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# It is a match! The effect of regulatory fit on new products recommendations

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## Abstract

Online retailers often recommend new products to consumers. The present study examined the influence of regulatory fit on consumers' click-through intentions of new products recommended by online retailers. We proposed that regulatory fit resulting from aligning the product's regulatory focus and recommendation message's regulatory orientation positively influences click-through intention of new product recommendations. In a laboratory study (Study 1), we found that regulatory fit increase consumers' click-through behaviors of new product recommendations. Study 2 replicated the findings of Study 1 in a controlled online experiment and found support for regulatory fit—click-through intentions relationship. Study 3 found that regulatory fit increases click-through intentions for new products but not for existing products. Study 4 supported the mediating role of perceived efficacy and boundary condition of consumer innovativeness in the relationship between regulatory fit and click-through intentions. This study contributes to the literature on new product adoption, regulatory focus, and product recommendation strategies. Furthermore, it helps online retailors develop effective recommendation strategies for new product recommendations.

KEYWORDS

new products, recommendation message, recommendation systems, regulatory fit, regulatory focus

## 1 | INTRODUCTION

Recommendation systems have become crucial online retailing tools in guiding consumers through a vast array of product choices (Feng et al., 2024; Marchand & Marx, 2020). By analyzing consumer behaviors, purchases, demographic data, and product profiles, these systems adeptly recommend products matching with consumer preferences, thereby significantly enhancing sales and profitability (Lee & Hosanagar, 2019; Zhang, Balaji, et al., 2022; Zhang, Shi, et al., 2022). The crucial role of recommendation systems in online retailing is demonstrated by their substantial impact on sales, contributing to 35% of Amazon's revenues (Migliorini et al., 2022). Recognizing their impact, online retailers are expanding these systems to introduce new products, catering to the evolving customer needs and preferences (Anderson et al., 2013). However, new products often encounter consumer resistance given the inherent risks and uncertainty associated with them (Min & Schwarz, 2022; Wu et al., 2021). Given the pivotal role recommendation systems play in guiding consumers to relevant products and facilitate their decision-making (Lee et al., 2020), it becomes

imperative for online retailers to develop and implement effective strategies for new product recommendations. Addressing the limited research on this topic, the study investigates how online retailers' recommendation strategies impact consumers' intention to consider new product recommendations in their decision-making process, as indicated by click-throughs.

Online retailers present new products through specific web pages or as recommendations on focal product pages. While introducing new products is a strategic move for online retailers, it poses significant challenges. Many new products fail to gain consumer acceptance, thereby prompting research into determinants of their acceptance or adoption (Faraji-Rad et al., 2017). The online retailer's recommendation systems emerge as a critical tool in addressing this challenge (Blut et al., 2023). By analyzing product attributes and consumer profiles, recommendation systems can effectively recommend new products that are more likely to meet consumer needs and preferences better than existing products (Helmers et al., 2019). This approach can result in higher customer satisfaction, as it aligns new product offerings with specific preferences and requirements of consumers. Furthermore, how recommendation messages are framed can help mitigate the uncertainties associated with new products, thereby fostering their acceptance (Basu, 2021). Thus, developing an effective new product recommendation strategy will help online retailers overcome the challenges associated with introducing new offerings, thereby enhancing market presence and financial performance. Grounded in the regulatory focus theory (Higgins, 1997) and regulatory fit concept (Higgins, 2000), this study aims to demonstrate the effectiveness of a regulatory fit strategy in enhancing the click-through of new products recommend by online retailers. Specially, we propose that aligning a new product's regulatory focus with the regulatory orientation of its recommendation message creates a perceived regulatory fit. This perception of fit increases perceived efficacy of the recommendation, thereby increasing their click-throughs (engagement) of the new product recommendations. In examining this strategy, the present study focuses on new product recommendations featured on focal product pages, as they are likely to capture consumers' immediate attention and significantly influences their decision-making.

In the present study, we investigate the impact of regulatory fit on consumer evaluation of new product recommendations. More specifically, regulatory fit is proposed to occur when the regulatory focus of a new product aligns with the regulatory orientation of its recommendation message. Prior research has demonstrated that the nature of product can trigger a particular regulatory focus among customers (Kordrostami et al., 2021; Peev & Kumar, 2021). Depending on the consumer's goals and motivations, products can either fulfill desired benefits or prevent negative outcomes (Das et al., 2018). For example, handheld gaming consoles deliver an enjoyable and stimulating experience, catering to pleasure-seeking goals. Conversely, child car seats protect children from accidents, aligning with consumers' desire for safety and prevention of harm. This distinction in product goals highlight the differences between promotion-focused and prevention-focused products (Peev & Kumar, 2021). Along with regulatory focus of products, its recommendation message can also evoke specific regulatory orientation in consumers. For example, product recommendation messages can either emphasize the attainment of desired benefit (e.g., buy fitness products to achieve physical fitness) or the avoidance of undesirable outcomes (e.g., buy fitness products to prevent health problems) (Ghiassaleh et al., 2020; Lagomarsino et al., 2020). Thus, the product recommendation messages can be framed as a promotion or prevention-oriented messages.

We propose that aligning (misaligning) the regulatory focus of a new products (promotion vs. prevention) with regulatory orientation (promotion vs. prevention) of its recommendation messages increase consumers' click-through of new product recommendations. The alignment creates a sense of "appropriateness" or "feeling right," fostering trust and reducing the perceived risk of adopting new products (Mathmann & Chylinski, 2022; Thongpapanl et al., 2018). Thus, the perception of regulatory fit significantly enhances the perceived efficacy of the recommendation, thereby positively influencing consumers' evaluation of new product recommendations. On the contrary, a regulatory nonfit reduces recommendation efficacy perceptions, thereby decreasing the click-through intentions. Thus, perceived efficacy serves as the underlying mechanism in the relationship between regulatory fit and click-through intentions of new product recommendations. To further investigate the relationship, the present study investigates the moderating role of consumer innovativeness. High customer innovativeness, with their disposition toward new experiences and risk-taking, may be more receptive to new products (Hwang et al., 2021; Koschate-Fischer et al., 2018). This suggests that consumer innovativeness trait may impact the relationship between regulatory fit and click-through intentions of new product recommendations in the online retailing context.

The present study enhances our understanding of new product adoption, recommendation systems, regulatory focus, and regulatory fit concepts. First, this study delves into factors that influence consumer adoption of new products in an online retailing context (Im et al., 2003; Lin et al., 2020). Second, while existing research focuses on developing effective recommendation algorithms to improve the accuracy of product recommendations, our study focuses on recommendation characteristics like the regulatory focus of new products and the regulatory orientation of recommendation messages in understanding consumer adoption of new product recommendations in an online retailing context (Marchand & Marx, 2020; Zhang, Balaji, et al., 2022; Zhang, Shi, et al., 2022). Finally, we examine how and when regulatory fit, created by aligning the regulatory focus of new product type (promotion vs. prevention) and recommendation message framing (promotion vs. prevention), influences consumers' click-through intentions of new products (Kato & Hoshino, 2021). For online retailers, our findings offer significant insights into crafting effective recommendation strategies that increases acceptance of new products.

## 2 | THEORETICAL BACKGROUND

### 2.1 | Online retailers and new product recommendations

The recommendation systems involve various algorithms that analyze and learn from a wealth of customer- and product-related information in recommending suitable products to consumers (Lu et al., 2015; Senecal & Nantel, 2004). This allows the online retailer to target specific consumer preferences and recommend products that meet their needs and requirements effectively (Liao & Sundar, 2022). Therefore, recommendation systems serve as a critical online consumers' purchase decision-making tool, ensuring the right products reach the right customers at the right time (Marchand & Marx, 2020). Typically, online retailers recommend existing products, however, they may also recommend new products to offer customers the latest alternatives (Hagiu & Wright, 2020). A new product is new to the company—even if other companies offer it in the same form—or new to the market and unique or novel compared to existing products (Szymanski et al., 2007). The recommendation of new products is a critical strategic decision for online retailers. A new offering can sometimes be more beneficial in meeting consumer needs than existing products. Furthermore, they can help attract new consumers, increase market share, and offer competitive advantage (Kato & Hoshino, 2021).

Online retailers can rely on content-based filtering to identify new product recommendations (Choudhary & Zhang, 2023). Content-based systems analyze consumers' preferences for product attributes and identify new alternatives with attributes similar to those customers have previously preferred (Chinchanachokchai et al., 2021). While content-based systems can identify new products with similar attributes to existing ones, a hybrid system may be necessary to recommend new products unrelated to existing alternatives (Roy & Dutta, 2022). Hybrid systems, which combine elements from both collaborative and content-based systems (Lu et al., 2015), not only identify products based on shared attributes but also introduce new products with unrelated features or characteristics that nonetheless meet the customer needs.

