



Collect them all! Increasing product category cross-selling using the incompleteness effect

Christoph Bauer¹ · Katie Spangenberg² · Eric R. Spangenberg³ · Andreas Herrmann⁴

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Abstract

The familiar state of tension associated with an incomplete collection or an unfinished jigsaw puzzle is predicted by Lewin's (1926; 1935) field theory. This feeling evokes a drive to completion—a phenomenon we label the *incompleteness effect*—which is useful to marketers endeavoring to cross-sell products and services. In three studies using online product configurators, we find that consumers faced with visual representations of incomplete product category collections, such as an evening drinks menu or a puzzle with its pieces representing services, are significantly more likely to complete the collection or finish the puzzle by cross-purchasing from a greater number of product or service categories as compared to those using a conventional online shopping format. We identify theoretical mechanisms through which the incompleteness effect works and potential moderators for the effect. Findings suggest that managers offering products or services across several categories can increase cross-selling by eliciting people's drive toward completion.

Keywords Cross-selling · Completeness · Field theory · Incompleteness effect · Zeigarnik effect

Cross-selling is the act of selling different product offerings to existing customers, thereby providing additional perceived benefits to consumers as well as increased revenues to the firm. The average profit associated with cross-buying customers is greater than that of consumers not offered, or not engaging in, cross-buying opportunities (Shah et al., 2012), and the costs of encouraging existing customers to increase purchases through cross-buying are much lower than those associated with new customer acquisition (Hart et al., 1990; Reichheld, 1996). Cross-buying customers are likely to become more loyal as they purchase multiple items across product categories (e.g., switching costs increase; Min et al., 2016), and more loyal consumers are likely to revisit a successful

cross-selling firm as future needs arise. Relatedly, in the non-profit sector, donors who have experienced the satisfaction of making a donation that completes a project are more likely to return to the platform and donate in the future (Argo et al., 2020; Wash, 2013). Cross-selling tactics are therefore recognized as a key strategic challenge for marketing managers. Herein, we demonstrate in two contexts (beverages and banking services) how online configurators can create incomplete collections of products or services in the minds of consumers, thereby encouraging cross-buying purchases that would not have otherwise been considered. This cross-selling technique can benefit marketing strategists in various organizations who desire to increase their customers'

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✉ Eric R. Spangenberg
ers@uci.edu

Christoph Bauer
christoph.bauer@simon-kucher.com

Katie Spangenberg
kquinn1@seattleu.edu

Andreas Herrmann
andreas.herrmann@unisg.ch

¹ Simon-Kucher & Partners, Am Sandtorkai 74,
20457 Hamburg, Germany

² Albers School of Business and Economics, Seattle University, 901
12th Ave, Seattle, WA 98122, USA

³ Center for Global Leadership, Paul Merage School of Business,
University of California Irvine, 4293 Pereira Drive, SB1 Ste 5300,
Irvine, CA 92697, USA

⁴ Institute for Mobility IMO-HSG, University of St. Gallen,
Bahnhofstraße 8, CH-9000 St. Gallen, Switzerland

propensity to engage in cross-buying of their respective goods and services.

The current research builds from the contemporary scholarship of marketing and consumer behavior while drawing from seminal theoretical work of psychologists almost a century ago. Early in the twentieth century, Zeigarnik (1927, 1938) demonstrated that people possess better memory for tasks they have started but not yet finished than for those already completed. A consumption-related instantiation of this “Zeigarnik effect” is exhibited by people collecting Panini stickers¹: a missing sticker space is much more salient in a collector’s memory than those already filled (see Fig. 1). Perhaps due to such heightened awareness of missing products, it has been shown that consumers are less likely to purchase a partially empty carton of eggs or a half full six-pack beverage carrier than they are to choose “complete” sets of a given product, even if such “incomplete” product bundles are correspondingly priced (e.g., an individual beverage is 1/6th the cost of a six pack; Barasz et al., 2017). This behavior is consistent with the tendency of people to reengage with interrupted action, complete a set, or fulfill a goal without explicit instruction to do so (i.e., the “Ovsiankina [1928] effect”).

Arguably underlying these effects is Lewin’s (1926, 1935) field theory, wherein the motivation to act or put forth effort toward task completion is contingent upon a state of internal tension caused by unmet needs or goals, which can be eliminated by fulfilling a perceived quasi-need through task completion (Lewin, 1926, 1935). When tasks are comprised of many steps (e.g., player stickers in Panini albums), the goal gradient effect applies (i.e., people accelerate behavior as they make progress toward their goals) (Hull, 1932; Kivetz et al., 2006). As a marketing example, research has shown that people fill car washing stamp cards more quickly the closer they are to completion (Nunes & Drèze, 2006).

