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Effect of product recommendation type and focal goal importance on consumer purchase intention

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Purpose: The product recommendation type is attracting attention from both the retail and academic communities. However, there is no consensus on the effectiveness of set recommendation versus separate recommendation. This research investigates the interaction effect of product recommendation type and consumer's focal goal importance on initial product purchase intention and cross-buying intention.

Design/methodology/approach: Four studies were used to examine the hypotheses, including three experimental studies with general participants and a field study with student participants.

Findings/results: An empirical analysis confirms an interaction relationship between product recommendation style and focal goal importance on enhancing purchase. When focal goal importance is high, set recommendation has a more positive effect on purchase intention. When focal goal importance is low, the separate recommendation has a more positive effect on purchase intention.

Practical implications: Research findings provide guidance for sellers on which product recommendation type to use with different customers. Sellers should be flexible in determining different product recommendation types through different consumers' focal goals.

Originality/value: Findings reveal the congruency effect between product recommendation type and consumer's focal goal importance, which indicates an interaction effect on initial product purchase intention and cross-buying intention. In addition, this research expands the application of regulatory focus theory and analyses the underlying mechanism by exploring the role of perceived incompleteness and cognitive load.

Keywords: set recommendation; separate recommendation; focal goal; purchase intention; perceived incompleteness; cognitive load.

Introduction

Product recommendations are a cornerstone of online retail strategies, serving as a means to enhance consumer shopping experiences and differentiate from competitors in a crowded market (Hallikainen et al., 2022). The efficacy of these systems lies in their ability to target consumers with personalised product suggestions, thereby increasing sales and consumer engagement (Kawaguchi et al., 2019). Despite the perception that recommendation systems may lack the expertise of human specialists, empirical evidence has demonstrated their significant influence on consumer purchasing decisions, often surpassing that of peers (Senecal & Nantel, 2004).

Recent studies have delved into the nuances of recommendation systems, examining how different types of recommendations can enhance the accuracy and appeal of these algorithms. Marchand and Marx (2020) highlighted the importance of aligning recommendation types with the psychological needs of consumers, suggesting that understanding the 'black box' of recommendation mechanisms is crucial for optimising their application. This aligns with the findings of Barasz et al. (2017), who noted that consumers are motivated by a sense of completeness when presented with set-based recommendations. Zhao and Xia (2021) furthered this by demonstrating that joint visual presentations can improve product evaluations, while D'Angelo and Valsesia (2023) showed that combination recommendations signal higher expertise, thus positively influencing consumer perceptions.

However, the literature also acknowledges the potential downsides of expanding choice sets. Iyengar and Lepper (2000) and Scheibehenne et al. (2010) have shown that an overabundance of

options can lead to consumer confusion, decreased motivation and dissatisfaction with choices. Karmarkar (2017) adds that mismatches between displayed and target items can diminish purchase intent, indicating that the form of recommendation is pivotal in heterogeneous consumer contexts.

Retailers, in turn, face the challenge of navigating these complexities to provide clear and effective recommendation strategies tailored to individual consumer needs (Bauer et al., 2022). Van and Janiszewski (2012) proposed a model of target-based product evaluation that underscores the role of immediate target activation in direct product selection. Böttger et al. (2017) found that marketing strategies can induce purchase goals, increasing consumer interest when products are presented in novel combinations.

Despite these insights, a significant gap remains in the literature regarding the interplay between individual consumer goals and the manner in which products are recommended. Chinchanachokchai et al. (2021) have pointed out the importance of understanding consumer focal goals and how they shape the effectiveness of product recommendations. This research aims to bridge this gap by examining the congruency effect between different recommendation types and the importance of consumer focal goals on purchase intention.

This research makes the following contributions. Firstly, unlike product recommendations based on artificial intelligence (AI) algorithms (Ampadu et al., 2022; Chinchanachokchai et al., 2021; Schreiner et al., 2019; Srivastava et al., 2020), this research explores the effect of different types of recommendations, separate recommendations or set recommendations, on customers' purchase intention. More importantly, this research examines the interactive impact between different recommendation sets and focal goals from the perspective of customer's focal goal importance. Secondly, this research explains the underlying mechanism of the interaction effect of different recommendation set and focal goal importance on customer's purchase intention by exploring the mediating role of perceived incompleteness and cognitive load. Much of the literature has examined the negative effects of incompleteness (Abramowitz et al., 2010; Gollwitzer, 1987; Summerfeldt, 2004). This research however, explores the positive effects of perceived incompleteness on cross-buying intentions through the lens of marketing, enriching the application of perceived incompleteness in marketing. Thirdly, this research also provides a further breakdown of the impact that product recommendation type has on the dependent variable by dividing it into planned and unplanned purchases in terms of purchasing behaviour. Most researches have examined this issue through the positive impact of one-time goal completion after constructing tasks or products into set (Barasz et al., 2017; Bauer et al., 2022; Converse et al., 2023; Ruan et al., 2023). This research subdivides purchase behaviour into initial product purchase intention and cross-buying intention from the perspective of the process of goal completion, which broadens the theoretical research literature related to goal completion.

Based on the summary of the existing literature, this research focusses on the logical relations among the variables and then puts forward the research hypothesis of this article, then, four experiments are carried out to test the hypothesis. Finally, according to the experimental results and related research conclusions, the contribution of these conclusions to theory and practice is expounded.

Literature review and hypotheses development

Product recommendation type and consumer purchasing intention

Product recommendation is a common form of personalisation used in various marketing communication channels. Chinchanachokchai et al. (2021) define recommendation marketing as the process by which firms provide product or service recommendations to current and prospective customers based on their personal interests or purchase history. Personalised product recommendations enable retailers to make more targeted product recommendations to consumers, reducing the associated product screening and product evaluation costs (Zhang et al., 2011). In the field of marketing, several scholars have investigated the categorisation of recommendation types. For example, Ansari et al. (2000) argued that mainstream historical preference-based recommendation types can be classified into collaborative and content filtering. Gai and Klesse (2019) classified recommendation types into item-based and user-based recommendations. Kim and Rao (2023) divide online recommendation methods into simultaneous recommendation and sequential recommendation. Lewin (1935) points out that setting goals creates tension that can only be eliminated by goal achievement. By recommending a collection of different products, a completion impulse can be created in the consumer. The completion impulse is triggered by an incomplete set of products, which triggers the desire to accomplish a goal and arguably removes the discomfort of failure (Bauer et al., 2022). Therefore, in this article, we categorise the forms of product recommendation into two categories based on different categories of products: separate recommendation and set recommendation.

Separate recommendation is the recommendation of separate products to consumers (Zhao & Xia, 2021). In separate evaluation, each option is presented and evaluated separately (Bazerman et al., 1999). If the focal options are already attractive in separate evaluation, then subjecting these options to joint evaluation will hurt their attractiveness (Hsee & Leclerc, 1998). Mogilner et al. (2013) found that consumers were more satisfied with what they chose when different product options were presented at the same time than when the options were presented separately in sequence. In separate recommendations, firms do not intentionally assign a specific link between separate products (Zhao & Xia et al., 2021). For example, in a study conducted by Zhao and Xia et al. (2021) burgers and fries are presented separately and individually (even though there may also be

some complementary relationship between the products themselves), and it was found that compared with joint presentation, individual presentation leads to lower product evaluation.

Set recommendation is a combination of products from different categories that are recommended to consumers via some connection (see Appendix 1 for details). This has become one of the most common tools for retaining customers and stimulating product usage. When induced by marketing stimuli, people are motivated to pursue consumption-related goals (Cheema & Bagchi, 2011), and set recommendations are the products category derived under the goals. For example, running gear includes items such as running shoes, quick-drying apparel and fanny packs, and the items in the set are closely related to the needs of runners. Multiple goods within the set may also be linked by some goal (Spaid, 2018). Consumers are therefore motivated to purchase products they might not otherwise have considered (Bauer et al., 2022). In the study done by Carey (2008), results indicated that sets can motivate collecting behaviour by increasing the social value of an item to the collector. Evers et al. (2014) found that the collection-matching effect increased consumer diversity seeking. Barasz et al. (2017) demonstrated that even when no explicit goals were provided, the arbitrary combinations of items or tasks as part of an apparent 'set' (pseudo-set), either through visual representations or written descriptions, motivate people to reach a perceived point of completion. Zhao and Xia (2021) found that presenting products together was more likely to provide consumers with solutions to problems than presenting separate products and describing their attributes. Bauer et al. (2022) further demonstrated that marketers can increase the likelihood of cross-selling products by using them as part of a set, set of products or other goals to be accomplished.

Building on the literature, numerous studies examine the positive effect of collecting the complete set (Barasz et al., 2017; Bauer et al., 2022). As recommended products may not be the products that consumers initially need to purchase, dividing the dependent variable into initial product purchase intention and cross-buying intention should not be overlooked, hence included in this study. On the one hand, before purchasing all the products in the collection, consumers begin with an established interest in one or more products (otherwise they would not have paid attention to the collection), we call this sentiment or the initial intention to purchase (Zhu & Chang, 2015). On the other hand, when consumers buy an initial product, they begin to think that they need the other products as well. To finalise this situation, they tend to buy complementary products, a desire for instinctive directness called the Diderot effect (Çakaröz et al., 2022). Cross-buying refers to the behaviour of customers who purchase other products and services in addition to those of their existing service providers (Ngobo, 2004). Cross-buying customers may become more loyal and purchase multiple items across product categories (Min et al., 2016); cross-buying is therefore beneficial to merchants and the key to successful cross-selling in inducing subsequent purchases by consumers (Kim & Tanford, 2021). Because of the efforts of marketers, when products that consumers initially want to buy are assembled into a collection with other products and recommended to consumers, those products that would not have been considered receive the attention of consumers, which creates the intention to cross-buy other products. Thus, we propose hypothesis 1:

H1: Recommending products from different categories as a set (vs. separate recommendation) increases consumers' initial product purchase intention and cross-buying intention.