When recommending new products, online retailers often frame them with a message to highlight the products' novelty. For example, recommendation messages such "New Releases," "New Arrivals," or "Discover What's New" are frequently used to display new product recommendations on the focal product page or main page (see Supporting Information S1: Web Appendix A). Additionally, online retailers may use benefit-based framing for the new product recommendations, such as "Make their life the best" for pet foods or "Stay healthy and have a good time" for exercise-related products which emphasize promotion-orientation. Similarly, they may also use prevention orientation for the new product recommendation, such as "Reduce your home's energy use" for home goods or "Helps escape a meaningless life" for laptops.

### 2.2 | Regulatory focus theory

Regulatory focus theory (Higgins, 1997) proposes that consumers adopt two distinct motivations: promotion and prevention. These motivations reflect consumers' distinct values and beliefs, affecting perceptions, attitudes, and behaviors (Pham et al., 2023). Promotion-focused customers are primarily motivated by positive outcomes, seeking accomplishments and aspirations. In contrast, prevention-focused customers prioritize avoiding negative outcomes, emphasizing safety, and security (Tran et al., 2020). While customers might have a chronic predisposition toward either promotion or prevention focus (a trait), specific situations can also temporarily induce these focuses (a temporary state) (Choi & Park, 2021). For example, a promotion-focused consumer considering safety features when buying a car might temporarily adopt a state of prevention focus. Such temporary activation aligns with theories suggesting contextual cues can influence consumers' regulatory focus (Luo et al., 2016; Moskowitz, 2002). Although considerable debate exists regarding the relative impact of situational versus chronic regulatory orientations in influencing consumer behaviors (Haws et al., 2012; Wheeler & Berger, 2007), evidence suggests that situational priming has a comparable or even greater impact on consumer behaviors than chronic regulatory focus.

Motyka et al. (2014) in their meta-analytic synthesis reported that situation-prime has a greater impact on both consumer evaluation and behavioral intentions than chronic focus. Luo et al. (2016) demonstrated that situational priming of regulatory focus has a significant impact on consumer behavior when compared to chronic regulatory states. The authors found that participants in incremental new product condition showed a significant increase in promotion focus compared to their chronic states. Similarly, those in the really new product condition displayed a significant increase in their temporary prevention focus score than their chronic prevention scores (Study 1). Krishna et al. (2021) found that situational promotion focus increased impulsive buying irrespective of consumers' chronic promotion and prevention focus states. Arnold et al. (2014) demonstrated that situational regulatory focus can reinforce consumers' chronic states in influencing in-store retail behaviors. Other researchers have shown that, irrespective of how regulatory focus is elicited, whether situational and chronic, regulatory focus explains product evaluations and consumer behaviors (Wang et al., 2020; Werth & Foerster, 2007; Xie & Kahle, 2014). Based on the above discussion, this study focuses on situational regulatory focus triggered by product type and message framing. While this study does not aim to examine the relative effectiveness of situational versus chronic states, the emphasis on situational priming allows us to explore their immediate effects on consumer decisions in the context of new product recommendations in online retailing. Furthermore, as previous research has shown that situational cues provided by the product type and message framing significantly influences consumer outcomes (Borges & Gomez, 2015; Choi & Park, 2021; Shen, 2015), this study utilized situational regulator focus to examine the role of regulator fit on new product adoption.

We describe the roles of product type and recommendation messages in evoking situational regulatory focus in the following section.

### 2.3 | Situational regulatory focus via product goals and recommendation messages

Various situational factors can evoke specific regulatory focus in consumers (Kordrostami et al., 2021). In the present study, we propose that product goals and recommendation message framing have the potential to activate a temporary state of specific regulatory focus. Individual products resonate with consumers' goals, either to attain a positive state or to avoid a negative one (Higgins et al., 2020). Products meeting positive consumer goals and benefits, such as enjoyment or financial gains, are considered promotion-focused. On the other hand, those helping consumers avoid negative consequences, such as avoiding risks or illness, are prevention-focused (Peev & Kumar, 2021). Ghiassaleh et al. (2020) categorized products like perfumes and jewelry as promotion-focused due to their benefits, such as an attractive smell and appearance. On the other hand, products such as helmets, safety glasses, or sunscreen have informational motives that help consumers avoid specific problems or adverse outcomes. Kordrostami et al. (2021) analyzed the impact of online reviews on consumer buying intentions, considering dental floss and teeth whitening as prevention and promotion products, respectively.

In addition to the products, recommendation message framing also play a pivotal role in shaping consumers' regulatory focus (Cesario et al., 2013; Kato & Hoshino, 2021). These recommendation messages can be specifically framed to highlight either achieving positive outcomes of using a product or avoiding negative consequences of not using it. As such, when these messages emphasize the positive benefits of a product, they induce a promotion-oriented mindset in consumers. For example, a recommendation message showcasing a "fun and enjoyable experience" for handheld gaming devices may elicit a promotion focus. In contrast, messages highlighting the prevention of undesirable outcomes, such as "helps avoid boredom" for handheld gaming devices, may foster a focus on prevention. Such messages represent benefit-focused recommendations because they emphasize benefits products offer to consumers and highlight the values that are important for to them (Karpinska-Krakowiak et al., 2023). Previous research has examined the persuasiveness of regulatory messages on consumer choices in various contexts. For example, Alhouti et al. (2019) found that prevention-oriented messages lead to higher recovery outcomes than promotion-oriented messages with a donation component. Lagomarsino et al. (2020) demonstrated that promotion-oriented messages are more effective than prevention-oriented messages in determining pro-environmental behavior in high-egoistic value consumers.

Building upon this understanding of how products and recommendation messages can trigger situational regulatory focus, our study proposes that a fit between these two situational factors results in "regulatory fit," which influences consumer evaluation of new product recommendations. We describe the concept of regulatory fit in the following sections.

### 2.4 | Regulatory fit

Higgins (2000) introduced regulatory fit, arguing that customers are more motivated when the means to achieve goals align with their regulatory orientation. This "fit" makes consumers more committed and confident in decision-making (Naletelich et al., 2023). When perceived fit is realized, it significantly increases their interest and intentions to meet the intended goal (Choi et al., 2022; Florack & Scarabis, 2006). Previous research showed that regulatory fit influences online shopping behavior, product evaluation, social media engagement, brand associations, co-creation and co-production, and salesperson performance (Fazeli et al., 2020; Jia et al., 2022; Li et al., 2021; Septianto & Mathmann, 2023). Furthermore, researchers demonstrated that situational factors, from product design to organizational climate, can modify regulatory fit. For example, Liu et al. (2020) showed that design novelty modulates regulatory fit. Miao et al. (2021) found that competitive psychological climate and salesperson's focus determine regulatory fit. Finally, Atav et al. (2021) showed that orientation of an apology message affects the regulatory fit, which in turn, influences customers' emotional responses and behaviors. Given this, we propose that perceived fit resulting from aligning the regulatory focus of new products and recommendation messages leads to higher click-through for the new product recommendations via enhanced perceived efficacy of the recommendation. The following sections delves deeper into arguments supporting this.

## 3 | HYPOTHESIS DEVELOPMENT

Figure 1 presents the conceptual framework of the study. As shown in Figure 1, we propose that regulatory fit (vs. nonfit) impacts consumer click-through of new products recommendations. The perceived efficacy of the recommendation is the underlying mechanism, and consumer innovativeness is the boundary condition in the relationship between the regulatory fit and click-through of new product recommendations.