Importantly, perceptions of incomplete sets or unfulfilled goals can be created ad hoc and externally influenced by marketers (Barsalou, 1983). For example, a bank may generate a list of “essential financial services,” or a brand-related “shopping list” may accompany a recipe; such actions represent marketer-generated “to-dos” for consumers when such combinations may otherwise not have comprised people’s consideration sets. In the current research, we test Lewin’s field theory (1926, 1935), which suggests a greater likelihood of consumers making cross-buying choices to complete such lists relative to conditions under which product or service offerings are independently presented—a drive to completion we refer to as the “incompleteness effect.” Although recent

work examines related concepts (i.e., pseudo-sets; Barasz et al., 2017), research to date has not studied how aspects of online product configurators influence cross-buying and set completion.

We also build from recent work examining a critical driver of consumer purchase behavior: customer inspiration. Among the findings of Böttger et al. (2017), visual components of advertising increase customer inspiration, increasing purchase likelihood. We examine this finding in conjunction with those of Cheema and Bagchi (2011) to show how visual (vs. textual) cues can inspire people to consider cross-buying products they may not otherwise.

Across three studies we demonstrate how online product configurators can be used to present people with a collection or puzzle they are inspired to complete, thereby making several contributions to the literature. First, we experimentally demonstrate that the completion impulse can be elicited in online shopping contexts to increase cross-selling. To our knowledge, this is the first research to show that online product configurators can effectively trigger the impulse to complete a set, thereby increasing consumers’ likelihood of cross-buying products to do so. Second, we examine drivers of the incompleteness effect. Online shopping configurators reduce the number of decisions a consumer must make, thus increasing likelihood of set completion (Jin et al., 2013), an effect likely to be driven by multiple mechanisms. Specifically, online configurators increase the number of products considered (and potentially purchased) without requiring consumers to decide whether to continue shopping. We also show that the way the product categories are grouped (individually vs. part of an interrelated set) and presented (visually vs. textually) increases perceptions of incompleteness and therefore set completion impulse, thereby increasing the likelihood that consumers will buy all products presented as a set. Using a phased manipulation of product configurators, we examine separate components of this process and find that perceptions of incompleteness, impulse to complete a set, and number of products considered all play a role. Importantly, we use a phased manipulation of product configurators to examine our complete model, thereby avoiding exaggerating the effect of any single product configurator manipulation.

Finally, we examine moderating effects identifying boundary conditions for the incompleteness effect. While previous research has shown some support for our hypothesized incompleteness effect (Barasz et al., 2017), it has not examined conditions under which this effect is more or less likely to manifest, as we do. Notably, we study how perceived feasibility and justification of purchase can moderate the incompleteness effect. That is, when a consumer perceives no possible path to completing the full set or no ability to justify

¹ Panini sticker collections, common in Europe, are players on sports teams (e.g., World Cup soccer teams), much like baseball card collections in North America.



Fig. 1 Panini sticker album for the 2018 Soccer World Cup

purchasing all items, we see no increase in cross-buying purchases or set completion. Such empirical findings advance theory regarding goal pursuit and help managers implement this effect in practice.

Background

Lewin's field theory set the stage for a long tradition of goal-related work explored by scholars; he showed that setting a goal can generate tension that can only be removed through goal attainment and until a goal is attained, the "incomplete task" discomforts a person (Lewin, 1926, 1935). This state of tension associated with the desire to complete collections and factors associated with alleviating said tension are demonstrated across multiple studies (e.g., Garland & Conlon, 1998; Long & Schiffman, 1997). Scholars have more recently directed effort to applying knowledge of goal setting and goal completion (Locke & Latham, 1990) to questions regarding consumption-related decisions and behaviors (e.g., Barasz et al., 2017; Nunes & Drèze, 2006). Originating from the work motivated by Lewin's (1926) field theory, our research most closely follows a growing body of contemporary research by marketing scholars and consumer psychologists. Table 1 synthesizes this marketing-relevant research, helps identify gaps in the literature, and illustrates how our work contributes to the

theoretical and methodological understanding of this stream of inquiry.