Focal goal and consumer purchasing intention

Goals significantly impact decision-making and guide consumer choice and behaviour (Bagozzi & Dholakia, 1999). In the hierarchy of goals, there are three types of goals: superordinate goals, focal goals and secondary goals (Vatllacher & Weger, 1985). They are arranged in order from the top down in the structure. Superordinate goals answer the question: why do I want to achieve the goal I am pursuing? Focal goals are located in the middle of the goal hierarchy and answer the question: what is the goal I am pursuing? Secondary goals are located at the bottom of the structure and answer the question: how can I achieve the goal I am pursuing? An individual's behaviour is thought to be controlled by a goal at the middle level of the goal hierarchy (the focal goal), with the initial motivation for engaging in the focal goal coming from the superior goal it serves (e.g. to make one's appearance look better), and the goals at the lower levels of the structure providing the means to operate to achieve the focal goal (e.g. exercising, dieting) (Bagozzi & Dholakia, 1999; Vatllacher & Weger, 1985). We can imagine the higher-level (high-level) goals as ends or standards, the lower-level goals as operational levels and the focal goal at the centre of the goal structure, with the focal goal being rationalised through the higher- and lower-level goals, which are shown to be interconnected through inferential relationships (Bagozzi & Dholakia, 1999). Therefore, individuals make decisions with many goals, but one goal dominates the framing process and that goal is the focal goal (Friedman et al., 2018).

In the current research on the focal goal in marketing, the goal of products serving consumers is referred to as the focal goal, and the consumer's decision to purchase a particular product depends on the importance given to the 'goal that the product serves' (Friedman et al., 2018; Lee & Chu, 2022). Consumption is about achieving a goal and consuming a product to fulfil a need; such as a consumer's decision to 'buy shirts and overalls' (a sub-goal) is derived from the 'goal of dressing for work' (a focal goal) (Friedman et al., 2018). Therefore, the purchase behaviour (sub-goal) is derived from the focal goal and the purchased product serves the focal goal within the consumer. Focal goal is, therefore, a combination of motivation and activated cognitive structures. Thus, a person's motivation and actions are influenced by the 'focal goal', which changes as cognition evolves (Dong et al., 2023). Hence, we propose hypothesis 2:

H2: When consumers place a high (vs. low) value on the goal that the good serves for them (focal goal), it will have a positive effect on purchase intention.

Interaction of product recommendation type with focal goal importance

According to regulatory focus theory (Higgins, 1997), people have two distinct motivational management systems that govern how they pursue goals: promotion focus and prevention focus. These two self-regulatory systems can be either chronic tendencies or situationally induced in individuals (Aaker & Lee, 2001; Higgins et al., 2001). Individuals who are promotion focussed are sensitive to the presence or absence of positive outcomes (e.g. gained and unearned), are motivated by proximity and are oriented toward the pursuit of achievement and growth consistent with a desired state (Camacho et al., 2003). Prevention focussed individuals are more sensitive to the presence or absence of negative outcomes (losses and non-losses), are typically avoidance motivated and have a security or vigilance orientation consistent with their ought state (Higgins, 1997). Therefore, according to regulatory focus theory, when focal goal importance is high, individuals will exhibit a promotion focus and thus come close to collecting all the products in the set, meaning that a set recommendation is beneficial to the initial product purchase intention and cross-buying intention. However, when focal goal importance is low, individuals will exhibit a preventive focus and avoid the financial loss or loss of energy that set purchasing brings to them. In that case, the set recommendation inhibits initial product purchase intention and cross-buying intention.

Construal level theory (Trope & Liberman, 2003) indicates that the level of abstraction at which people make mental representations of cognitive objects is classified as high or low level of construal. When adopting a high level of construal, people use abstract, essential and general features to represent events, whereas, when initiating a low level of construal, they adopt concrete, surface and local features to represent events (Labroo & Patrick, 2009). In this research, set recommendation is a joint presentation of different products, which is a detailed and concrete description of the thing, a low level of construal, and separate recommendation is a separate and independent presentation of different products, which is an abstract overview of the thing, a high level of explanation. Therefore, this article argues that when focal goal importance is high, it drives consumers to have enough patience to understand the related products within the set, and a low level of construal will occur, and the recommendation for the products should be a set recommendation. When focal goal importance is low, the recommendation for the different products will take the form of abstract representation, and a high level of construal will occur. In that case, separate recommendation is better.

Based on the above analyses, this research concludes that there is an interaction effect of focal goal importance and the product recommendation type on consumer's initial product purchase intention and cross-buying intention. Thus, we propose hypothesis 3:

H3a: When focal goal importance is high, a set recommendation will increase consumers' initial product purchase intention and cross-buying intention more than separate recommendations.

H3b: When focal goal importance is low, a set recommendation decreases consumers' initial product purchase intention and cross-buying intention.

The mediating role of cognitive load and perceived incompleteness

Human memory capacity and perceived information level are very limited, and if an individual receives an amount of information that exceeds their information capacity in a certain period, this sudden influx of information will produce a certain 'load' on their cognitive system, termed the cognitive load (Sweller, 1988). The level of cognitive load refers to the level of mental energy required to process information (Sweller, 1988). When competition for cognitive resources is high, individuals experience high volume of interference, and this distraction interferes with problem-related thinking (Jeong & Hwang, 2015). Pantoja et al. (2016) found that cognitive load affects consumers' attitude towards brands. It reduces psychological resources and weakens spontaneous mental simulation (Cian et al., 2020). Therefore, this research argues that when focal goal importance is low, the various types of product information appearing in the set recommendation will cause consumers to experience information overload selection difficulties, increasing their cognitive load and reducing their purchase intention for the initial product. Therefore, we propose hypothesis 4a:

H4a: Cognitive load mediates the interaction effect of product recommendation type and focal goal importance on consumer's initial product purchase intention.

Incompleteness is an unsettling and irremediable feeling that one's behaviour or experience is not 'just right' and underlies many of the symptoms of obsessive-compulsive disorder (OCD) (Summerfeldt, 2004). According to self-completion theory, it occurs when people realise that they are falling short of what is required and is an aversive self-evaluative state (Gollwitzer, 1987). The 'incompleteness effect' draws from psychological studies on the human inclination to seek completion, applying this concept to consumer behavior. Zeigarnik (1927) posits that tasks left unfinished are more likely to be recalled than those that have been completed. An important sub-dimension of consumer purchase planning is completeness, which refers to the degree of specificity of each part of the course of action, and may result in more complete plans for consumer tasks that are of high importance or difficult to achieve (Bagozzi & Dholakia, 1999). Abramowitz et al. (2010) suggest that perceived incompleteness, which focusses on symmetry, completeness and the need for things to be 'just right', is associated with OCD. Cheema and Bagchi (2011) further increased perceived incompleteness by presenting a visualisation of a collection, increasing people's drive to complete and leading to a greater likelihood of collection completion. People often have an innate need for

visual completeness, and once people think in terms of collections, they are motivated to reach a satisfactory and complete endpoint (Barasz et al., 2017). Complete perceptions are processed more easily and quickly than incomplete judgements, especially when facing more complex multi-attribute products in more challenging decision-making environments (Harahap et al., 2018). The intrinsic need for visual completeness drives people to spontaneously perceive complete images from incomplete displays (Gerbino, 2020). As a result, consumers are increasingly interested in unused product categories, and the proportion of customers purchasing the full range of products is many times higher than in traditional marketing settings (Bauer et al., 2022). Ladeira et al. (2023) propose a display incompleteness effect model to analyse the impact of product information processing. Therefore, this research argues that when focal goal importance is high, consumers perceive extreme incompleteness within themselves if they do not purchase the full range of items within the set, and that this perception of incompleteness increases as focal goal importance increases, which in turn affects cross-buying intention. Therefore, hypothesis 4b is proposed:

H4b: Perceived incompleteness mediates the interaction effect of product recommendation type and focal goal importance on consumers' cross-buying intention.

The theoretical framework and the research guideline of this research is presented in Figure 1.

Study 1

Study 1 builds on previous research (Barasz et al., 2017; Bauer et al., 2022) and explores the effect of set recommendations (vs. separate recommendation) on consumers' initial product purchase intention and cross-buying intention, with the aim of validating H1. This article hypothesises that people will have higher initial product purchase intention and cross-buying intention when products in different categories are set recommended (vs. separate recommended). We manipulated the form of product recommendation as detailed in Appendix 2.

Pretest

The stimuli selected for this study were protein powder and multivitamin, and the description and selection of the materials simulated real shopping scenarios for consumers as much as possible. There was a significant difference between the extent to which 60 participants perceived the two products to be a set (Cronbach's α = 0.827) under set and separate recommendations (M_{set} = 5.48, $M_{separate}$ = 4.60, p = 0.001). The composition and selection of the measurement statements were adjusted drawing on previous studies (Barasz et al., 2017; Bauer et al., 2022; Spaid, 2018).