### 3.1 | Regulatory fit and click-through intentions of new product recommendations

We propose that a regulatory fit achieved when the regulator focus of new products aligns with the regulatory orientations of its recommendation message increases consumers' likelihood of considering new product recommendations in their decision-making. Previous research has demonstrated that regulatory fit significantly influences consumer decisions. For example, Motyka et al. (2014) in

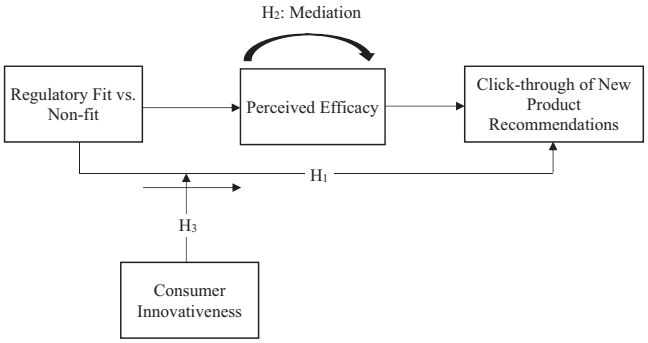


**FIGURE 1** Conceptual framework for the study.

their meta-analysis showed that depending on how fit is created, it affected each type of outcome, including evaluation, behavioral intentions, and behaviors. Fazeli et al. (2020) demonstrated that regulatory fit influences online luxury purchase intentions. Li et al. (2021) showed that regulatory fit resulting from matching customer–employee relationship with regulatory focus of service appeals influence their service purchase intentions. Habitzreuter and Koenigstorfer (2021) found that regulatory fit positively influences perceived philanthropy-driven motives for sponsorship. Choi et al. (2022) showed that regulatory fit enhances individuals' intentions of using smartwatch health apps. More recently, Zhou et al. (2024) revealed that regulatory fit improves customers' experiences, thus inspiring their co-design behavior. Regulatory fit was also observed to increase a consumer's engagement in the task or target, thereby enhancing the value of the consumer's actions (Pham et al., 2023). It increases fluency or ease of processing information and transfers positive affective feeling to the task or target (Das et al., 2020). Building on this, we propose that regulatory fit positively influences consumer evaluation of new product recommendations.

New products often carry inherent risks due to the absence of tangible consumer experiences or reliable reviews (Nguyen & Chaudhuri, 2019). However, regulatory fit can mitigate these risks by reducing perceived uncertainty and increasing consumer confidence in the new product recommendations. For example, Van Noort et al. (2008) found that regulatory fit—specifically, when presenting safety cues to prevention-focused individuals—reduces risk perceptions and enhances both attitude and behavioral intentions toward the website and retailer. On the contrary, Kühberger and Wiener (2012) showed that high regulatory fit increases action motivation, which leads to risk-taking, while low fit reduces risk-seeking. More recently, Naletelich et al. (2023) demonstrated that regulatory fit from matching consumer mindset with different forms of visual imagery reduces perceived risk, leading to an increased willingness to pay for the product. Other researchers have demonstrated that regulatory fit increases risk-taking in the context of performance feedback, novel food products, and food neophobia contexts (Cui et al., 2019; Mount & Baer, 2022; Zhang, Shi, et al., 2022). The above discussion suggests that regulatory fit creates a sense of "feeling right" and influences decision-making by either increasing risk-taking or reducing perceived risk associated with the new products. It also enhances consumer confidence and ease of processing information, all of which are pivotal in enhancing click-through intentions of new product recommendations (Lin et al., 2020; Min, 2023). Thus, we propose that:

> **H1.** Regulatory fit, resulting from matching the new product's regulatory focus with the regulatory orientation of the recommendation message, positively influences consumer click-through intentions for new product recommendations.

## 3.2 | Mediating role of perceived efficacy of recommendation

Perceived efficacy refers to consumers' belief that the products recommended by an online retailer will help them achieve their goals (Fazal-e-Hasan et al., 2021). Perceived efficacy depends on the ability of the recommendation systems to accurately suggest new products that meet evolving consumer needs and preferences. The present study proposes that regulatory fit increases perceived efficacy, which, in turn, enhances the click-through intentions for new product recommendations. Keeling et al. (2013) demonstrated that when reward orientations (promotion vs. prevention) are aligned with how rewards (verbal vs. numeric) are presented (fit), it enhances the perceived efficacy of these rewards. Thongpapanl et al. (2018) found that when consumer motivations and chronic regulatory orientations are aligned, the resulting fit positively influences consumers' value perceptions and trust toward the mobile shopping environment. Furthermore, research has shown that perceived efficacy is positively related to intentions to adopt or purchase products and services. Fazal-e-Hasan et al. (2021) demonstrated that perceived efficacy of smart retail technology increase its adoption. Research in diverse areas, such as healthcare, information systems, and environmental management, has also demonstrated that higher perceived efficacy leads to greater intention to engage with or acquire the product (Chang et al., 2023; Lee et al., 2020). Based on the above discussion, we propose that regulatory fit enhances consumer confidence and perception of feeling right, which leads to a perception of greater efficacy of recommended new products in meeting their specific

needs and preferences. Consequently, this leads to higher click-through intentions of new product recommendations. Thus, we propose that:

**H2.** Perceived efficacy of the recommendation mediates the impact of regulatory fit on click-through intentions for new product recommendations.

### 3.3 | Moderating role of consumer innovativeness

Consumer innovativeness is "the degree to which an individual adopts innovations relatively early than other members in his or her social system" (Im et al., 2003, p. 62). As a specific facet of the broader concept of innate innovativeness, it reflects a consumer's intrinsic drive toward novel products and experiences (Koschate-Fischer et al., 2018). Furthermore, it indicates a natural curiosity and preference for new products/services, often preferring them over existing or previous choices (Hwang et al., 2021). Widely recognized as an important personality trait, consumer innovativeness often predicts the success of new products or innovations (Hetet et al., 2020; Hwang et al., 2021). Previous research has shown that consumer innovativeness influences various retail behaviors, such as shopping styles, selection of retail formats, customer involvement, choice of channel, adoption of online and smart retailing, and perceptions of risk in retail shopping situations (Adapa et al., 2020; Anwar et al., 2021; Hwang et al., 2021; Jain et al., 2021). These findings suggest that consumers with a high degree of innovativeness tend to be receptive to new products, often overlooking the potential risks of these new products and innovations.

In the present study, we posit that consumers with high innovativeness are intrinsically predisposed to consider new products. Given their openness to seeking novelty, they are likely to explore and potentially adopt new products recommended by online retailers in their decision-making (Hwang et al., 2021), regardless of whether a regulatory fit is achieved or not. On the contrary, consumers with low innovativeness are generally cautious and hesitant to take risks (Zhang & Hou, 2017). They prefer existing or familiar products and often seek additional assurances when considering unfamiliar products (Park & Tussyadiah, 2017). For such customers, we propose that a regulatory fit might foster a sense of rightness and increase their confidence in the new products. Furthermore, it can reduce perceived risk and increase trust in new products leading to their higher click-through during the online shopping process. Thus, we propose that:

**H3.** Consumer innovativeness moderates the effect of regulatory fit on click-through intentions for new product recommendations, such that, for consumers with a low degree of innovativeness, the regulatory fit has a greater impact on click-through intentions for new product recommendations. No such difference in regulatory fit conditions is expected for consumers with high levels of innovativeness.

## 4 | METHODS

We conducted four studies to test the proposed hypotheses. Study 1 examined the effect of regulatory fit on click-through behavior in a laboratory setting ($H_1$). Study 2 replicated the findings of the Study 1 in an online experiment. To test the robustness of our findings, Study 3 was carried out by exploring the role of product novelty (new products vs. existing products) in the effectiveness of regulatory fit on click-through intentions. Study 4 examined the mediating role of perceived efficacy of recommendation ($H_2$) and the boundary condition of consumer innovativeness ($H_3$). Two pretests were carried out to develop the stimuli for the main studies.

All studies were conducted in the online retailing context. While the respondents for the laboratory experiment in Study 1 came from a university panel in China, Studies 2–4 utilized US respondents from the Prolific Academic panel. We used fictitious names for all products (focal and recommended) in the stimuli and for the online retailer to minimize familiarity bias and preconceived notions associated with well-known brands and retailers.

Pretest 1 was an open-ended thought-listing study to identify promotion- and prevention-focused products. Fifty undergraduate students participated in the study in exchange for course credits. They were instructed to imagine potential product purchases and articulate three corresponding goals these purchases would accomplish. This approach is consistent with Kordrostami et al. (2021), who highlighted the role of goal orientation when evaluating promotion- and prevention-focused products.

Following previous literature, we selected five products for the pretest: child car seat, handheld gaming device, green tea, laptop, and bed net (Dutta & Das, 2017; Krishen et al., 2016; Lee & Liao, 2015). Although products occasionally have both promotion and prevention consumption goals, the objective of the pretest was to identify products where one of the two goals was dominant. Two independent coders classified the product purchase goals as either promotion-focused, which aids in achieving desirable outcomes, or prevention-focused, which helps in preventing undesirable outcomes. The two coders agreed on 82.0% of the product goals, resolving any discrepancies through mutual consultations. The results revealed that purchase goals for the child car seat (63.3% prevention vs. 26.7% promotion) and bed net (65.3% prevention vs. 34.7% promotion) were mostly prevention-focused, while those for laptop (9.3% prevention vs. 91.7% promotion), the handheld gaming device (18.7% prevention vs. 82.3% promotion), and green tea (8.7% prevention vs. 91.3% promotion) were largely promotion-focused.