People are more motivated by how much is left to reach their target rather than how far they have come (Hull, 1932). Demonstrations of this goal gradient effect in marketing contexts include Kivetz and colleagues (2006) and Nunes and Drèze (2006) who used bonus/stamp cards to show that the time between visits to a café or car-wash facility became increasingly shorter when customers neared the completion goal of a full card. Importantly, these two papers examined how overcoming the "starting problem" (i.e., whether a stamp card was empty or already started with two stamps) changed completion likelihood. Partially addressing a gap in the literature, we examine how grouping items together as a set can increase completion even when all consumers start with an empty shopping basket and items are not as closely related as repeat café or car-wash visits. Relatedly, Cheema and Bagchi (2011) found greater motivation to work toward goals by giving people visual finish lines relative to their objectives (i.e., goal persistence and effort increased as ease of goal visualization increased). Specifically, Cheema and Bagchi (2011) study attenuation of goal completion when interrelated (non-purchase-related) tasks are split into subgoals and/or become more proximate with regard to level of task completion (e.g., commitment to savings). Incorporating their findings on visual progress into our studies, we consider how the acquisition of somewhat disparate products or services can be visually

Table 1 Synopsis of literature on sets and goal completion—relevance and extensions of current work

Reference	Independent variable(s)	Dependent variable(s)	Type of Studies	Key Findings
Current work	Product Presentation (individual items, basic configurator, as part of a set or puzzle to complete, visually linked)	Set completion, cross-buying product	Controlled online configurator experiments	- Presenting items as a set to be completed increases likelihood of cross-buying purchases to complete the set - Visual presentation (using multiple instantiations) of an incomplete collection of product or service categories increases impulse to complete a set, leading to increased likelihood of cross-purchasing from a greater number of product or service categories - Feasibility and rationalization moderate the effect of set completion
NO COMPLETION REWARD				
Argo et al. (2020) <i>JEB</i>	Whether a donation completed a campaign	Donation size	Field experiment	How current work extends findings - Donors contributed significantly more money to reach exact fundraising target - Donors make donations that complete a campaign significantly more frequently than donations that reach any other given fraction of the target Studies completed in marketing context
Böttger et al. (2017) <i>JM</i>	Marketing-induced inspiration, idea shopping, ease of imagery processing	Customer loyalty, emotional attachment, satisfaction	Lab experiment, Field experiment	- Purchase goals can be externally induced via marketing tactics - Customer inspiration increases when: 1) firms present existing products in new or unexpected combinations and 2) firms increase ease of imagery processing in advertisements Use of configurator to create consumer purchase goals; extends finding regarding ease of imagery; different dependent variables (i.e., actual product or service choice)
Barasz et al. (2017) <i>JEP:G</i>	Task sets presentation (individual items vs. grouped)	# of tasks completed, donation likelihood, set completion by purchasing same items	Lab experiment, field experiment	- People are more likely to complete arbitrary pseudo-sets of tasks or purchases - This effect is mediated by perceived incompleteness Examines boundary conditions of set completion; manipulates visualization of sets (e.g., use of “puzzle” in configurator); purchase likelihood of different (vs. similar) products
Wash (2013) <i>ICWSM</i>	Does donation complete campaign	Donation size, repeat donations	Field data	- Donations that complete a project (on DonorsChoose.org) are more than twice as large as other donations - Donors whose donations complete a project are more likely to return to the platform to donate again Studies completed in marketing context
Cheema and Bagchi (2011) <i>JM</i>	Ease of visualization (hard vs. easy) Goal distance (near vs. far) Goal framing (subgoal vs. consolidated goal)	Exerted effort, commitment, persistence	Lab experiment, field data	- When people are near their goal, those who can easily visualize the goal exert more effort and report greater commitment than those who cannot easily visualize the goal - Ease of visualization increases effort and commitment when people are near the goal - This effect is mediated by progress perceptions - This effect is moderated by goal distance and goal framing Add to the “effectiveness of visualization” findings; set configurator establishes goal for customers; different dependent variables (e.g., choices)
Garland and Conlon (1998) <i>JASP</i>	Degree of project completion (80% vs. 20%) Sunk cost amount (80% vs. 20%)	Project fund allocation	Lab experiment	Subjects more willing to allocate resources to a project when close to completion regardless of sunk cost expenditures Studies “project completion-like effect” in marketing context; different dependent variables

Table 1 (continued)