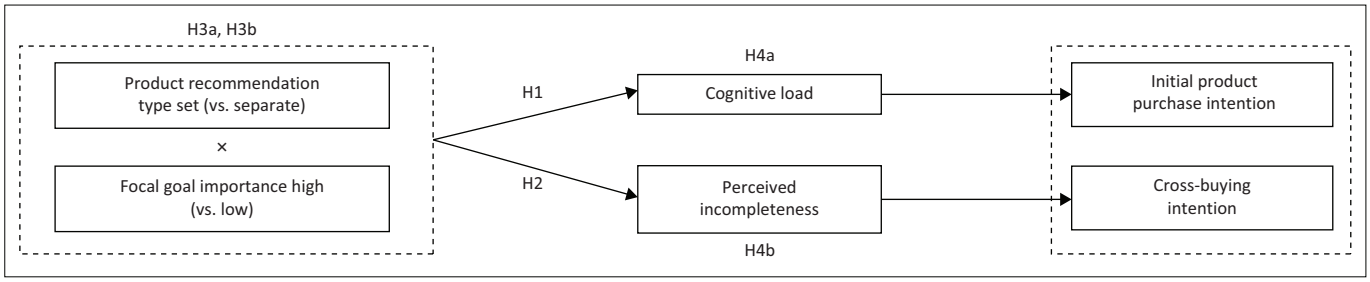
Method

A total of 80 participants (52.5% female, M_{age} = 37.2) were invited from Credamo (a local data collection platform) to participate in this study. Participants were randomly assigned to a one-factor (product recommendation type: set recommendation vs. separate recommendation) between-group design. The study began by informing the participants that protein powder can replenish the protein needed by humans and improve the body's immunity. Then they were to imagine that they are searching for product information about protein powder on a shopping platform, and after selecting a bottle of protein powder of interest, they click on it. The set recommendation group and the separate recommendation group were each given a different type of recommendation. The groups were then asked to fill out a purchase intention scale for protein powders and a cross-buying intention scale for multivitamins. In this case, items for the purchase intention scale (Cronbach's α = 0.897) were taken from Dodds et al. (1991) and Whitley et al. (2018), and items for the cross-buying intention scale (Cronbach's α = 0.903) were taken from Ngobo (2004) and modified with real shopping situations. All scale measurement items can be found in Appendix 3.

Results of study 1

An independent sample *T*-test was conducted on the extent to which participants perceived the protein powder and multivitamin to be a set (Cronbach's α = 0.866). Results showed that there was a significant difference in the extent to which the two products were perceived to be a set across the different recommendation modes (M_{set} = 5.56, $M_{separate}$ = 4.53, $p < 0.001$), which indicates the manipulation of the set was successful.

Analysis of variance (ANOVA) analysis showed that consumers had similar purchasing intentions towards the initial product in both the set and separate recommendations



H, hypothesis.

FIGURE 1: Conceptual framework. The theoretical model of product recommendation type and focal goal importance on consumer purchase.

(M_{set} = 5.64, $M_{separate}$ = 5.30, F (1,78) = 1.76, p > 0.05), while they had a higher purchasing intention toward the recommended products in the set recommendation (M_{set} = 5.80, $M_{separate}$ = 4.99, F(1,78) = 12.48, p < 0.05). Therefore, H1 is partially supported.

Study 2

The purpose of Study 2 was to explore the positive effect of high (vs. low) focal goal (health) importance on the purchase intention and cross-buying intention toward the relevant health product.

Pretest

In this study, a focal goal manipulation was designed (see Appendix 4 for details). 'Health' was selected as the focal goal, and 80 participants completed a four-item measure (Cronbach's α = 0.795) of the importance of the 'health' goal after observing the picture for 10 s on a scale taken from Fitzsimons and Fishbach's (2010) measure of the importance of health. Analysis results showed that there was a significant difference in participants' perceived importance of health between the manipulation conditions (M_{high} = 6.07, M_{low} = 5.50, p < 0.01). Thus, the manipulation of focal goal importance was successful.

Method

A total of 80 participants (50.1% female, M_{age} = 36.8) were invited to participate in this study from Credamo and were randomly assigned to a one-factor (high vs. low focal goal importance) between-groups design. We began the study by asking participants to view the manipulation material for at least 10 s. Immediately after that, the participants were informed that protein powder can replenish the protein needed by humans and improve the body's immunity. Then the participants were to imagine that they were searching for product information about protein powder on a shopping platform. After selecting a bottle of protein powder of interest, we asked the participants to fill out a purchase intention scale for protein powder (Cronbach's α = 0.836) and a health importance scale (Cronbach's α = 0.811). As all of the above presentations about product information were textual descriptions and no pictures were shown, there were no set or separate recommendation involved. Instead, there was only a one-factor manipulation of the high (vs. low) importance of the focal goal.

Results of study 2

A manipulation test was conducted on the importance of participants' perceived health. *T*-test results showed that there was a significant difference in the perceived importance of the two products by the participants under the different manipulation conditions (M_{high} = 6.38, M_{low} = 5.88, p < 0.01). Results of ANOVA analysis showed that high (vs. low) focal goal importance significantly increased purchase intention for protein powder (M_{high} = 6.12, M_{low} = 5.38, F (1,78) = 11.01, p < 0.01). Therefore, H2 is supported.

Study 3

The purpose of Study 3 was to explore the interaction effect between product recommendation type and focal goal importance on consumers' initial product purchase intention and cross-buying intention and to verify the mediating mechanism of cognitive load on initial product purchase intention and the mediating mechanism of perceived incompleteness on cross-buying intention.

Method

A total of 240 participants (53.3% female, M_{age} = 35.6) were invited from Credamo to participate in this experiment, in which the materials from Study 1 were used for the manipulation of set and separate recommendations (see Appendix 2 for details), and the manipulation from Study 2 was selected for focal goal importance (see Appendix 4 for details). Next, participants were asked to fill out the initial product purchase intention scale for protein powders (Cronbach's α = 0.831), the cross-buying intention scale for multivitamin (Cronbach's α = 0.943), the perceived incompleteness (Cronbach's α = 0.931) and cognitive load scale (Cronbach's α = 0.798) and the importance of health scale (Cronbach's α = 0.799). The four-item scale of perceived incompleteness was adapted form Summerfeldt (2004) and Bauer et al. (2022). The three-item scale of cognitive load drew on Paas et al. (1994), Shen et al. (2016) and Jiang et al. (2016).

Results of study 3

T-test analysis showed that participants in high focal goal importance groups (vs. low) perceived the importance of health more significantly (M_{high} = 6.26, M_{low} = 5.89, p < 0.001). A manipulative test was conducted to identify the extent to which the participants perceived the recommendation product as a set. The results showed that there was a significant difference in the extent to which the participants perceived the two products as a set across the different recommendation types (M_{set} = 5.52, $M_{separate}$ = 4.68, p < 0.001). Thus, the manipulation of focal goal importance and set was successful.

A two-way ANOVA was used to test H3. Results (Figure 2) showed that the interaction term between product recommendation type and focal goal importance was significant (initial product: F(1, 236) = 41.10, p < 0.05; cross-buying product: F(1, 236) = 54.36, p < 0.001), which suggests that the product recommendation type and focal goal importance had a significant interaction effect on consumer's initial and cross-buying purchase intention. Further, a simple effect test was conducted on the willingness to purchase protein powder by the product recommendation type and focal goal importance at each level. When focal goal importance is high, a set recommendation is more likely to increase consumers' initial product and cross-buying purchase intention than separate recommendations (initial product: M_{set} = 6.33, $M_{separate}$ = 5.74, p < 0.001; cross-buying product: M_{set} = 6.33, $M_{separate}$ = 5.35, p < 0.001), Therefore, H3a is supported. When focal goal importance is low, a set recommendation (vs. separate recommendations) reduces

the consumer's initial and cross-buying purchase intentions (initial product: M_{set} = 5.01, $M_{separate}$ = 5.38, $p < 0.05$; cross-buying product: M_{set} = 4.21, $M_{separate}$ = 4.61, $p < 0.05$), Therefore, H3b is supported.

The PROCESS macro, model 8 was used to test the mediation effect. Results (Table 1) show that there was a significant effect of the interaction of product recommendation type and focal goal importance on initial product purchase intention (β = −0.75, t = −7.22, $p < 0.001$). There was a significant effect of cognitive load on initial product purchase intention (β = −0.82, t = −24.91, $p < 0.001$). There was a significant (β = 1.70, lower limit confidence interval [LLCI] = 1.04, upper limit confidence interval [ULCI] = 2.49) moderated mediation effect of cognitive load. The mediating effect of cognitive load was significant when focal goal importance was high, with a 95% confidence interval (CI) (of 0.26, 0.64), not including 0, and an effect size of 0.43. When focal goal importance was low, the mediating effect of cognitive load was significant, with a 95% CI (−of 1.88, −0.74), not including 0, and an effect size of −1.28. Thus, H4a was supported. Moreover, the results also show that there was a significant effect of the interaction of product recommendation type and focal goal importance on cross-buying intention (β = 1.01, t = 19.01, $p < 0.001$). There was a significant effect of perceived incompleteness on cross-buying intention (β = 0.93, t = 52.43, $p < 0.001$). Perceived incompleteness had a significant (β = 0.37, LLCI = 0.02, ULCI = 0.71) moderated mediation effect. The mediating effect of perceived incompleteness was significant when focal goal importance was high, with a 95% CI (of 0.58, 0.89), not including 0, and an effect size of 0.73. When the importance of the focal goal was low, the mediating effect of perceived incompleteness was significant, with a 95% CI (of 0.05, 0.69), not including 0, and an effect size of 0.36. Thus, H4b was supported.