Pretest 2 was carried out to identify promotion- and prevention-oriented recommendation messages for previously identified products from Pretest 1. Recommendation messages and product reviews from leading online retailers and advertising messages in the United States and China guided the development of promotion- and prevention-oriented recommendation messages for each product. The recommendation messages for a child car seat were "Have a comfortable travel" and "Protect your child from accidents." For bed net, they were "Delivers a sweat night" and "Guards you and your

family at all times." For the laptop, the messages were "Launch your creativity" and "Helps escape from a meaningless life," for a handheld gaming device, "A totally new experience" and "Helps avoid boredom," and for green tea, "Brighten your day," and "Helps avoid aging and disease."

A sample of 50 students assessed the regulatory orientation of these messages. To mitigate the order effect, the presentation of the products and messages was counterbalanced. A 7-point semantic differential scale measured whether the message emphasized achieving positive outcomes or avoiding negative outcomes. Higher values indicated promotion-oriented messages, while lower values signaled prevention-oriented ones.

The results of the one-sample $t$ test (scale mid-point = 4.0), revealed that for child car seat, "Have a comfortable travel" was deemed promotion-oriented ($M = 6.14$, SD = 1.05, $t(49) = 14.41$, $p < 0.01$), while "Protect your child from accidents" was assessed as prevention-oriented ($M = 1.60$, SD = 1.05, $t(49) = 12.00$, $p < 0.01$) messages. Similarly, for the laptop, the messages "Launch your creativity" and "Helps escape from a meaningless life" were evaluated as promotion-oriented ($M = 6.62$, SD = 0.60, $t(49) = 30.76$, $p < 0.01$) and prevention-oriented ($M = 2.94$, SD = 2.01, $t(49) = 3.72$, $p < 0.01$) messages, respectively. For handheld gaming device, "A totally new experience" and "Helps avoid boredom" were assessed as promotion-oriented ($M = 6.04$, SD = 0.95, $t(49) = 15.24$, $p < 0.01$) and prevention-oriented ($M = 2.82$, SD = 2.05, $t(49) = 4.08$, $p < 0.01$) messages, respectively. For green tea, messages "Brighten your day" and "Helps avoid aging and disease" were evaluated as promotion-oriented ($M = 6.42$, SD = 0.67, $t(49) = 25.43$, $p < 0.01$) and prevention-oriented ($M = 1.88$, SD = 1.75, $t(49) = 8.59$, $p < 0.01$) messages, respectively. For the bed net, "Delivers a sweet night" and "Guards you and your family at all times" were assessed as promotion-oriented ($M = 6.24$, SD = 1.08, $t(49) = 14.67$, $p < 0.01$) and prevention-oriented ($M = 2.04$, SD = 1.47, $t(49) = 9.43$, $p < 0.01$) messages, respectively.

## 5 | STUDY 1: EXAMINING REGULATORY FIT AND CLICK-THROUGH BEHAVIORS

Study 1 examined the role of regulatory fit on click-through behaviors for new product recommendations.

### 5.1 | Method

In a laboratory experiment simulating an actual online shopping activity, 193 business management students (54.9% female, $M_{age}$ = 21.25 years) from a Chinese public university participated in the study for course credit. The stimuli and questionnaire were administered in Chinese following the back-translation method (Brislin, 1970). The sample size is more than the recommended size of 128 responses obtained from G*Power with error probability of 0.05 and power of 0.80. The sample size for the study has a sample power of 0.93 (Faul et al., 2007).

The study used a 2 (product's regulatory focus: promotion vs. prevention) × 2 (recommendation message's regulatory orientation: promotion vs. prevention) between-subjects design. Regulatory fit (nonfit) was achieved when regulatory orientation of the message matched (did not match) the regulatory focus of the product. Based on the results of Pretest 1, "green tea" and "bed net" represented promotion- and prevention-focused products. From Pretest 2, recommendation messages like "New releases–Brighten your day" and "New releases–Helps avoid aging and disease" for green tea and "New releases–Guards you and your family at all times" and "New releases–Delivers a sweet night" for bed net were selected, with the prefix "New Releases" denoting new products or product newness. This is consistent with recommendation message framing for new products on popular e-commerce platforms such as Amazon.

Over 8 weeks, in various sessions with 5–12 students each, participants imagined they were interested in buying green tea or a bed net for personal use from a fictitious online retailer, www.allproducts.com. Their interest in a specific product made them explore its product page for more information.

Participants were randomly assigned to one of the four conditions. We created four web pages using HTML and JavaScript, each showcasing green tea or bed net. Each product page included a description of the focal product and four new product recommendations (other brands) with either a promoted- or prevention-oriented recommendation message (see Supporting Information S1: Web Appendix A). Every new product recommendation had a dedicated page for in-depth exploration, and participants could navigate freely to these pages by clicking on the new products recommended on the focal product page. All pages (focal product and recommended products) maintained consistent description, length, and imagery. While new product recommendations were included in the focal product page, no such recommendations were included in the recommended product web pages. We used fictitious names to reduce familiarity bias for focal and new product recommendations.

The participants were instructed to undertake the online shopping activity as they typically would. The dependent variable assessed was the participants' click-through the behavior of new products recommended on the focal product page. Clicking-through behavior refers to consumers' deliberate action, such as leaving or landing on a certain web page or clicking or not clicking a link or product (Japutra et al., 2022; Xu & Luo, 2023). It is a significant indicator of consumer engagement with the recommended products. When consumers click on recommended products, it suggests a heightened level of interest and willingness to engage further with the product, potentially moving toward a purchase decision (Lu & Du, 2020). As each focal product page had four new product recommendations, the click-through behavior could range from 0 to 4. Thus, in our study, click-through behavior represents the number of new product recommendations participants clicked on to learn more about them during the online shopping activity.

After participants completed the online shopping activity, they were instructed to click on the "Return to Search Results," which led to the subsequent online survey page. Participants responded to questions

regarding the manipulation check for regulatory focus of the product using a seven-point semantic differential scale (because of the problems this product helps me avoid versus because of the pleasure I get from this product) adapted from Borges and Gomez (2015) and recommendation message using a seven-point semantic differential scale (avoid negative outcomes vs. achieve positive outcomes) adapted from Ghiassaleh et al. (2020). The participants also answered questions on realism, online shopping habits, and demographics.

## 5.2 | Results

### 5.2.1 | Manipulation checks

The manipulations were effective. A one-sample *t* test (scale mid-value = 4.0) showed participants evaluated "green-tea" as promotion-focused ($M = 4.53$, $SD = 1.75$, $t(96) = 2.96$, $p < 0.01$) and "bed net" as prevention-focused ($M = 3.54$, $SD = 1.96$, $t(95) = 2.23$, $p < 0.05$) products. Regarding the recommendation messages, "New releases—Brighten your day" and "New releases—Delivers a sweet night" were assessed as promotion-oriented ($M = 4.78$, $SD = 1.69$, $t(96) = 4.56$, $p < 0.01$) messages, while "New releases—Helps avoid aging and disease" and "New releases—Guards you and your family at all times" were evaluated as prevention-oriented ($M = 3.24$, $SD = 1.68$, $t(95) = 4.44$, $p < 0.01$) messages. Participants found the scenario realistic ($M = 4.97$, $SD = 1.67$), with no significant difference across conditions ($ps > 0.09$).

### 5.2.2 | Click-through behavior

For consistency in reporting, we only presented the results of the analyses that included covariates, as their exclusion did not change the significance of the effects of independent variables. Regarding click-through behavior, 9.7% ($n = 18$) of participants did not click on new product recommendations. However, 24.4% ($n = 47$) clicked on one, 22.8% ($n = 44$) clicked on two, 23.3% ($n = 45$) clicked on three, and 20.2% ($n = 39$) clicked on all four new product recommendations during the online shopping activity. Normality was examined using Skewness and Kurtosis statistics (Chou & Bentler, 1995). The results revealed that Skewness (−0.075) and Kurtosis (−1.115) were within the generally accepted range of −2 and +2 for assuming normal distribution.