Reference	Independent variable(s)	Dependent variable(s)	Type of Studies	Key Findings
COMPLETION REWARD				
Jin et al. (2013) <i>JCR</i>	Goal adoption vs. goal completion Goal structure (fixed sequence vs. rigid)	Goal adoption, goal completion	Lab experiment, field experiment	• Project-completion effect stronger than sunk-cost effect • Fixed-sequence goal-related actions discourage goal adoption, but increase likelihood of goal completion
Kivetz et al. (2006) <i>JMR</i>	“Bonus” starter stamps vs. empty stamp card	Stamp card completion time, interpurchase times, program reengagement	Field experiment, secondary customer data	• Intervisit purchase time decreases as consumers near stamp card completion (reward) • Stamp cards with “bonus” starter stamps provide the illusion of progress, inducing purchase acceleration • Stronger tendency to accelerate towards goal increases reengagement likelihood and retention
Nunes and Drèze (2006) <i>JCR</i>	Task framing (started vs. not started) Endowment reason (given vs. not given) Medium (points vs. purchases)	Reward card redemption, time to card completion	Lab experiment, field experiment	• Framing a task as started but incomplete leads to greater likelihood of completion than a similar task that has not yet been started • This finding is moderated by providing a reason the task has already been started and the medium of the reward (points vs. purchases)
Long and Schiffman (1997) <i>P&M</i>			Conceptual	• Tension builds when collections are incomplete • As items in the collection are acquired, tension is relieved
Hull (1932) <i>Psych Review</i>	Distance from endpoint	Section completion time	Animal lab experiment	• As rats got closer to the endpoint, they ran faster, suggesting a greater motivation to complete the goal
				Human versus animal subjects

framed such that the purchase of a combination thereof constitutes a goal that consumers are more likely to pursue under certain conditions.

Our general expectation is that a completion impulse is triggered by an incomplete set of products, thereby eliciting a desire to complete a goal, arguably eliminating the discomfort associated with failing to do so. Consistent with this notion, Barasz et al. (2017) showed that framing products as elements of pseudo-sets (e.g., a six-pack of beer) leads to greater likelihood of purchasing multiple items, at least in part because such pseudo-sets influence perceptions of completion. Although theoretically similar, we differentiate our paper from Barasz et al. (2017) and add to the literature in two primary ways. First, set completion in our studies require purchasing from different product categories (e.g., not only wine but also juices and grappa, or not only daily banking services but also insurance and pension products) as opposed to purchasing more of the same product (e.g., beer). Second, we examine boundary conditions wherein set completion is more or less likely—circumstances yet to be reported in the literature.

Goal-derived categories (Barsalou, 1991) can be established intrinsically by consumers (Böttger et al., 2017) or by extrinsic (e.g., marketing-introduced) cues (Ratneshwar et al., 1996). For example, a pre-configured product such as a pizza or a car can establish a “complete” product or goal in consumers’ minds, even though no actual purchase has been made (cf. Levin, 2002). Such categories can be obviously related (e.g., “fruit” or “furniture”) or created ad hoc (e.g., “drinks for an entire evening’s dinner party”). In either case, both types of categories can be structured in such a way that makes them susceptible to manifestation of Hull’s (1932) goal gradient principles. The decision to continue pursuing a goal and decisions within a goal step require different cognitive orientations (Brandstätter & Schuler, 2013) and transitioning between these two types of decisions (i.e., shifting between two mindsets) can be extremely taxing (Hamilton et al., 2011). In addition to mindset transitions, each subtask decision also requires cognitive effort (Vohs et al., 2008). For example, when purchasing wines for a dinner, one must consider the budget for each item, how the items pair (both with each other and with the food), as well as their dinner guests’ preferences. An excessive number of decisions could delay purchase or reduce likelihood of completion (Dhar, 1997; Iyengar & Lepper, 2000).

To counteract the negative effects of excessive choice, companies can restrict decision-making in certain areas of the shopping process. The current work operationalizes an online configurator, an approach yet untested in set completion research. Configurators automatically move consumers to the next goal-directed action when the preceding action (i.e., previous product choice) is completed, thus eliminating the need for consumers to decide at each step whether to continue goal pursuit (i.e., “Should I keep shopping?”). Instead, people

remain in an implemental mindset making subtask product purchase decisions (e.g., which grappa to choose) more efficiently (Gollwitzer, 1999). Thus, a fixed sequence advancing consumers forward can facilitate goal completion by reducing the mindset transitions and cognitive effort that may otherwise dissuade consumers from completion (Jin et al., 2013).