Study 4

The purpose of Study 4 was also to explore the interaction effect of product recommendation type and focal goal importance on consumers' initial product purchase intention and cross-buying intention, as well as their underlying mechanisms. Different from Study 3, Study 4 tests the hypotheses using a field study and a different consumer category, which enables the testing of the generalisability of Study 3 results to a new sector.

Pretest

The stimuli selected for this study were burgers and fries (see Appendix 5 for details). There was a significant difference between the extent to which 60 participants perceived the two products to be a set (Cronbach's α = 0.762) and separate recommendations (M_{set} = 6.18, $M_{separate}$ = 5.68, $p < 0.01$). Furthermore, we identified 'having lunch' as the focal goal for participants. We manipulate the importance of 'having lunch' by the hunger levels of participants, using the

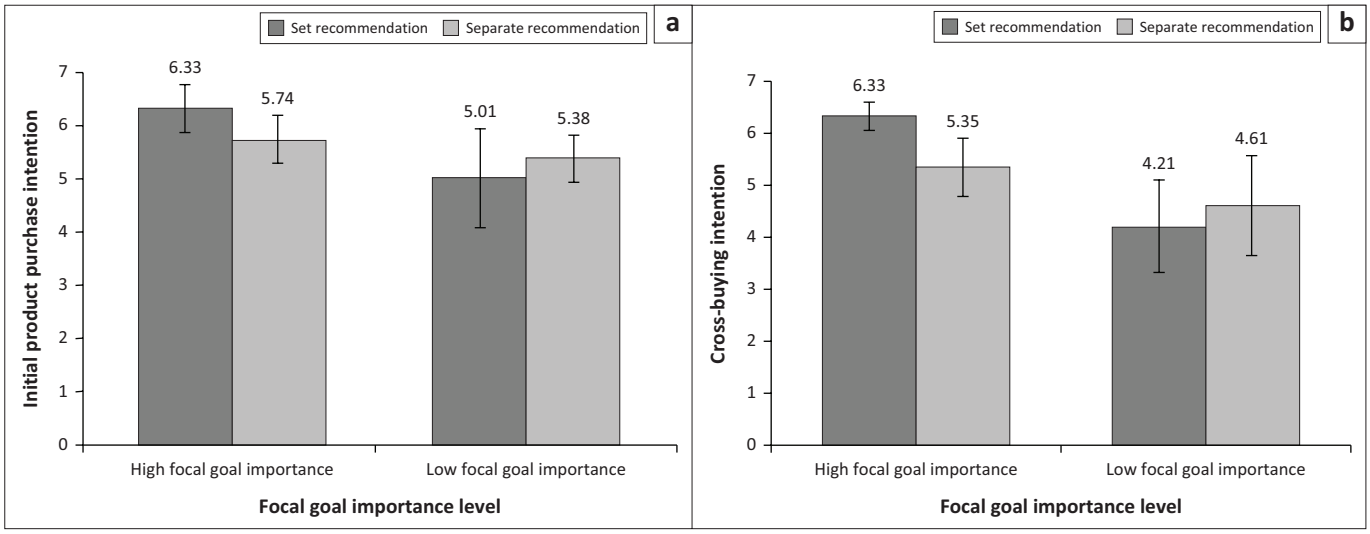


FIGURE 2: The interaction effect of recommendation type and focal goal importance on consumer's purchase intention.

TABLE 1: Mediating effect of cognitive load and perceived incompleteness on consumers' purchase intention.

Dependent variable	Effect type	Focal goal importance	Effect	SE	*t*	*p*	95% Confidence interval	
							LLCI	ULCI
Initial product purchase intention	Direct effect	High	0.162	0.058	2.80	0.006	0.0479	0.2764
		Low	0.914	0.076	12.09	0	0.7647	1.0625
	Indirect effect	High	0.427	0.099	-	-	0.2566	0.6370
		Low	-1.280	0.305	-	-	-1.9061	-0.7605
Cross-buying intention	Direct effect	High	0.250	0.040	6.30	0	0.1719	0.3283
		Low	-0.759	0.038	-20.06	0	-0.8333	-0.6842
	Indirect effect	High	0.729	0.083	-	-	0.5762	0.896
		Low	0.359	0.165	-	-	0.0469	0.6926

SE, standard error; LLCI, lower limit confidence interval; ULCI, upper limit confidence interval.

manipulation and measurement of Köpetz et al. (2011). Our results showed that there was a significant difference between the participants' hunger levels before and/or after meals ($M_{pre\text{-}lunch}$ = 4.17, $M_{post\text{-}lunch}$ = 1.73, $p < 0.001$). Thus, the manipulation of focal goal importance and set was successful.

Method

A total of 171 participants participated in the experiment. Excluding 11 invalid samples who did not pass the attention test and had too short answer times, a total of 160 valid samples were collected (52.5% female, M_{age} = 21.3). The selection of materials for the set and separate recommendations and the manipulation of the focal goal (lunch) used the experimental materials in the pre-test. Next, participants were asked to fill out a purchase intention scale for burgers (Cronbach's α = 0.906), a cross-buying intention scale for fries (Cronbach's α = 0.939), a perceived incompleteness scale (Cronbach's α = 0.866) and a cognitive load scale (Cronbach's α = 0.896). Finally, participants' hunger level and perceptions of the extent to which fries and burgers were a set were measured (Cronbach's α = 0.893).

Results of study 4

T-test analysis showed that participants in the high focal goal importance groups (vs. low) perceived 'having lunch' as more important (M_{high} = 4.13, M_{low} = 2.05, $p < 0.001$). A manipulative test was conducted for the extent to which the participants perceived the two products as set. Results showed that there was a significant difference in the extent to which the participants perceived the two products as set across the different recommendation type (M_{set} = 4.37, $M_{separate}$ = 3.78, $p < 0.05$). Thus, the manipulation of focal goal importance and set recommendation was successful.

A two-way ANOVA was used to test H3. Results (Figure 3) showed that the interaction term between product recommendation type and focal goal importance was significant (initial product: $F(1, 156) = 14.17$, $p < 0.001$; cross-buying product: $F(1, 56) = 27.47$, $p < 0.001$), which suggests that the product recommendation type and focal goal importance had a significant interaction effect on consumer's initial and cross-buying purchase intention. Further, a simple effect test was conducted on the willingness to purchase burgers and fries in terms of the product recommendation type and focal goal importance at each level. When focal goal importance is high, a set recommendation is more likely to increase consumers' initial product and cross-buying purchase intention than separate recommendations (initial product: M_{set} = 5.52, $M_{separate}$ = 4.84, $p < 0.001$; cross-buying product: M_{set} = 5.16, $M_{separate}$ = 3.55, $p < 0.001$), Therefore, H3a is supported. When focal goal importance is low, a set recommendation (vs. separate recommendations) reduces the consumer's initial and cross-buying purchase intentions (initial product: M_{set} = 2.81, $M_{separate}$ = 3.38, $p < 0.05$; cross-buying product: M_{set} = 2.67, $M_{separate}$ = 3.37, $p < 0.05$), Therefore, H3b is supported.

The PROCESS macro, model 8 was used to test the mediation effect. Results (Table 2) show that there was a significant effect of the interaction of product recommendation type and focal goal importance on initial product purchase intention (β = 0.59, t = 2.13, $p < 0.05$). There is a significant effect of cognitive load on initial product purchase intention (β = −0.66, t = −8.16, $p < 0.001$). There was a significant (β = 0.66, LLCI = 0.25, ULCI = 1.12) moderated mediation effect of cognitive load. The mediating effect of cognitive load was significant when focal goal importance was high, with a 95% CI [of 0.04, 0.56], not including 0, and an effect size of 0.28. When focal goal importance was low, the mediating effect of cognitive load was significant, with a 95% CI (−of 0.72, −0.06), not including 0, and an effect size of −0.37, and H4a was established. Moreover, the results also show that there was a significant effect of the interaction of product recommendation type and focal goal importance on cross-buying intention (β = 1.35, t = 6.06, $p < 0.001$). There was a significant effect of perceived incompleteness on cross-buying intention (β = 0.90, t = 18.99, $p < 0.001$). Perceived incompleteness had a significant (β = 0.96, LLCI = 0.21, ULCI = 1.67) moderated mediation effect. The mediating effect of perceived incompleteness was significant