### 5.2.3 | Testing $H_1$

To test $H_1$, we examined the effects of regulatory fit (vs. nonfit) on click-through behavior. Fit was coded as 1 when the regulatory focus of both the product and the recommendation message aligned or matched. In contrast, nonfit was coded as 0 when there was a mismatch between the regulatory focus of the product and the recommendation message. The analysis of variance (ANOVA) demonstrated a significant effect of regulatory fit on click-through behavior ($F(1, 188) = 9.54$, $p < 0.01$). Specifically, a regulatory fit ($M = 2.48$, $SD = 1.22$) led to higher click-through behavior compared to a nonfit ($M = 1.94$, $SD = 1.28$). This provides support for $H_1$. Control variables (age, gender, and frequency of online shopping) did not have a significant impact on click-through behavior ($ps > 0.15$). Figure 2 plots the differences between regulatory fit conditions on click-through of new product recommendations.

A post-hoc analysis with the product's regulatory focus and the recommendation message's regulatory orientation as fixed factors, click-through behavior of new product recommendation as dependent variable, and age, gender, and frequency of online shopping as covariates were carried out. The results did not show significant main effects for the product's regulatory focus ($F(1, 186) = 0.20$, $p = 0.66$) or the recommendation message's orientation ($F(1, 186) = 0.08$, $p = 0.77$). However, a significant interaction effect emerged ($F(1, 186) = 9.44$, $p < 0.01$). Specifically, for the promotion-focused

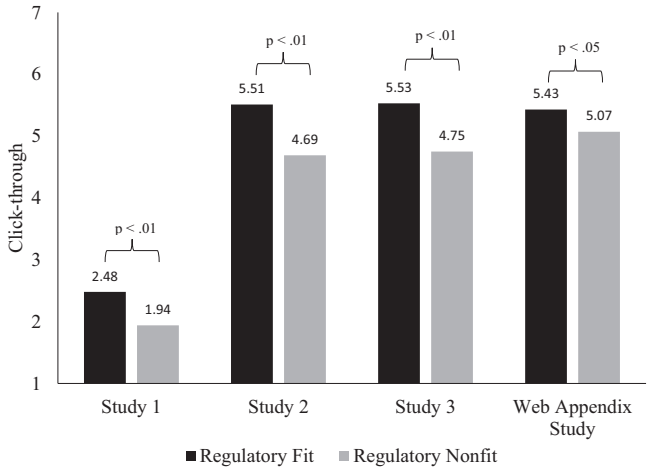


**FIGURE 2** Effect of regulatory fit on click-through of new product recommendations. We measured click-through behavior (click-through range: 0–4) in Study 1 while assessed click-through intentions (7-point Likert scale) in remaining studies.

product (green tea), a promotion-oriented recommendation message ("New releases—Brighten your day") resulted in higher click-through behavior ($M = 2.52$, SD = 1.15) than a prevention-focused recommendation message ("New releases—Helps avoid aging and disease") ($M = 2.00$, SD = 1.28), $t(95) = 2.11$, $p < 0.05$. On the other hand, for the prevention-focused product (bed net), a promotion-oriented message ("New releases—Delivers a sweet night") led to lower click-through behavior ($M = 1.88$, SD = 1.29) than a prevention-oriented message ("New releases—Guards you and your family at all times") ($M = 2.45$, SD = 1.30, $t(94) = 2.16$, $p < 0.05$).

### 5.3 | Discussion

The initial findings from Study 1, conducted in an eastern cultural context of China using a student sample in a laboratory setting, highlights the effect of regulatory fit on the actual click-through behavior for new products recommendations in online retailing context. Specifically, matching the new product's regulatory focus with its recommendation message's regulatory orientation increased customers' click-through behaviors. However, the generalizability of these results to other contexts (e.g., western) and with different sample groups enhances the validity and generalizability of our research findings. We address this in the following study.

## 6 | STUDY 2: REPLICATION IN AN ONLINE EXPERIMENT

Study 2 aimed to replicate and extend the findings of Study 1 through a controlled online experiment, focusing on different product categories, participant base, and outcome variable. This study was preregistered at AsPredicted.org (https://aspredicted.org/blind.php?x=L1K_C19).

### 6.1 | Method

A 2 (product's regulatory focus: promotion vs. prevention) × 2 (recommendation message's regulatory orientation: promotion vs. prevention) between-subjects design was used. Study 2 followed the data collection method of Study 1 with five key changes. First, we recruited 200 participants from Prolific Academic who met the screening criteria: US citizens, >18 years of age, >90% approval rate, and purchased online at least once in the past month (52% female, $M_{age} = 34.4$ years). This sample size exceeded the required minimum estimated from G*power and yields a sample power of 0.94, which signifies an adequate level of statistical power for the study (Faul et al., 2007).

Second, "handheld gaming devices" and "child car seat" were selected as promotion-focused and prevention-focused products, respectively. Third, following Pretest 2 results, we used "New releases—A totally new experience" for gaming devices and "New releases—Have a comfortable travel" for the child car seat as promotion-oriented; while "New releases—Helps avoid boredom" for handheld gaming device and "New releases—Protect your child from accidents" served as prevention-oriented messages.

Fourth, price is a pivotal factor in the product evaluation. Although product pricing was not specified in Study 1, we included this information in the stimuli for Study 2. By replicating the study findings with such additional product information, we aim to offer further validity for the role of regulatory fit in consumer evaluation of new product recommendations (see Supporting Information S1: Web Appendix B).

Finally, participants responded to questions regarding the manipulation check for product focus (when buying the product, the motivation is: avoid undesirable outcomes/attain desired outcomes) and recommendation message (the message means the new products recommended helps avoid undesirable outcomes vs. attain desired outcomes) using a 7-point semantic differential scale and answered questions on click-through intentions.

We measured click-through intentions using two items ($r = 0.93$;) adapted from Aguirre et al. (2015) (see Supporting Information S1: Web Appendix C). Click-through intentions refer to individual's immediate interest or desire to click recommended products (Ogbanufe & Kim, 2018). It is recognized as a significant predictor of targeted marketing strategies (Shao et al., 2023). Click-through intentions is consumers' self-reported measure for willingness or likelihood to engage with the recommended products or online advertising (Aguirre et al., 2015). It is considered a key metric for measuring the effectiveness of recommender systems and used as a proxy measure for actual consumer actions or behaviors in online marketing contexts (Gai & Klesse, 2019; Shao et al., 2023; Zhang, Balaji, et al., 2022; Zhang, Shi, et al., 2022). The data for click-through intentions was normally distributed (Skewness = −0.958 and Kurtosis = 0.267).

### 6.2 | Results

#### 6.2.1 | Manipulation checks

The manipulations were effective. A one-sample $t$ test (mid-value = 4.0) showed that participants assessed the handheld gaming device as a promotion-focused product ($M = 5.89$, SD = 1.21, $t(99) = 15.58$, $p < 0.01$). In contrast, the child car seat was assessed a prevention-focused product ($M = 2.68$, SD = 1.96, $t(99) = 6.72$, $p < 0.01$). For recommendation messages, "New releases—A totally new experience" for the gaming device and "New releases—Have a comfortable travel" for the child car seat were perceived as promotion-oriented (M = 5.84, SD = 1.38, $t(99) = 13.37$, $p < 0.01$). Messages such as "New releases—Helps avoid boredom" for the gaming device and "New releases—Protect your child from accidents" for the car seat were identified as prevention-oriented ($M = 3.00$, SD = 2.27, $t(99) = 4.41$, $p < 0.01$).

### 6.2.2 | Testing $H_1$

We followed a similar procedure to the previous study for creating fit and nonfit conditions. $H_1$ was supported, with regulatory fit significantly increased click-through intentions of new product recommendations ($F(1, 195) = 15.39$, $p < 0.01$) than regulatory nonfit. Specifically, the regulatory fit condition ($M = 5.51$, SD = 1.25) resulted in a higher click-through intentions than the nonfit condition ($M = 4.69$, SD = 1.57) (see Figure 2). Among the control variables, online shopping frequency ($p < 0.01$) had a significant impact on click-through intentions. Excluding these controls did not change the significance of the results.

A post-hoc analysis revealed no significant main effects for the product's regulatory focus ($F(1, 193) = 0.48$, $p = 0.49$) or the recommendation message's regulatory orientation ($F(1, 193) = 1.69$, $p = 0.20$) on click-through intentions. However, a significant interaction ($F(1, 193) = 15.30$, $p < 0.01$) was observed such that a promotion-oriented message for a promotion-focused product ($M = 5.66$, SD = 1.08) led to higher click-through intentions than a prevention-oriented one ($M = 4.59$, SD = 1.50), $t(98) = 4.09$, $p < 0.01$. For the prevention-focused product, a prevention-oriented message ($M = 5.36$, SD = 1.41) showed marginally higher click-through intention than a promotion-oriented one ($M = 4.78$, SD = 1.65), $t(98) = 1.89$, $p = 0.07$.