Our primary contention derived from the literature and observation of consumer behavior is that using a configurator to represent products as sets, collections, or puzzles to be completed—that may not have otherwise been considered as such—can increase consumer purchase behavior to alleviate feelings of tension associated with incompleteness on the way to achieving goal completion. This approach can usefully be applied to marketing contexts, such as with easily developed online product configurators that guide consumers through the decision-making process. In addition to our work’s practical implications, the present research makes several theoretical contributions. First, we extend research on the goal gradient effect (Hull, 1932; Kivetz et al., 2006) by testing new factors (e.g., how items are grouped together) that also increase goal completion likelihood. Further, we use a novel product configurator manipulation and combine research on subtask decision making (Vohs et al., 2008) with that of task completion (Jin et al., 2013). Finally, we examine unexplored boundary conditions identifying situations under which set completion is less likely to occur. We turn now to specific hypotheses regarding our work.

Hypotheses

No research to date has tested our modelled effects using an online configurator. We therefore manipulate an online configurator to progress step-by-step through our model, testing our predictions on the dependent variable of cross-buying consumer choice. A conceptual model of our predictions and where each is tested in our three studies is shown in Fig. 2. First, the guided nature of a configurator should reduce the effort required for consideration of any single product, thereby increasing likelihood of tasks completed (Jin et al., 2013). Second, a feeling of incompleteness is more likely to manifest if there is something to complete (i.e., the products are presented as related to each other in a set). And third, using visual representation to show how something is incomplete should magnify perceptions and feelings of incompleteness. Thus, to more fully understand the processes driving the incompleteness effect, we manipulate our product configurator in three phases: (1) presenting product offerings together using a configurator is the simplest effect; (2) presenting product offerings as “interrelated categories” or “a set” of offerings is the second level of creating a clear consumption or purchase goal (Böttger et al., 2017); and 3)

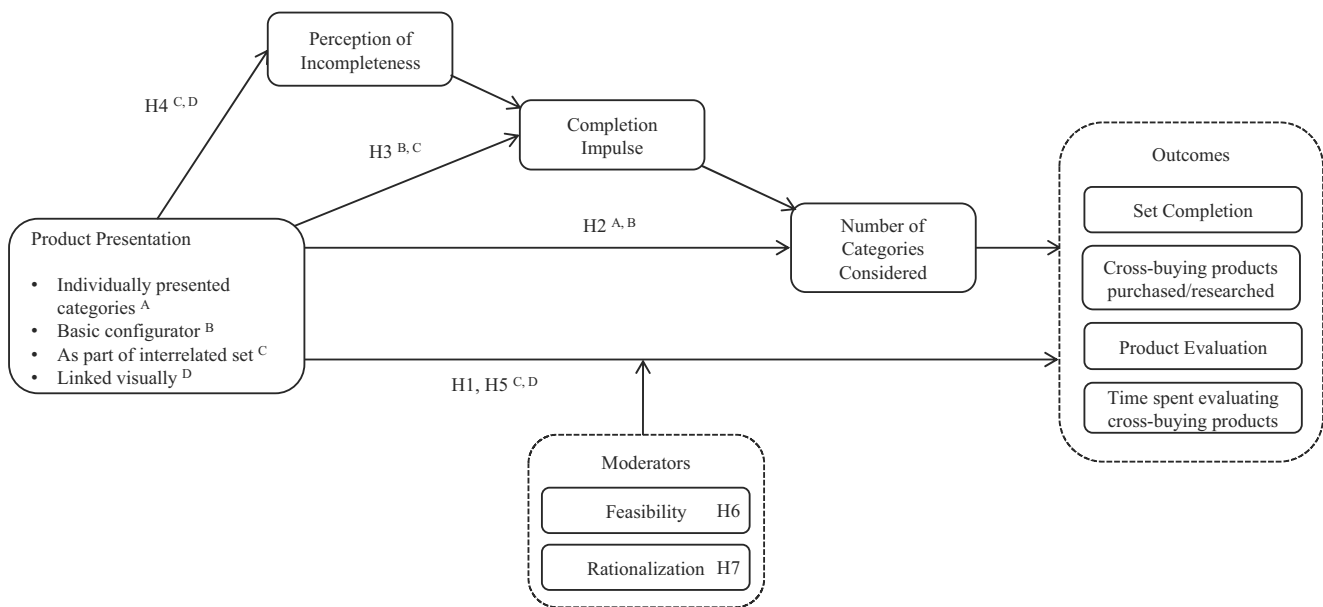


Fig. 2 Conceptual model. *Note.* Study 1 tests H1–H5; Study 2 tests H1; Study 3 tests H6–H7. ^{A,B,C,D} superscripts denote Study 1 conditions compared to test indicated hypotheses

visual presentation of the “missing” elements of a category should strengthen likelihood of a consumer desiring to complete the set or “finish the puzzle” (Cheema & Bagchi, 2011). Our first goal was to establish these three components of the effect. Thus, the following main hypothesis is proposed:

H1 People are monotonically more likely to purchase a complete group of products if the options are A) presented in a configurator (vs. as individual product categories), B) presented as elements of an interrelated larger whole (vs. basic configurator), and C) presented using visual (vs. textual) cues.