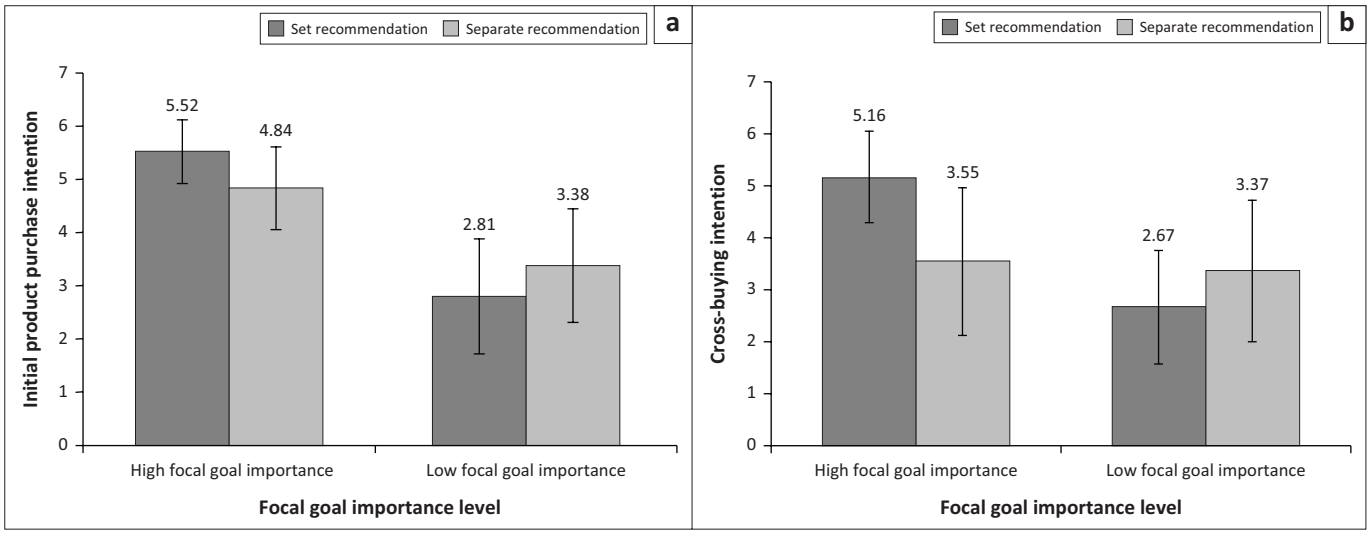


FIGURE 3: The interaction effect of recommendation type and focal goal importance on consumer's purchase intention.

TABLE 2: Mediating effect of cognitive load and perceived incompleteness on consumers' purchase intention.

Dependent variable	Effect type	Focal goal importance	Effect	SE	*t*	*p*	95% Confidence interval	
							LLCI	ULCI
Initial product purchase intention	Direct effect	High	0.393	0.190	2.068	0.041	0.0165	0.7693
		Low	-0.194	0.192	-1.001	0.315	-0.5750	0.1868
	Indirect effect	High	0.285	0.132	-	-	0.0371	0.5587
		Low	-0.373	0.170	-	-	-0.7191	-0.0642
Cross-buying intention	Direct effect	High	0.014	0.175	0.077	0.939	-0.3335	0.3605
		Low	-1.340	0.157	-8.510	0	-1.6512	-1.0277
	Indirect effect	High	1.595	0.283	-	-	1.0263	2.1374
		Low	0.639	0.288	-	-	0.0996	1.2456

SE, standard error; LLCI, lower limit confidence interval; ULCI, upper limit confidence interval.

when focal goal importance was high, with a 95% CI (of 1.03, 2.13), not including 0, and an effect size of 1.59. When focal goal importance was low, the mediating effect of perceived incompleteness was significant, with a 95% CI (of 0.10, 1.25), not including 0, and an effect size of 0.64, and H4b was supported.

Ethical considerations

This article does not contain any studies involving human participants or animals performed by any of the authors.

Result discussion and study implications

Firstly, this research enriches the theoretical study of algorithmic recommendation systems by examining the interaction between product recommendation type and focal goal importance. based on regulatory focus theory (Higgins, 1997) and construal level theory (Liberman & Trope, 1998). Previous studies have largely explored the algorithm design and system optimisation of recommender systems from a technical perspective (Kumar & Thakur, 2018; Tripathi et al., 2021; Yoon & Joung, 2020). In this research, we take the perspective of focal goal importance and draw on Bauer et al. (2022) to classify the product recommendation type into set recommendation and separate recommendation, finding an interaction effect of algorithmic recommendation types on the influence of consumer purchase intention under different focal goal importance, and revealing the mediating mechanism of this matching effect. This enriches the idea of focal goal in the research on algorithmic recommendation systems and broadens the research perspectives of recommendation systems in the field of marketing.

Secondly, this research enriches the theoretical research on collection completeness by examining the dependent variable. Previous work has mainly explored the positive effects of set recommendations on charity behaviour, task completion, goal attainment, collection completeness and cross-purchase (Barasz et al., 2017; Bauer et al., 2022; Carey, 2008; Evers et al., 2014; Yoon et al., 2019). There is thus a dearth of explorations of the drivers of the two types of purchases, initial product purchase intention and cross-buying intention. More exploration is urgently needed on how to promote initial product purchase and cross-purchase better. Collection alignment affects not only the final consumption outcome but also the consumer's intention to purchase the initial product and engage in cross-purchasing, which may have different psychological and behavioural impacts on consumers. This research demonstrates the matching effect of product recommendation type on initial product purchase intention and cross-buying intention under different focal goal importance, which enriches the research on the drivers of initial product purchase intention and cross-buying intention from the focal goal perspective.

Thirdly, the research also enhances the research on perceived incompleteness and cognitive load in the field of marketing. While most previous studies have explored the positive effects of goal completion on people (Cheema & Bagchi, 2011; Converse et al., 2023; Ruan et al., 2023), this research finds that the driving effect of perceived incompleteness on purchasing behaviour is also significant. Established studies on cognitive load often initiate cognitive load by asking participants to memorise meaningless syllables or long string of numbers (Cian et al., 2020; Shen et al., 2016), whereas we initiate consumer cognitive load through set recommendations (vs. separate recommendation) with different ways of presenting product information and find that when focal goal importance is low, set recommendations (vs. separate recommendations) will generate a greater cognitive load for consumers, reducing their purchase intention for the initial product.

Practical implications

Firstly, the findings of this study can inform shopping platforms on whether to choose set or separate recommendation when recommending products to different users. Personality traits may be particularly important in online shopping behaviour (Wang & Keh, 2017). Consumers typically spend 3 s – 7 s on a product, which is known as the first moment of truth in the industry (Han et al., 2022). Sohn and Ko (2021) proposed a framework for integrating personalisation into complementary product recommendations to suggest compatible products based on product relationships and user preferences. As a result, the user habits and recent browsing volume can be used to infer the level of importance that users attach to a focal goal, and when users attach high importance to focal goal, the push of related products can be selected as a set recommendation. However, when users attach low importance to a focal goal, it may be more prudent to select separate recommendations for the push of related products.

Secondly, the importance that consumers place on the focal goal served by a product can change. Firms can increase the importance of the consumer focal goal served by a product through advertising and other promotional means. Psycholinguistic research suggests that goal-derived categories do not come to mind naturally but must be prompted (Gentner & Kurtz, 2006; Gibbert & Mazursky, 2009). For example, by promoting the importance of running, the focal goal importance of 'running' may be increased across the whole population, which in turn increases the sales of a collection of running-related products (e.g. running shoes, jerseys, fanny packs). For example, by promoting the better life brought by 'smart', Yummi increases consumers' purchase intention to buy smart home appliances. Sellers should also develop related advertising and marketing programmes based on product characteristics and customise marketing recommendations from the perspective of consumers (Li et al., 2023).

Thirdly, the study can provide a reference for product design and advertising design of enterprises. When constructing set of products from different categories, businessmen attempt to increase the complementarity between products and enhance their information processing fluency to reduce cognitive load. It is crucial for marketing managers to create visual content that consumers enjoy at first glance (Overgoor et al., 2022). Purpose-driven brand building is operationalised through responsible leadership to benefit consumers (Enslin et al., 2023). Hence, empirical research on what aspects of visual content can contribute to the information-processing fluency that recommendations can generate is necessary to help companies use visual content more effectively on social media.

Limitations and directions for future research

The limitations of this research mainly lie in the following areas. Firstly, as the materials chosen for study 1, 2 and 3 were protein powder and multivitamin, which are both health products, there are fewer varieties and limitations in the range of product category choices. In the future, the scope of experimental products may be expanded beyond personal care products to further explore a variety of products in other categories. Secondly, this research only focusses on one-time purchases. A future research avenue worth pursuing is to investigate how the relationship between product recommendation types and primary goals, as well as the significance of initial purchase intentions versus cross-buying intentions, may evolve over time within various experimental contexts. Thirdly, in this research we measured initial product purchase and cross-buying intentions, while consumers' reactions to overall evaluation remain to be explored.

Conclusion

This study examined the effect of different recommendation types on consumer's purchase intention as a function of consumer's focal goal importance. When focal goal importance is high, a set recommendation has a more positive effect on initial product purchase intention and cross-buying intention than separate recommendations. When focal goal importance is low, separate recommendations have a more positive effect on initial product purchase intention and cross-buying intention than a set recommendation. It provides a reference basis for companies to choose product recommendation methods. In addition, this research suggests that cognitive load mediates the relationship between set recommendations and reduced initial purchase intention, and that perceived incompleteness is an important driver of cross-buying intention.

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Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

Authors' contributions

L.C. conceptualised and supervised the study; S.W. contributed towards the methodology, data curation, writing of the original draft preparation. K.M. was involved in writing of the original draft preparation, validation, writing, reviewing and editing. Y.W. contributed towards the formal analysis.