## 6.3 | Discussion

The findings from Study 2 provided further support for the effectiveness of regulatory fit in enhancing click-through intentions for new product recommendations. Replicating the study findings with a different sample group, across different product categories, and including pricing information, validates the effectiveness of regulatory fit. While Studies 1 and 2 demonstrated that regulatory fit effectively increases consumers' click-through of new product recommendations, it remains unclear whether this strategy is equally persuasive for existing products. We test this in the following study.

# 7 | STUDY 3: TESTING THE VALIDITY OF REGULATORY FIT FOR PRODUCT NOVELTY

This study examines the role of product novelty (new vs. existing) in the relationship between regulatory fit and click-through intentions. We propose that regulatory fit enhances click-through intentions for new product recommendations due to their inherent risk perceptions. In such cases, regulatory fit can enhance the perception of feeling right, which leads to higher click-through intentions for new products. However, for existing products, abundant product and consumer information (e.g., product description, consumer reviews, and ratings) exists. Previous research has found that such information can help prospective consumers in predicting the quality or performance of products better (Bezençon et al., 2020). Thus, consumers are more likely to rely on this available signals or cues rather than the perception of regulatory fit in their decision-making. Thus, we propose that the effect of regulatory fit on click-through intentions is more pronounced for new products, but not for existing products.

## 7.1 | Method

This study adopted a data collection approach similar to Study 2 but included one key change. First, we carried out a 2 (product's regulatory focus: promotion vs. prevention) × 2 (recommendation message's regulatory orientation: promotion vs. prevention) × 2 (product novelty: new vs. existing) between-subjects design. While the laptop and child car seat, along with their promotion- and prevention-oriented recommendation messages were used, product novelty was manipulated in two ways. First, for new products, we incorporated the phrase "New releases" within the recommendation message to indicate their novelty; this phrase was absent for existing products. Second, abundant consumer ratings and reviews accompanied existing product recommendations, whereas new product recommendations lacked such details (see Supporting Information S1: Web Appendix D). After reviewing the stimuli, participants answered questions on manipulation check questions and click-through intentions ($r = 0.94$). The data for click-through intentions was normally distributed (Skewness = −1.35 and Kurtosis = 1.22).

Of the 400 respondents recruited through Prolific Academic, 24 were excluded due to missing data or failing the attention-check questions, leaving a sample of 376 participants (60.4% female and $M_{age} = 34.12$ years). The sample size yields a sample power of 0.99, which signifies an adequate level of statistical power for the study (Faul et al., 2007).

## 7.2 | Results

### 7.2.1 | Manipulation checks

The manipulations for both the product's regulatory focus and the recommendation message's regulatory orientation were successful. Participants identified the laptop as promotion-focused and the child car seat as prevention-focused products ($ps < 0.01$). Both sets of recommendation messages were correctly assessed in line with their intended orientations ($ps < 0.01$). Regarding the product novelty, new product recommendations ($M = 5.50$, SD = 1.38) were perceived as more novel than existing ones ($M = 4.98$, SD = 1.63), $F(1, 374) = 10.79$, $p < 0.01$.

### 7.2.2 | Product novelty and click-through intentions

To examine the effect of product novelty, we carried out an ANOVA with click-through intentions as the dependent variable, regulatory

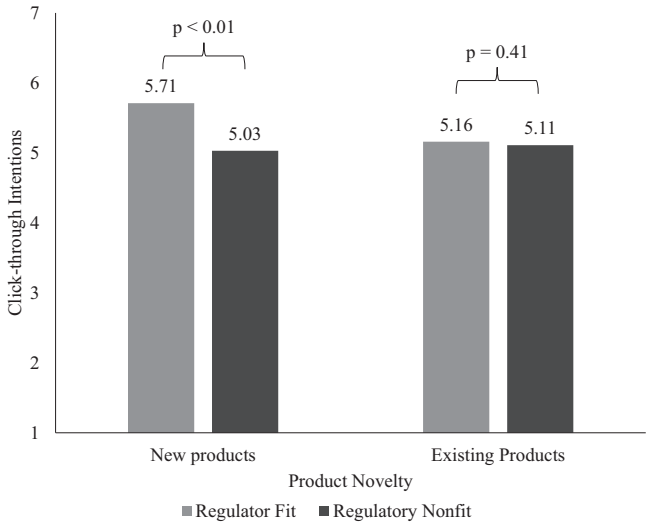


**FIGURE 3** Interaction plot of product novelty and regulatory fit (Study 3).

fit, and product novelty as fixed factors. The results revealed a significant main effect of regulatory fit ($M_{fit}$ = 5.43, SD = 1.44 vs. $M_{nonfit}$ = 5.07, SD = 1.56, $F(1, 372) = 5.62$, $p < 0.05$) on click-through intentions. This is consistent with findings for $H_1$ in previous studies. We did not find a significant main effect of product novelty ($F(1, 372) = 2.27$, $p = 0.13$). However, we found a significant interaction effect of regulatory fit and product novelty ($F(1, 372) = 4.10$, $p < 0.05$), such that regulatory fit led to higher click-through intentions for new product ($M_{fit}$ = 5.71, SD = 1.18 vs. $M_{nonfit}$ = 5.03, SD = 1.62, $t(183) = 3.24$, $p < 0.01$), but not for existing products ($M_{fit}$ = 5.16, SD = 1.62 vs. $M_{nonfit}$ = 5.11, SD = 1.50, $t(189) = 0.24$, $p = 0.41$). Figure 3 presents the interaction plot.

### 7.3 | Discussion

The findings of this study demonstrate the pivotal role of regulatory fit in influencing click-through intentions. Specifically, we found that the impact of regulatory fit was evident for new products but not for existing ones. This is because of the lack of signals, such as consumer ratings and reviews, for new products that could assist them in their decision-making process. According to signaling theory, information asymmetry between online retailers and consumers renders consumers uncertain about quality, benefits, or performance of new products, causing the consumers to perceive the new product recommendations as risky and thus resist them (Ali et al., 2023). As a result, recommendation messages, which are a kind of marketing-controlled signal conveyed by online retailers to inform consumers of benefits of the new product recommendations, can attenuate the information asymmetry and influence consumer response (Kharouf et al., 2020). Previous studies have shown that the success of new products is contingent on the effectiveness of communication strategies (Jiang et al., 2024; Zhao et al., 2014). Therefore, in the current study, we posit regulatory fit strategy conveys a signal or cue for feeling right about the efficacy of the recommendation, which in turn impacts the consideration of the new products recommended by the online retailer in their decision-making process. We test the underlying mechanism and the boundary condition in this relationship in the following study.

## 8 | STUDY 4: TESTING THE MEDIATION AND MODERATION IN THE EFFECT OF REGULATORY FIT

Study 4 investigated the mediating role of perceived efficacy of recommendation between regulatory fit and click-through intentions of new product recommendations. We also examined the moderating role of consumer innovativeness in the regulatory fit and click-through intentions relationship.

### 8.1 | Method

This study followed the data collection approach from Study 2, albeit with two significant changes. First, we used a between-subjects experimental design, manipulating the product's regulatory focus (promotion vs. prevention) and the recommendation message's regulatory orientation (promotion vs. prevention), while measuring consumer innovativeness. Promotion-focused and prevention-focused products were represented by a "laptop" and a "child car seat," respectively. For promotion-oriented messages in the recommendation, "New releases—Launch your creativity" was used for the laptop, and "New releases—Have a comfortable travel" for the child car seat. Conversely, the prevention-oriented messages included "New releases—Helps escape from a meaningless life" for laptops and "New releases—Protect your child from accidents" for child car seats (see Supporting Information S1: Web Appendix E).

Second, in addition to the click-through intentions of new product recommendations ($r = 0.92$; Skewness = −0.85; Kurtosis = 0.08), the perceived efficacy of the recommendations was evaluated using three items ($\alpha = 0.95$; Skewness = −0.97; Kurtosis = 1.13) adapted from Chittaro and Sioni (2015) and Wu and Cutright (2018) and consumer innovativeness ($r = 0.85$) measured using three items adapted from Roehrich (2004). Furthermore, participants responded to manipulation check questions, demographic information (gender and age), and online shopping frequency (refer to Supporting Information S1: Web Appendix C).