We methodologically separate the three components to parse the potential influence of each of the three effects relative to a baseline purchase rate, thereby avoiding overestimating the influence of one of them in isolation. Formal statement of our further hypotheses follows elaboration on the proposed mechanisms below.

Presentation in a product configurator First, we discuss the context of cross-selling using a configurator wherein products are presented as distinct, unrelated products—customers are led through categories and/or customization options in a stepwise manner, forced to consider and make a conscious choice regarding every product offering or customization option for at least a few seconds. Although such a seemingly simple mechanical approach motivates further shopping, at its core a configurator typically presents products as being interrelated in some fashion (analogous to a Panini collection of world cup soccer player stickers), harkening back to our earlier discussion of Lewin’s

(1926, 1935) field theory. The likelihood that customers develop a purchase interest in any of the product offerings is thereby higher compared to conventional online presentations, where products are presented in a way that allows customers to avoid exposure to one or more offerings and thereby limit their shopping time. The average number of observed categories should increase with a gradual product configuration solution forcing consideration (Bordalo et al., 2013) as compared to more conventional forms of marketing (Shih et al., 2019). Thus, we propose that more categories will be considered, leading to an increase in set completion likelihood, if a configurator is used (vs. non-configured online shopping). Formally:

H2 The guided nature of an online configurator (vs. presentation as individual product categories) leads consumers to consider more product categories, thereby increasing likelihood of set completion.

Presentation of products as part of an interrelated set

Consider again Panini collections—sticker spaces for all team players (e.g., on world cup soccer teams) in an album. This combining of teams and players alone increases the probability that a fan will engage with the teams and each player as they scroll through their album. Loosely combining players would not work in the same manner as presenting them as part of a “larger whole.” Zeigarnik (1927, 1938) and Ovsiankina (1928) delineated between clear-cut goals (i.e., a task with a clearly specified end/goal) and indefinite goals (i.e., the end is not clearly predictable) as an important moderator regarding task memory and resumption in a prematurely interrupted task. Zeigarnik (1927, 1938) found recall for interrupted tasks

to be much greater for those with clear-cut goals versus those with indefinite points of completion. Similarly, Ovsiankina (1928) found clear-cut goals to be twice as likely to be resumed versus indefinite actions. It is difficult to experience a sense of incompleteness if one does not know what constitutes completion. Barsalou (1983, 1991) provides ample evidence that people create categories when they might not otherwise exist (i.e., ad hoc categories). Marketers can similarly create ad hoc collections (sometimes across categories) in consumers' minds (Ratneshwar et al., 1996). From a configuration standpoint, product offerings can then be portrayed as an interrelated program with a specified number of elements, with the goal being completion of the collection by purchasing each element. Explicitly linking products to one another in a product configurator will increase consumers' impulse to complete the set, increasing attention paid to all of the offerings, thereby increasing likelihood of consumers buying more—or the full set of—products offered. Suggesting the products are part of a “larger whole” (vs. loosely related items) allows the consumer to see that there may be a set that needs completing, which would increase product consideration and set completion. Formally, we hypothesize:

H3 Presentation of products as a set of interrelated products (vs. presentation as distinct, unrelated items) increases the impulse to complete the set, leading to consideration of more product offerings, resulting in increased likelihood of set completion.

Presentation of products as visually linked in a set In the Panini sticker albums, a placeholder with a certain number is created for each sticker (e.g., in Fig. 1, the missing sticker is labeled #441 [out of 690 for the FIFA 2018 World Cup]). Empty, numbered placeholders provide obvious visual reminders of a collection's incompleteness. Without this numbered placeholder, a missing sticker of the collection would be less obvious, if not unnoticed. Zeigarnik (1927) and Ovsiankina (1928) both found visualization of incompleteness to be an important moderator to the urge to complete. Zeigarnik (1927) notes that the aesthetic structure of a completion task (e.g., visual wholeness), and consequently, the visual clarity of incompleteness influenced capability to remember an uncompleted task. Relatedly, Ovsiankina (1928) described that some trial participants reported the “eye catching” character of an obviously unfinished work as reason for task resumption. Consistent with these early observations, Böttger et al. (2017) found people to be inspired to pursue consumption-related goals when induced by marketing stimuli, while Cheema and Bagchi (2011) found a visually presented progress bar to increase effort and commitment toward goal completion (i.e., saving for a trip). They showed that distance-to-goal was perceived as lower shortly before completion with the progress bar