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Data availability

The data that support the findings of this study are available on request from the corresponding author, K.M.

Disclaimer

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References

Aaker, J.L., & Lee, A.Y. (2001). 'I' seek pleasures and 'we' avoid pains: The role of self-regulatory goals in information processing and persuasion. *Journal of Consumer Research*, *28*(1), 33–49. https://doi.org/10.1086/321946

Abramowitz, J.S., Deacon, B.J., Olatunji, B.O., Wheaton, M.G., Berman, N.C., Losardo, D., Timpano, K.R., McGrath, P.B., Riemann, B.C., Adams, T., Björgvinsson, T., Storch, E.A., & Hale, L.R. (2010). Assessment of obsessive-compulsive symptom dimensions: Development and evaluation of the Dimensional Obsessive-Compulsive Scale. *Psychological Assessment*, *22*(1), 180. https://doi.org/10.1037/a0018260

Ampadu, S., Jiang, Y., Debrah, E., Antwi, C.O., Amankwa, E., Gyamfi, S.A., & Amoako, R. (2022). Online personalized recommended product quality and e-impulse buying: A conditional mediation analysis. *Journal of Retailing and Consumer Services*, *64*, 102789. https://doi.org/10.1016/j.jretconser.2021.102789

Ansari, A., Essegaier, S., & Kohli, R. (2000). Internet recommendation systems. *Journal of Marketing Research*, *37*(3), 363–375. https://doi.org/10.1509/jmkr.37.3.363.18779

Baier, D., & Stüber, E. (2010). Acceptance of recommendations to buy in online retailing. *Journal of Retailing and Consumer Services*, *17*(3), 173–180. https://doi.org/10.1016/j.jretconser.2010.03.005

Bagozzi, R.P., & Dholakia, U. (1999). Goal setting and goal striving in consumer behaviour. *Journal of Marketing*, *63*(4_suppl1), 19–32. https://doi.org/10.1177/00222429990634s104

Barasz, K., John, L.K., Keenan, E.A., & Norton, M.I. (2017). Pseudo-set framing. *Journal of Experimental Psychology*: *General*, *146*(10), 1460. https://doi.org/10.1037/xge0000337

Bauer, C., Spangenberg, K., Spangenberg, E.R., & Herrmann, A. (2022). Collect them all! Increasing product category cross-selling using the incompleteness effect. *Journal of the Academy of Marketing Science*, *50*(4), 713–741. https://doi.org/10.1007/s11747-021-00835-6

Bazerman, M.H., Moore, D.A., Tenbrunsel, A.E., Wade-Benzoni, K.A., & Blount, S. (1999). Explaining how preferences change across joint versus separate evaluation. *Journal of Economic Behavior & Organization*, *39*(1), 41–58. https://doi.org/10.1016/S0167-2681(99)00025-6

Böttger, T., Rudolph, T., Evanschitzky, H., & Pfrang, T. (2017). Customer inspiration: Conceptualization, scale development, and validation. *Journal of Marketing*, *81*(6), 116–131. https://doi.org/10.1509/jm.15.0007

Çakaröz, K.M., Kiliç, S., & Civek, F. (2022). Consumer view on the axis of diderot effect and unplanned purchase. *Mehmet Akif Ersoy Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, *9*(2), 1327–1348. https://doi.org/10.30798/makuiibf.1034930

Camacho, C.J., Higgins, E.T., & Luger, L. (2003). Moral value transfer from regulatory fit: What feels right is right and what feels wrong is wrong. *Journal of Personality and Social Psychology*, *84*(3), 498. https://doi.org/10.1037/0022-3514.84.3.498

Carey, C. (2008). Modeling collecting behaviour: The role of set completion. *Journal of Economic Psychology*, *29*(3), 336–347. https://doi.org/10.1016/j.joep.2007.08.002

Cheema, A., & Bagchi, R. (2011). The effect of goal visualization on goal pursuit: Implications for consumers and managers. *Journal of Marketing*, *75*(2), 109–123. https://doi.org/10.1509/jmkg.75.2.109

Chinchanachokchai, S., Thontirawong, P., & Chinchanachokchai, P. (2021). A tale of two recommender systems: The moderating role of consumer expertise on artificial intelligence based product recommendations. *Journal of Retailing and Consumer Services*, *61*, 102528. https://doi.org/10.1016/j.jretconser.2021.102528

Cian, L., Longoni, C., & Krishna, A. (2020). Advertising a desired change: When process simulation fosters (vs. hinders) credibility and persuasion. *Journal of Marketing Research*, *57*(3), 489–508. https://doi.org/10.1177/0022243720904758

Converse, B.A., Tsang, S., & Hennecke, M. (2023). The value of mere completion. *Journal of Experimental Psychology*: *General*, *152*(11), 3021–3036. https://doi.org/10.1037/xge0001434

D'Angelo, J.K., & Valsesia, F. (2023). You should try these together: Combinatory recommendations signal expertise and improve product attitudes. *Journal of Marketing Research*, *60*(1), 155–169. https://doi.org/10.1177/00222437221111344

Dodds, W.B., Monroe, K.B., & Grewal, D. (1991). Effects of price, brand, and store information on buyers' product evaluations. *Journal of Marketing Research*, *28*(3), 307–319. https://doi.org/10.1177/002224379102800305

Dong, L., Hou, J., Huang, L., Liu, Y., & Zhang, J. (2023). Impacts of normative and hedonic motivations on continuous knowledge contribution in virtual community: The moderating effect of past contribution experience. *Information Technology & People, 37*(1), 502–520. https://doi.org/10.1108/ITP-07-2022-0529

Enslin, C., Wolfswinkel, M., & Terblanche-Smit, M. (2023). Responsible leadership through purpose-driven brand building: Guidelines for leaders in Africa. *South African Journal of Business Management*, *54*(1), 3427. https://doi.org/10.4102/sajbm.v54i1.3427

Evers, E.R., Inbar, Y., & Zeelenberg, M. (2014). Set-fit effects in choice. *Journal of Experimental Psychology*: *General, 143*(2), 504. https://doi.org/10.1037/a0033343

Fitzsimons, G.M., & Fishbach, A. (2010). Shifting closeness: Interpersonal effects of personal goal progress. *Journal of Personality and Social Psychology*, *98*(4), 535. https://doi.org/10.1037/a0018581

Friedman, E.M., Savary, J., & Dhar, R. (2018). Apples, oranges, and erasers: The effect of considering similar versus dissimilar alternatives on purchase decisions. *Journal of Consumer Research*, *45*(4), 725–742. https://doi.org/10.1093/jcr/ucy023

Gai, P.J., & Klesse, A.K. (2019). Making recommendations more effective through framings: Impacts of user-versus item-based framings on recommendation click-throughs. *Journal of Marketing*, *83*(6), 61–75. https://doi.org/10.1177/0022242919873901

Gentner, D., & Kurtz, K.J. (2006). Relations, objects, and the composition of analogies. *Cognitive Science*, *30*(4), 609–642. https://doi.org/10.1207/s15516709cog0000_60

Gerbino, W. (2020). Amodal completion revisited. *i-Perception, 11*(4), 2041669520937323. https://doi.org/10.1177/2041669520937323

Gibbert, M., & Mazursky, D. (2009). How successful would a phone-pillow be: Using dual process theory to predict the success of hybrids involving dissimilar products. *Journal of Consumer Psychology*, *19*(4), 652–660. https://doi.org/10.1016/j.jcps.2009.05.014

Gollwitzer, P.M. (1987). The implementation of identity intentions: A motivational-volitional perspective on symbolic self-completion. In J. Kuhl (Ed.), *Motivation, intention, and volition* (pp. 349–369). Springer.

Hallikainen, H., Luongo, M., Dhir, A., & Laukkanen, T. (2022). Consumers of personalized product recommendations and price promotions in online grocery shop**. *Journal of Retailing and Consumer Services*, *69*, 103088. https://doi.org/10.1016/j.jretconser.2022.103088

Han, Y., Chandukala, S.R., & Li, S. (2022). Impact of different types of in-store displays on consumer purchase behaviour. *Journal of Retailing*, *98*(3), 432–452. https://doi.org/10.1016/j.jretai.2021.10.002

Harahap, D.A., Amanah, D., & Agustini, F. (2018). Effect of product completeness and price on consumer purchasing decision in SMEs market medan. *Jurnal Manajemen*, *22*(1), 47–61. https://doi.org/10.24912/jm.v22i1.312

Higgins, E.T. (1997). Beyond pleasure and pain. *American Psychologist, 52*(12), 1280. https://doi.org/10.1037/0003-066X.52.12.1280

Higgins, E.T., Friedman, R.S., Harlow, R.E., Idson, L.C., Ayduk, O.N., & Taylor, A. (2001). Achievement orientations from subjective histories of success: Promotion pride versus prevention pride. *European Journal of Social Psychology*, *31*(1), 3–23. https://doi.org/10.1002/ejsp.27

Hsee, C.K., & Leclerc, F. (1998). Will products look more attractive when presented separately or together? *Journal of Consumer Research*, *25*(2), 175–186. https://doi.org/10.1086/209534

Iyengar, S.S., & Lepper, M.R. (2000). When choice is demotivating: Can one desire too much of a good thing? *Journal of Personality and Social Psychology*, *79*(6), 995. https://doi.org/10.1037/0022-3514.79.6.995