Data were collected from 275 participants through Prolific Academic. However, after accounting for missing data and incorrect responses to two attention–check questions, we received 247 complete responses (45.7% female, $M_{age}$ = 32.49 years). The sample size meets the minimum required as computed through G*Power (Faul et al., 2007). The sample size meets the minimum required as computed through G*Power (Faul et al., 2007) and yields a sample power of 0.97, which signifies an adequate level of statistical power for the study.

## 8.2 | Results

### 8.2.1 | Manipulation checks

The manipulations were successful. For regulatory focus (one–sample $t$ test with scale mid-value = 4.0), participants evaluated laptop as promotion-focused ($M = 5.54$, SD = 1.67, $t(122) = 10.23$, $p < 0.01$) and the child car seat as prevention-focused ($M = 3.56$, SD = 2.40, $t(123) = -2.02$, $p < 0.05$) products. Participants assessed the messages "New releases—Have a comfortable travel" for the child car seat and "New releases—Launch your creativity" for the laptop as promotion-oriented messages ($M = 6.05$, SD = 1.08, $t(123) = 21.10$, $p < 0.01$). Conversely, they evaluated "New releases—Protect your child from accidents" for the child car seat and "New releases—Helps escape from a meaningless life" for the laptop as prevention-oriented messages ($M = 3.20$, SD = 2.43, $t(122) = -3.67$, $p < 0.01$).

### 8.2.2 | Testing $H_1$

$H_1$ was supported as regulatory fit ($M = 5.53$, SD = 1.05) resulted in higher click-through intentions for new product recommendations than regulatory nonfit ($M = 4.75$, SD = 1.59), $F(1, 242) = 19.79$, $p < 0.01$. Among the control variables, only age ($p < 0.1$) has a marginal impact on click-through intentions. Excluding control variables did not change the significance of the results.

### 8.2.3 | Testing $H_2$

The results of the PROCESS Model 4 using 5000 bootstrapped resamples in SPSS 29.0 revealed that perceived efficacy mediates the relationship between regulatory fit and click-through intentions for new product recommendations (indirect = 0.50, SE = 0.12, 95% confidence interval [CI] = 0.26–0.75). Figure 4 presents the mediation effect. Removing control variables did not change the significance of the results.

### 8.2.4 | Testing $H_3$

The results of the PROCESS Model 1 with 5000 bootstrapped resamples using SPSS 29.0 revealed a significant moderating effect of consumer innovativeness in the relationship between regulatory fit and click-through intentions for new product recommendations (interaction effect = −2.82, $p < 0.01$). Johnson–Neyman results revealed that regulatory fit led to a higher click-through intentions for new product recommendations when consumer innovativeness was lower than 5.43 (76.92% of participants below that value) (see Figure 5). These results provide support for $H_3$.

Post-hoc analysis with PROCESS Model 7 provided further support for the moderating effect of consumer innovativeness in the mediation effect of perceived efficacy in the relationship between regulatory fit and click-through intentions for new product recommendations (index of moderated mediation = −0.22, SE = 0.11, 95% CI = −0.44 to −0.01).

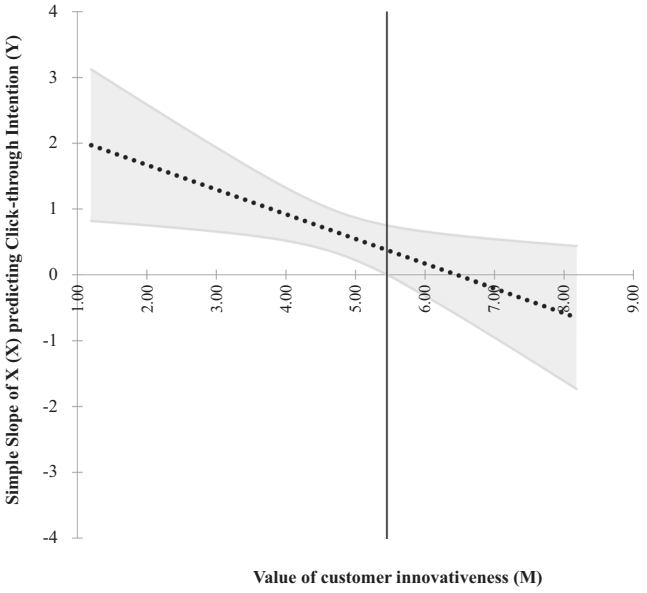


**FIGURE 5** Johnson–Newman analysis results for consumer innovativeness (Study 4).

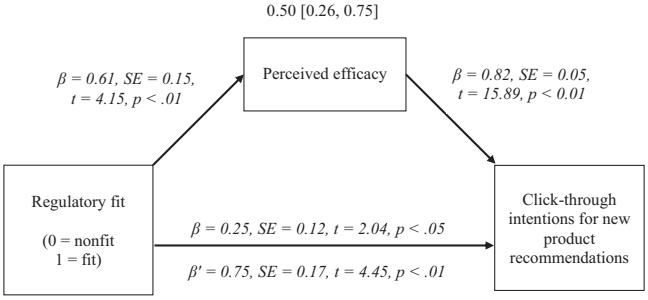


**FIGURE 4** Mediation effect of perceived efficacy (Study 4). $\beta'$ is effect of regulatory fit on click-through intention without perceived efficacy.

### 8.3 | Discussion

The findings of Study 4 support the mediating role of perceived efficacy in the regulatory fit and click-through intentions relationship. Furthermore, consumer innovativeness was found to moderate the effect of regulatory fit on click-through intentions for new product recommendations. More specifically, regulatory fit was found to positively impact click-through intentions for new product recommendations when consumers have a low level of consumer innovativeness. On the contrary, no difference in click-through intentions was observed between regulatory fit conditions for consumers with high level of innovativeness trait.

## 9 | GENERAL DISCUSSION

Product recommendation systems are critical in influencing consumers' online decisions regarding online retailing (Feng et al., 2024; Zhang, Balaji, et al., 2022; Zhang, Shi, et al., 2022). While new products offer online retailers the opportunity to differentiate and meet evolving consumer needs, they also carry inherent risks due to the lack of prior consumer experiences and reviews (Min & Schwarz, 2022; Wu et al., 2021). However, it remains unclear how recommendation strategies for new products influence consumers' decision-making when shopping online. The present study addresses this gap. We found that the regulatory fit, resulting from matching the product's regulatory focus and recommendation message's regulatory orientation, increases the click-through behavior (Study 1) and click-through intentions (Studies 2, 3, and 4) for new products. Furthermore, we found that regulatory fit impacts click-through intentions for new products but not for existing products (Study 3). We found that perceived efficacy explains the effect of regulatory fit on click-through intentions of new products recommended by online retailers (Study 4). Furthermore, we found that support for the moderating role of consumer innovativeness in the relationship between regulatory fit and click-through intentions (Study 4). Table 1 presents the summary of the study findings.

### 9.1 | Theoretical implications

Online recommendation systems have become a popular and effective marketing approach for online retailers. While online recommendation systems help consumers find suitable products, they also introduce them to new products and offerings they might not have initially considered but are indeed suitable for their needs. The present study contributes to the literature on online recommendation systems, new product adoption, and regulatory focus and fit.

First, the present research makes important contributions to understanding product recommendation systems. The majority of previous research on recommendation systems has focused on the effectiveness of various recommendation algorithms (Gai & Klesse, 2019; Liao & Sundar, 2022) in determining product choices

**TABLE 1** Summary of studies conducted to test the hypothesized relationships.

| Study | Design and sample | Predictor | Mediator | Moderator | Outcome | Inference |
|---|---|---|---|---|---|---|
| Study 1 | Laboratory experiment, China, Students, $n$ = 193 | Product's regulatory focus (promotion vs. prevention)/recommendation message's regulatory orientation (promotion vs. prevention) | | | Click-through behavior (number of new product recommendations participants click on) | Supports $H_1$ |
| Study 2 | Preregistered experiment, United States, Prolific, $n$ = 200 | Product's regulatory focus (promotion vs. prevention)/recommendation message's regulatory orientation (promotion vs. prevention) | | | Click-through intentions of new product recommendations | Supports $H_1$ |
| Study 3 | Scenario-based experiment, United States, Prolific, $n$ = 376 | Product's regulatory focus (promotion vs. prevention)/recommendation message's regulatory orientation (promotion vs. prevention) | | Product novelty (new vs. existing) | Click-through intentions | Support $H_1$ |
| Study 4 | Scenario-based experiment, United States, Prolific, $n$ = 247 | Product's regulatory focus (promotion vs. prevention)/recommendation message's regulatory orientation (promotion vs. prevention) | Perceived efficacy | Consumer innovativeness | Click-through intentions of new product recommendations | Supports $H_2$ and $H_3$ |

and sales (Lee & Hosanagar, 2019; Marchand & Marx, 2020), and influencing consumer decision-making (Häubl & Trifts, 2000; Maslowska et al., 2022). Little research has examined the conditions and mechanisms by which new product recommendations lead to their increased click-throughs. Our research seeks to fill this gap by investigating the role of regulatory fit strategy in increasing the consumer's perception of efficacy of new product recommendations, which in turn enhances their intentions to consider them in their decision-making.