visualization tool motivating greater savings rates—a finding also consistent with Lewin's (1926, 1935) field theory. Therefore, we predict visual (vs. textual) cues will magnify perceptions of incompleteness, which increase the completion impulse, and result in more products being considered. Formally, we hypothesize:

H4 Visual (vs. textual) depiction of missing products will increase perceptions of incompleteness, increasing the impulse to complete a set, leading to consideration of more product offerings, resulting in greater likelihood of completing a set.

Effect on cross-buying products Next, we should also see consumers evaluating cross-buying products differently than the initially considered products as a result of marketing efforts of the firm (Kumar et al., 2008), such as visual representation. In a dinner setting scenario for example, people commonly shop for red wine, white wine, and sparkling wine, whereas juice and grappa are cross-buying products that “complete” the drink offerings of the party. Without clear suggestion provided/created by marketers (e.g., drinks for every dinner course), the understanding of what constitutes completion of one's set of drinks for the evening is less likely to occur in consumers' minds. Thus, the (amendable) incompleteness of a collection visually represented by placeholders on a product configurator (akin to missing team member stickers in a Panini album) creates an incomplete set, making consumers more likely to purchase (i.e., complete) the collection.

Nunes and Drèze (2006) found consumers to have an increased interest in completing a stamp card as evidenced by less time passing between purchases as people's stamp cards neared completion. Relatedly, we would expect consumers to exhibit different shopping behavior for products that are purchased last in a set of choices (i.e., the cross-buying products that complete a set). As people fill their baskets with products from primary categories (e.g., red, white, and sparkling wines) their shopping task nears completion. A configurator effectively reduces the amount of effort directed at whether consumers will shop for beverages beyond the wines they have selected; rather than expending effort deciding whether to continue shopping or not, they are automatically advanced to the next product, where they can decide whether or not to purchase an item, especially one they may not otherwise have considered. This automatic exposure to visually depicted cross-buying product choices should lead to increased goal-related (i.e., set completing) cross-buying choice behavior (Cheema & Bagchi, 2011). Thus, motivation to complete the set could manifest through increased attention to, and more positive evaluation of, visually presented cross-buying products (e.g., juice and grappa) in a configurator. Formally:

H5 Visual salience of incompleteness (vs. textual grouping) will affect behavior towards cross-buying products such that consumers will A) provide more positive evaluations, B) spend more time evaluating, and C) be more likely to purchase the cross-buying products.

The conceptual model in Fig. 2 illustrates the relationships among constructs including the hypothesized mediators and moderators, which we test across three studies. In Study 1 we examine the incompleteness effect in a vineyard product sales scenario. Study 2 replicates Study 1 in the context of banking services, where professional service firms stand to enormously benefit from an increase in cross-selling to existing customers. In Study 3 we test moderating Hypotheses 6 and 7—discussed in detail preceding that study—in a banking services field study with a different visual incompleteness manipulation than that of the first two studies.

Study 1: Vineyard product sales study

Participants and procedure

This study used a real online shopping site for vineyard products to test our hypotheses. A commercial market research firm screened participants to ensure participants had wine-related beverage needs and wants (i.e., the consumers had invited guests for a meal to their home or restaurant in recent years and indicated a likelihood of purchasing wine over beer for such occasions); fewer than 15% of those contacted qualified. Participants were given the following purchase scenario:

You want to celebrate your birthday and you have invited 10 friends to an evening meal/dinner to your home. You and your friends are Italy fans. You have become besotted with Tuscany in particular. Therefore, you want to buy drinks for dinner from one of the most renowned vineyards of Tuscany. You have already had good experiences with this vineyard in the past. The vineyard is also well known by many of your friends. The online store of the vineyard you want to use for your order has been (anonymously) activated for you. Please fictitiously order drinks there for your birthday dinner. Please assume that you have the required glasses for each respective drink or that you can borrow them from a good neighbor. By clicking on save and send in the shopping cart you complete this test purchase. At the end we briefly ask you about your test purchase.