Jeong, S.H., & Hwang, Y. (2015). Multitasking and persuasion: The role of structural interference. *Media Psychology*, *18*(4), 451–474. https://doi.org/10.1080/15213269.2014.933114

Jiang, Y., Gorn, G.J., Galli, M., & Chattopadhyay, A. (2016). Does your company have the right logo? How and why circular-and angular-logo shapes influence brand attribute judgments. *Journal of Consumer Research*, *42*(5), 709–726. https://doi.org/10.1093/jcr/ucv049

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica: Journal of the Econometric Society*, *47*(2), 263–291. https://doi.org/10.2307/1914185

Karmarkar, U.R. (2017). The impact of 'display-set' options on decision-making. *Journal of Behavioral Decision Making*, *30*(3), 744–753. https://doi.org/10.1002/bdm.1998

Kawaguchi, K., Uetake, K., & Watanabe, Y. (2019). Effectiveness of product recommendations under time and crowd pressures. *Marketing Science*, *38*(2), 253–273. https://doi.org/10.1287/mksc.2018.1132

Kim, E.L., & Tanford, S. (2021). Turning discounts into profits: Factors influencing online purchasing decisions for hotel add-on items. *Cornell Hospitality Quarterly*, *62*(4), 438–454. https://doi.org/10.1177/1938965520935397

Kim, H., & Rao, V.R. (2023). A comparison of online recommendation methods: Simultaneous versus sequential approaches. *Journal of Retailing, 99*(2), 210–227. https://doi.org/10.1016/j.jretai.2023.02.001

Köpetz, C., Faber, T., Fishbach, A., & Kruglanski, A.W. (2011). The multifinality constraints effect: How goal multiplicity narrows the means set to a focal end. *Journal of Personality and Social Psychology*, *100*(5), 810. https://doi.org/10.1037/a0022980

Kumar, P., & Thakur, R.S. (2018). Recommendation system techniques and related issues: A survey. *International Journal of Information Technology*, *10*, 495–501. https://doi.org/10.1007/s41870-018-0138-8

Labroo, A.A., & Patrick, V.M. (2009). Psychological distancing: Why happiness helps you see the big picture. *Journal of Consumer Research*, *35*(5), 800–809. https://doi.org/10.1086/593683

Ladeira, W.J., de Oliveira Santini, F., & Perin, M.G. (2023). The role of product scarcity on display incompleteness. *Marketing Intelligence & Planning*, *41*(5), 544–556. https://doi.org/10.1108/MIP-09-2022-0440

Lee, J., & Chu, W. (2022). The effect of adding focal-goal similar versus dissimilar attributes on convergence product purchase decision: The role of relational and item-specific elaboration style. *Journal of Consumer Behaviour*, *21*(2), 296–309. https://doi.org/10.1002/cb.2002

Lewin, K. (1935). *A dynamic theory of personality*. McGraw Hill Book.

Li, Z., Tian, X., Chen, J., Ren, L., & Zhang, Y. (2023). Does complementary role matter? An empirical study on paid search and social ads on purchase. *South African Journal of Business Management*, *54*(1), 11. https://doi.org/10.4102/sajbm.v54i1.3472

Liberman, N., & Trope, Y. (1998). The role of feasibility and desirability considerations in near and distant future decisions: A test of temporal construal theory. *Journal of Personality and Social Psychology*, *75*(1), 5. https://doi.org/10.1037/0022-3514.75.1.5

Marchand, A., & Marx, P. (2020). Automated product recommendations with preference-based explanations. *Journal of Retailing*, *96*(3), 328–343. https://doi.org/10.1016/j.jretai.2020.01.001

Min, S., Zhang, X., Kim, N., & Srivastava, R.K. (2016). Customer acquisition and retention spending: An analytical model and empirical investigation in wireless telecommunications markets. *Journal of Marketing Research*, *53*(5), 728–744. https://doi.org/10.1509/jmr.14.0170

Mogilner, C., Shiv, B., & Iyengar, S.S. (2013). Eternal quest for the best: Sequential (vs. simultaneous) option presentation undermines choice commitment. *Journal of Consumer Research*, *39*(6), 1300–1312. https://doi.org/10.1086/668534

Ngobo, P.V. (2004). Drivers of customers' cross-buying intentions. *European Journal of Marketing*, *38*(9/10), 1129–1157. https://doi.org/10.1108/03090560410548906

Overgoor, G., Rand, W., Van Dolen, W., & Mazloom, M. (2022). Simplicity is not key: Understanding firm-generated social media images and consumer liking. *International Journal of Research in Marketing*, *39*(3), 639–655. https://doi.org/10.1016/j.ijresmar.2021.12.005

Paas, F.G.W.C., Van Merriënboer, J.J.G., & Adam, J.J. (1994). Measurement of cognitive load in instructional research. *Perceptual and Motor Skills*, *79*(1), 419–430. https://doi.org/10.2466/pms.1994.79.1.419

Pantoja, F., Rossi, P., & Borges, A. (2016). How product-plot integration and cognitive load affect brand attitude: A replication. *Journal of Advertising*, *45*(1), 113–119. https://doi.org/10.1080/00913367.2015.1085818

Ruan, B., Polman, E., & Tanner, R.J. (2023). The one-away effect: The pursuit of mere completion. *Journal of Consumer Research*, *50*(5), 945–961. https://doi.org/10.1093/jcr/ucad030

Scheibehenne, B., Greifeneder, R., & Todd, P.M. (2010). Can there ever be too many options? A meta-analytic review of choice overload. *Journal of Consumer Research*, *37*(3), 409–425. https://doi.org/10.1086/651235

Schreiner, T., Rese, A., & Baier, D. (2019). Multichannel personalization: Identifying consumer preferences for product recommendations in advertisements across different media channels. *Journal of Retailing and Consumer Services*, *48*, 87–99. https://doi.org/10.1016/j.jretconser.2019.02.010

Senecal, S., & Nantel, J. (2004). The influence of online product recommendations on consumers' online choices. *Journal of Retailing*, *80*(2), 159–169. https://doi.org/10.1016/j.jretai.2004.04.001

Shen, H., Zhang, M., & Krishna, A. (2016). Computer interfaces and the 'direct-touch' effect: Can iPads increase the choice of hedonic food? *Journal of Marketing Research*, *53*(5), 745–758. https://doi.org/10.1509/jmr.14.0563

Sohn, Y.S., & Ko, M.T. (2021). The impact of planned vs. unplanned purchases on subsequent purchase decision making in sequential buying situations. *Journal of Retailing and Consumer Services*, *59*, 102419. https://doi.org/10.1016/j.jretconser.2020.102419

Spaid, B.I. (2018). Exploring consumer collecting behaviour: A conceptual model and research agenda. *Journal of Consumer Marketing*, *35*(6), 653–662. https://doi.org/10.1108/JCM-05-2017-2224

Srivastava, A., Bala, P.K., & Kumar, B. (2020). New perspectives on gray sheep behaviour in E-commerce recommendations. *Journal of Retailing and Consumer Services*, *53*, 101764. https://doi.org/10.1016/j.jretconser.2019.02.018

Summerfeldt, L.J. (2004). Understanding and treating incompleteness in obsessive-compulsive disorder. *Journal of Clinical Psychology*, *60*(11), 1155–1168. https://doi.org/10.1002/jclp.20080

Sweller, J. (1988). Cognitive load during problem solving: Effects on learning. *Cognitive Science*, *12*(2), 257–285. https://doi.org/10.1016/0364-0213(88)90023-7

Tripathi, A.K., Mittal, H., Saxena, P., & Gupta, S. (2021). A new recommendation system using map-reduce-based tournament empowered Whale optimization algorithm. *Complex & Intelligent Systems*, *7*, 297–309. https://doi.org/10.1007/s40747-020-00200-0

Trope, Y., & Liberman, N. (2003). Temporal construal. *Psychological Review, 110*(3), 403. https://doi.org/10.1037/0033-295X.110.3.403

Van Osselaer, S.M., & Janiszewski, C. (2012). A goal-based model of product evaluation and choice. *Journal of Consumer Research*, *39*(2), 260–292. https://doi.org/10.1086/662643

Vatllacher, R.R., & Wegner, D.M. (1985). *A theory of action identification*. Erlbaum.

Wang, X., & Keh, H.T. (2017). Consumer susceptibility to cross-selling persuasion: The roles of self-construal and interpersonal harmony. *Journal of Retailing and Consumer Services*, *34*, 177–184. https://doi.org/10.1016/j.jretconser.2016.10.008

Whitley, S.C., Trudel, R., & Kurt, D. (2018). The influence of purchase motivation on perceived preference uniqueness and assortment size choice. *Journal of Consumer Research*, *45*(4), 710–724. https://doi.org/10.1093/jcr/ucy031

Yoon, J., & Joung, S. (2020). A big data based cosmetic recommendation algorithm. *Journal of System and Management Sciences*, *10*(2), 40–52. https://doi.org/10.33168/JSMS.2020.0203

Yoon, J., Whillans, A.V., & O'Brien, Ed. (2019). *Connecting the dots : superordinate framing enhances the value of unimportant tasks*. Harvard Business School. Retrieved July 07, 2024, from https://id.lib.harvard.edu/ead/c/bak00968c05404/catalog.