Second, our work contributes to the literature on consumer adoption of new products, emphasizing factors influencing the adoption of new products recommended by online retailers. Previous research has examined the effects of consumer, product, and marketing factors on new product adoption (Frank et al., 2023; Lamey et al., 2018; Langley et al., 2012). The online context, with its myriad touchpoints and evolving dynamics, introduces additional complexities to the consumers' decision-making process, especially concerning new product adoption (Fakhoury & Aubert, 2017). We add to this stream of research on new product adoption by emphasizing the distinctive influence of online recommendation system in influencing these decisions. Specifically, we demonstrate that consumers' intention to consider new products in their decision-making depends on the match between the product's regulatory focus and the recommendation message's regulatory orientation, thus emphasizing the distinctive influence of online recommendation systems in influencing these decisions.

Third, our research extends regulatory fit concept into the context of new product recommendations, whereby we propose that online consumer choices are affected by recommendation characteristics such as the message and product type (Habitzreuter & Koenigstorfer, 2021; Liao & Sundar, 2022; Motyka et al., 2014). While prior research has revealed the role of regulatory fit in affecting consumer evaluations and behaviors, such as shopping experience and referral intention (Das et al., 2020), online purchase intentions (Fazeli et al., 2020), self-disclosure willingness (Choi & Zhou, 2023), the present study extends this by demonstrating that aligning the products' regulatory focus and recommendation message's regulatory orientation increases click-through intentions for new product recommendations. Furthermore, our findings indicate that certain product categories and message framings might unconsciously trigger specific regulatory goals. This aligns with prior research showing that a temporary state of regulatory fit can emerge from specific product and message strategies (Karpinska-Krakowiak et al., 2023; Kordrostami et al., 2021). Furthermore, our study contributes to the literature on understanding the underlying mechanism by which recommendation systems influence consumer decision-making (Zhang, Balaji, et al., 2022; Zhang, Shi, et al., 2022).

Finally, the findings regarding the moderating role of consumer innovativeness extends the works of Hwang et al. (2021) and Hetet et al. (2020), which acknowledge the significance of consumer innovativeness in new product acceptance. By demonstrating the greater impact of regulatory fit for less innovative consumers, our study offers an in-depth understanding of how consumer traits influence the effectiveness of new product recommendation strategies in online retailing context.

## 9.2 | Managerial implications

This study offers critical insights for online retailers in developing new product recommendation strategies. Our research suggests that recommendation messages can be utilized as a strategic tool for optimizing the effectiveness of new product recommendations. This can be achieved by framing the new product recommendations with a recommendation message that fits with the recommendations' regulatory focus. For example, when a consumer searches for a promotion-focused product like laptop, online retailers could present new laptop brands recommendations with a promotion-oriented recommendation message such as "New releases—Launch your Creativity." The resulting regulatory fit can evoke a feeling in the consumers that the recommended new products meet their requirements, thus enhancing their intention to consider the new products in their decision-making process, which in turn, can potentially mitigate the chances of new product failure.

The study findings suggest that online retailers need to be strategic in using the regulatory fit strategy to influence consumer choices. While regulatory fit can enhance click-through intentions for new product recommendations, this effect may not extend to existing products. For such products, consumers often rely on established signals or cues such as user reviews, ratings, and detailed product descriptions. Recognizing this difference in the impact of regulatory fit strategy between new versus existing products allows retailers to align their recommendation strategies more effectively to their target segments. This approach enhances the effectiveness of product recommendations and overall customer engagement in the online retailer by recommending more personalized and relevant products.

The study findings suggest that online retailers need to strategical in using the regulatory fit strategy to influence consumer choices. While regulatory fit can enhance click-through intentions for new product recommendations, this effect may not extend to existing products. For such products, consumers often rely on established signals or cues such as user reviews, ratings, and detailed product descriptions. Therefore, online retailers should exercise caution when using regulatory fit recommendation strategy for different type of products.

Our findings indicated that consumer innovativeness significantly influences the effectiveness of regulatory fit on click-through intentions for new product recommendations. Therefore, online retailers should tailor their recommendation strategies to accommodate the diverse personality traits of their consumers, particularly focusing on the level of innovativeness. This approach is crucial, as regulatory fit strategies have shown to be more effective for consumers with lower levels of innovativeness. To implement this effectively, retailers must employ advanced analytics to analyze consumers' past purchase behaviors, product search patterns,

shopping cart behaviors, and product reviews. Such a data-driven approach will enable the creation of detailed customer profiles, categorizing them based on their inclination or willingness toward new or novel products and solutions. Subsequently, this segmentation allows for the precise targeting of customers, facilitating the use of regulatory fit strategies to increase the adoption of new products. Furthermore, this approach will allow online retailers to significantly enhance the impact of their product recommendation systems.

## 9.3 | Limitations and future research directions

The current research has certain limitations that suggest future research avenues. First, although the present study focused on new product recommendations on focal product pages due to their ability to immediately capture customer attention, scholars should examine the effectiveness of new product recommendations on designated web pages. Indeed, extant research has shown that these might have different impacts on consumer online shopping decisions. For instance, researchers have found that product recommendations on a shopping cart check-out page can lead to more purchase behaviors (Lu et al., 2023). Moreover, the current research investigates only certain product categories and future investigations should explore additional product categories (e.g., clothing, sport equipment) to enhance the validity of our study findings. Future investigations should also explore cross-cultural differences in the effect of regulatory fit on click-through intentions of new product recommendations. Previous research has observed that the effect of regulatory fit on evaluation and purchase intention to be different between the western developed and emerging Asian markets (Ashraf et al., 2016).

Second, while previous research has examined the effectiveness of item–based or user–based recommendation messages (Zhang, Balaji, et al., 2022; Zhang, Shi, et al., 2022), this study focuses on benefit–based recommendation messages in new product recommendation. This is because benefit–based recommendation which emphasizes the direct advantages or solutions a product offers, might resonate more strongly with the potential consumers (Karpinska-Krakowiak et al., 2023). Although our recommendation message strategies highlighting product benefits work for new product recommendations, past literature has documented alternative frames for achieving regulatory fit. For example, Lee and Aaker (2004) examined how people's regulatory focus aligns with message frame (gain vs. loss), thus resulting in more favorable brand attitudes. Future research should examine the effectiveness of other recommendation framing strategies (e.g., item-based) in promoting new product recommendations.

Third, this study focused on the substitute to the focal products as new product recommendations. As consumer evaluation of recommended products differ on whether they complement or substitute the focal product (Huang et al., 2022), future research could address this question. Furthermore, future research could investigate the impact of diversity versus similarity in new product recommendations on regulatory fit. Since new products are expected to provide additional value than existing ones (Sorescu & Spanjol, 2008), highlighting such attributes could influence click-through of new product recommendations. Future studies should also delve into how new products and their attributes highlighted in the recommendation influence their consumer evaluation.

Fourth, the present study shows that recommendation characteristics, such as products' regulatory focus and recommendation message's regulatory orientation, are key variables affecting consumer evaluations and behavioral intentions of new product recommendations. However, it remains unclear whether and how other recommendation characteristics affect evaluation of new product recommendations. Furthermore, online retailers recommend a mix of existing and new products, and the size of a recommendation list could be large or small (Zhang, Balaji, et al., 2022; Zhang, Shi, et al., 2022). While we controlled for these recommendation characteristics in the present study, future research could investigate how the recommendation size and mix could influence consumer decision-making toward new product recommendations.

Finally, while our study examined the boundary role of consumer innovativeness, future research could examine other potential moderators, such as consumers' prior experience, trust in online recommendation, cognitive style, or journey stage, to understand their influence on the regulatory fit and evaluation of new product recommendations. For example, prior research has demonstrated that consumers' prior experience enables them to approach new product use with confidence and disregard company-provided product information (Schreier et al., 2012). Cognitive styles can influence how people perceive and adopt innovations (Heidenreich et al., 2022). As such, future research should examine the interaction between regulatory fit and consumer characteristics (e.g., prior experience, cognitive style) in their evaluation of new product recommendations.

## DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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