a stronger effect on consumers.

## Appendix A. Measures and their psychometric qualities

	Study 1		Studies 2 and 3		
	Items	Psychometric qualities	Items	Psychometric qualities (study 2)	Psychometric qualities (study 3)
<p><b>Utilitarian value</b> Adapted from Wang et al. (2007)</p>	<p>Shopping on this app would make my life easier. If I wanted to buy a lipstick, the information and services on this app would be what I would look for. I think of this app as an expert in the products it offers. Shopping with this app would fit in with my schedule.</p>	<p><math>\alpha = 0.91</math>, Variance explained = 78.19%, loadings &gt; .87</p>	<p>Shopping on this website (store) would make my life easier. I think of this website (store) as an expert in the products it offers. Shopping with this website (store) would fit in with my schedule.</p>	<p><math>\alpha = 0.92</math>, Variance explained = 86%, loadings &gt; .91</p>	<p><math>\alpha = 0.84</math>, Variance explained = 76%, loadings &gt; .84</p>
<p><b>Cognitive effort</b> Adapted from Mosteller, Donthu, &amp; Eroglu (2014) and Seiders et al. (2005)</p>	<p>Not measured</p>	<p>–</p>	<p>I could easily and quickly choose the lipstick (the shirt) that fits me. Choosing a lipstick (a shirt) would need less time and effort. It would be easy to choose a lipstick (a shirt).</p>	<p><math>\alpha = 0.88</math>, Variance explained = 81.1%, loadings &gt; .83</p>	<p><math>\alpha = 0.88</math>, Variance explained = 86.2%, loadings &gt; .83</p>
<p><b>Patronage intentions</b> Adapted from Song &amp; Zinkhan (2008)</p>	<p>I imagine well buying a lipstick with this app. I would be very interested in buying a lipstick on this app. The next time I would like to buy a lipstick, I will take this app into consideration.</p>	<p><math>\alpha = 0.93</math>, Variance explained = 88.09%, loadings &gt; .93</p>	<p>I imagine well buying a lipstick with this website (clothes in this store for a job interview). I would be very interested in buying apparel on this Web site (clothes in this store for a job interview). The next time I would like to buy a lipstick (clothes for a job interview), I will take this website into consideration.</p>	<p><math>\alpha = 0.93</math>, Variance explained = 87.97%, loadings &gt; .92</p>	<p><math>\alpha = 0.92</math>, Variance explained = 8.8%, loadings &gt; .91</p>

<b>Worth Of Mouth Intentions</b> Adapted from Maxham III (2001)	I would recommend using the MakeUp Genius app to my friends. I am likely to spread positive WOM about the MakeUp Genius app. If my friends were looking for an app to try on make-up, I would tell them to try the MakeUp Genius app.	$\alpha = 0.93$ , Variance explained = 90.65%, loadings > .94	I would recommend using this website to my friends. I am likely to spread positive WOM about this website (this store). If my friends were looking for an app to choose a lipstick (a store to find clothes for a job interview), I would tell them to try this website (this store).	$\alpha = 0.94$ , Variance explained = 90.1%, loadings > .93	$\alpha = 0.94$ , Variance explained = 88.78%, loadings > .94
<i>Manipulation check</i>					
<b>Perceived valence of the feedback</b>	The message you received was (1 to 7: extremely negative – extremely positive)	–	The message you received was (1 to 7: extremely negative – extremely positive)	–	– –
<i>Control</i>					
<b>Brand attitude</b>	Overall, what is your opinion of the brand L'Oreal? (1 to 7: extremely negative to extremely positive)	–	Overall, what is your opinion of the brand Sephora? (1 to 7: extremely negative to extremely positive)	–	Not measured
<b>Perceived expertise</b>	Not measured	–	Compared to people around you, you would say that (1 to 7: "You know a lot about lipsticks/clothes" to "You know nothing about lipsticks/clothes")	–	———
<b>Body-esteem</b> Adapted from Heatherton & Polivy (1991)	I feel that others respect and admire me. I feel good about myself. I feel satisfied with the way my body looks right now. I am pleased with my appearance right now.	$\alpha = 0.91$ , Variance explained = 79.65%, loading > .82	I feel satisfied with the way my body looks right now. I am pleased with my appearance right now.	$\alpha = 0.81$ , Variance explained = 84%	$\alpha = 0.94$ , Variance explained = 94%

<p><b>Message trustworthiness</b> Adapted from Main, Dahl and Darke (2007)</p>	<p>This feedback was: trustworthy, honest, fake, manipulative: (1 to 7: totally disagree to totally agree)</p>	<p><math>\alpha = 0.85</math> Variance explained = 68%, loadings &gt;.62</p>	<p>This feedback was: trustworthy, honest, fake, manipulative: (1 to 7: totally disagree to totally agree)</p>	<p><math>\alpha = 0.75</math>, Variance explained = 58%, loadings &gt;.75</p>	<p><math>\alpha = 0.85</math> Variance explained = 69% loadings &gt; .76</p>
<p><b>Hedonic value</b> Adapted from Wang et al. (2007)</p>	<p>I enjoyed this online shopping trip for its own sake, not just for the items I could purchase. This online experience was enjoyable. This online shopping experience was a nice time out.</p>	<p><math>\alpha = 0.86</math> Variance explained = 79%, loadings &gt;.73</p>	<p>I enjoyed this online shopping trip for its own sake, not just for the items I could purchase. This online experience was enjoyable. This online shopping experience was a nice time out.</p>	<p><math>\alpha = 0.84</math> Variance explained = 76%, loadings &gt;.68</p>	<p>Not measured</p>

**Appendix B. Example of scenario: moderate choice uncertainty, neutral feedback  
(Study 3)**

In two days, you will have an important job interview.

You decide to go shopping **to find a new shirt for this important job interview.**

On a rack in a store, you see one: It is the right size and at a reasonable price.

So, you decide to try it on in the fitting room.

After putting it on, you look at yourself in the mirror and **you are not sure if you like it or not.**

At that point, **your choice confidence level is at 50%.**

As you get out of the fitting room, you explain to the salesperson that you are looking for a shirt for an important job interview.

**In response, the salesperson provides the following feedback:**

**"Do not hesitate to let me know if you need help."**

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**Figure 1. Conceptual framework**