Zeigarnik, B. (1927). On the retention of completed and uncompleted activities. *Psychologische Forschung*, *9*(1–85), 2.

Zhang, T., Agarwal, R., & Lucas, H.C. (2011). The value of it-enabled retailer learning: Personalized product recommendations and customer store loyalty in electronic markets. *Mis Quarterly*, *35*(4), 859–881.

Zhao, M., & Xia, L. (2021). Joint or separate? The effect of visual presentation on imagery and product evaluation. *International Journal of Research in Marketing*, *38*(4), 935–952. https://doi.org/10.1016/j.ijresmar.2020.11.007

Zhu, D.H., & Chang, Y.P. (2015). Effects of interactions and product information on initial purchase intention in product placement in social games: The moderating role of product familiarity. *Journal of Electronic Commerce Research*, *16*(1), 22. https://doi.org/10.2224/sbp.11586

Appendices start on the next page →

Appendix 1

TABLE 1-A1: Realistic examples of set recommendations.

Focal goal	Primely to buy	Set Recommendation	Cross-purchase
Fitness	Gym card	【Fitness card + private lessons】	Private lessons
Dining	Wine with meal	【Sparkling wine before meal + red wine during meal + grappa after meal】	Sparkling wine, Grappa
Tea Tasting	Tea set	【Tea tray + Tea set + Tea pet】	Tea trays, Tea pets
Picnic	Picnic mats	【Picnic mat + balloon + backdrop】	Balloons, backdrops
Skincare	VC products	【Morning C + Evening A】	A-alcohol creams
Exercise	Sports watches	【Sports equipment】	Sports watches, Bluetooth headphones, Body fat scales
Running	Running shoes	【Running shoes + quick-drying clothes + fanny packs】	Quick-drying clothing, Fanny packs
Wake Up	Instant coffee	【Instant Coffee + Coffee Mate】	Coffee mate
Coffee	Coffee in ear	【Ear coffee + hand brewing pot + travelling cups】	Hand brewers, To-go cups
Dental Care	Electric toothbrushes	【Electric Toothbrush + Tooth Flosser】	Teethers
Dogs	Dog food	【Dog Food + Teething Stick + Canned Dog Food】	Teething sticks, Canned dog food
Cats	Cat litter	【Cat Litter + Cat Nest + Cat Stick】	Cat litter + Cat teasers
Camping	Tents	【Tent + Egg Roll Table + Folding Chair + Canopy】	Egg roll table, folding chair, canopy
Car Interiors	Mats	【Cushion + mobile phone holder + car accessories】	Mobile phone holders + Car accessories
Exam Preparation	Stationery	【Stationery + Pillow + Steam Eye Mask】	Pillows, Steam eye masks
Black Hair Care	Sesame and Black Bean Powder	【Sesame and Black Bean Powder + Black Sesame Pills】	Black sesame pills
Hair loss treatment	Anti Hair Loss Conditioner	【Anti Hair Loss Liquid + Anti Hair Loss Shampoo】	Anti-hair loss shampoo
Office	Wireless Mouse	【Wireless Mouse + Bluetooth Keyboard + Computer Bracket】	Bluetooth keyboard, Computer stand
Weight Loss	Meal Replacement	【Meal Replacement + Probiotics + Black Coffee + Foot Soak】	Probiotics, Black coffee, Foot soak Packs
Laundry	Laundry Detergent	【Laundry Detergent + Laundry Gel + Conditioner】	Laundry gel, Conditioner
Kitchen Appliances	Air Fryer	【Air Fryer + Wall Breaker + Noodle Maker】	Wall breaker, Noodle maker
Home Hotpot	Meat & Vegetables	【Hotpot Collection Store】	Mushrooms

TABLE 2-A1: Examples of set recommendations in literature.

Set Recommendation	Cross-buy	Source
【Sparkling wine, Red wine, White wine, Grappa & juice】	Grappa and juice	Bauer, (2022)
【Account tariffs, debit cards, overdraft facilities and credit cards】	Overdraft facilities and credit cards	
【Global Survival Kit】	——	Barasz, (2017)
【A full set of beer】		
【Cardamom and fenugreek seeds】	——	D'Angelo, (2022)
【Spring salad, King salmon, Chocolate strawberry crepes for dessert】		
【Burgers and fries】	——	Zhao, (2021)
【Tops, Pants, Shoes】		
【Film tickets and discount gift cards】		

Appendix 2

Study 1:

Set recommendation:

English translation of the text:
Unlock new energy for daily health
Protein Powder: Have a glass for breakfast to boost your immunity.
Multivitamin: Take one capsule after meal, healthy and help digestion
Warmly Recommended Protective Power Set

Separate recommendation:

English translation of the text:
Unlock new energy for daily health
Warm Recommendations Enhancing Protection
Protein Powder: Protein Powder Immunity Enhancement

English translation of the text:
Unlock new energy for daily health
Warm Recommendations Enhancing Protection
Multivitamin: Multivitamins for healthy digestion

Appendix 3

TABLE 3-A1: Measurements of variables.

Variable	Measurements	Source
Initial product purchase intention	There's a good chance I'm considering purchasing protein powder/burger; I would buy the protein powder burger recommended by the merchant; I would recommend this protein powder/burger to others;	Dodds et al. (1991), Whitley et al. (2018)
Cross-buying intention	I would seriously consider the merchant's recommendation that I purchase multivitamin/fries; The likelihood that I will consider the recommendation to purchase multivitamin/fries is high; I will take advantage of the merchant's recommendation that I purchase multivitamin/fries; I would accept the recommendation from the merchant to purchase multivitamin/fries;	Ngobo, (2004)
Degrees of set	I think there is a strong connection between protein powders/burger and multivitamin/fries; I think protein powders/burger and multivitamin/fries are closely related products; I think protein powder/burger and multivitamin/fries complement each other; I think protein powders/burger and multivitamin/fries are all-in-one products;	Barasz et al. (2017), Spaid, (2018), Bauer et al. (2022)
The Importance of Health	Health is very important to me at the moment; I am currently very committed to the pursuit of health; I am currently highly committed to my health; I am concerned about my current progress with my health;	Fitzsimons and Fishbach, (2010)
Mediation: Perceived Incompleteness	Purchasing protein powder/burger and multivitamin/fries all together makes you feel just right; Purchasing protein powder/burger and multivitamin/fries this purchase together makes you feel perfect; The extent to which not purchasing the protein powder/burger and multivitamin/fries all together would have made you feel uncomfortable; The extent to which not purchasing the protein powder/burger and multivitamin/fries all together would have left you with an incomplete feeling about this shopping experience?	Summerfeldt, (2004), Bauer et al. (2022).
Mediation: cognitive load	How much mental effort did you put into the buying decision above? How difficult did you find the purchase decision you just made for you? How easy it was to feel distracted during the buying decision you just made?	Paas et al. (1994), Shen et al. (2016), Jiang et al. (2016)

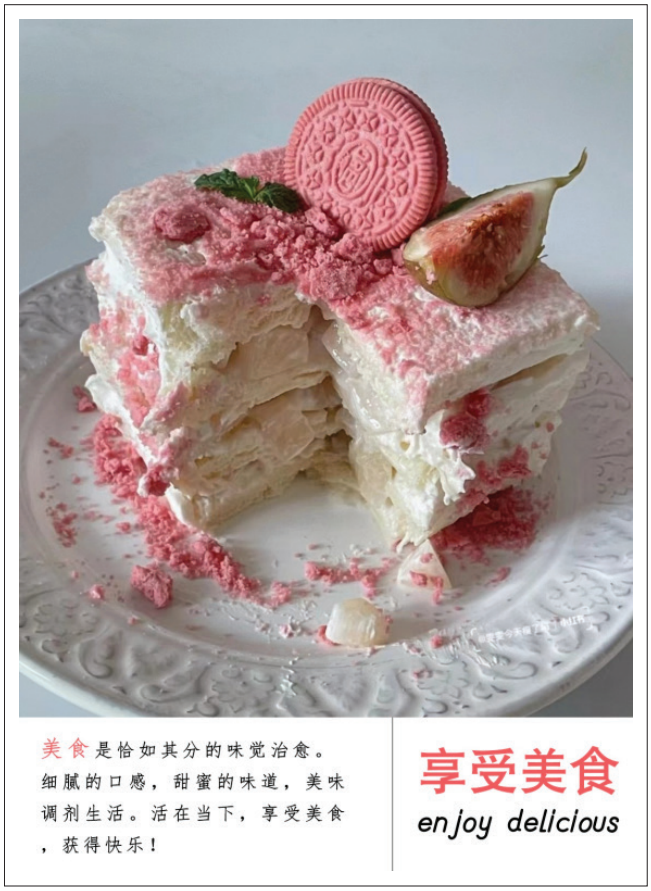
Appendix 4

Study 2:

High focal goal (health) importance

English translation of the text:
Health is an important cornerstone of life operation. Having a healthy body is the greatest wealth in life. Stay healthy and start a full day!

Low focal goal (health) importance



English translation of the text:
Delicious is a proper taste cure. Delicate taste, sweet taste and delicious taste adjust life. Live in the moment, enjoy the delicious food and have fun!

Appendix 5

Study 4:

Set recommendation:

English translation of the text:
New Products Large Fries match + signature burger

Separate recommendation:

English translation of the text:
Signature burger

English translation of the text:
New Products Large Fries