Eight hundred participants were randomly assigned to one of four online shopping conditions; seven were dropped for incomplete surveys leaving a final sample size of 793. Screen shots associated with each condition are shown in Figs. 3a to

3d. In each figure, the top picture is the start screen of the online shop, the bottom left shows the display after selection of first product, and the bottom right is the overview display after purchase (or non-purchase) in each of the five product categories. Each example screenshot in Figs. 3a to 3d shows the primary products (i.e., sparkling wine, red wine, and white wine) having been selected but not the cross-buying products (i.e., juice and grappa).

Condition A served as a baseline group who viewed a conventional online layout (see Fig. 3a). When participants clicked “Start,” they began on the sparkling wines category, where they could browse and select one of three sparkling wines and the quantity. They could also visit other product categories using the product menu on the left side of their screen. Each product category had three product offerings, of which only one product could be selected. Price and quality always increased in order from left to right, consistently labeled Classico (left), Selezione (center) and Eccellenza (right). By clicking “Add to Cart” participants were sent—as is common with online stores—to the shopping cart (see Fig. 3a bottom left). There, they saw their current selections and additional products that may be of interest to them (i.e., products from unpurchased categories). Thus, even in the condition without the configurator, we ensured that all participants saw all products offered, consistent with the three experimental conditions. Participants could click “Shop more products” or click directly on a remaining product to view the page. With each additionally selected product, the list of products below the shopping cart shortened until it was empty (i.e., participant had selected a product from each of the five categories). Importantly, however, participants did not have to select a product from every category—when they were done, they clicked “Save configuration and send.”

In Condition B, the five product categories were presented as five individual items in a configurator (see Fig. 3b). As in Condition A, participants started on the sparkling wines and selected one of the three product options. In this condition, once the customer clicked “Select,” the name of the selection appeared next to the category name in the configurator (e.g., Eccellenza, bottom left of Fig. 3b). Participants could also click “No selection” or “Next,” and would move to the next product category (or the overview page, if they were in the last category). On the overview page, product categories where no explicit decision had been made were labeled, “No [missing product category].” In this respect, the incomplete nature of the selection in the configurator was textually (vs. pictorially) displayed for participants, presenting a relatively difficult form of visualization (Cheema & Bagchi, 2011). Although there was not a specific “Shop more products” button in Conditions B, C, or D, participants could return to any of the five categories to change their selection or click on the “Go to Shopping Cart.” Total price for each product category was identical across all conditions.

Condition C was identical to Condition B with one modification: in Condition C we changed the title and labels of the product categories to present the five product categories as an interrelated shopping task (see Fig. 3c), wherein each product choice was presented as part of a “larger whole.” First, the page title was changed from “Our product categories at a glance” to “Our dinner product program—everything for your dinner.” Second, the product categories were renamed to tell a connected story around the ordinary course of a dinner as opposed to simple descriptors (e.g., “Our Sparkling Wine” was changed to “A welcoming sparkling wine;” see Methodological Appendix for all changes). Everything else (e.g., products, prices) was the same.

Although Condition C provided a “completion of a larger whole” task, a feeling of incompleteness is more likely to be experienced when a completion goal and the (temporary) incompleteness are made salient. Thus, Condition D was identical to Condition C with the addition of a Panini column² on the right side of the configurator (see Fig. 3d), to ease visualization of the completion goal. Rather than representing the selection (or non-selection) as text (such as in Conditions B and C), “digital stickers” were used as placeholders for each product choice (i.e., Classico, Selezione, or Eccellenza) in a category. Thus, corresponding placeholders remained empty with non-selection, akin to a partially filled Panini sticker album. We also incorporated a progress bar visually depicting level of completion. Following Cheema and Bagchi (2011), we developed this visual manipulation in consultation with expert colleagues, landing on a combination of placeholders and a progress bar emphasizing missing elements to ease visualization of a product program completion goal. In all conditions, purchases and time spent were recorded for participants upon their clicking “Save configuration and send.” Participants then completed a questionnaire with measures of quality, predicted mediators, and manipulation checks (see Table 2 for all measures).

Results

Interrelated set manipulation check In Study 1, we used two manipulation checks designed to assess the changes between conditions because different things were manipulated in each condition. From Condition B to C, the only difference was the verbiage in Condition C linking products together (To what extent do you perceived the products as part of a product program that is designed to be fully utilized? 1 = *Not at all*, 10 = *Very Much*). As expected, a oneway ANOVA on our treatment Conditions B–D revealed that embedding products in a dinner program resulted in significantly greater perception

that the products existed as part of a larger product program ($F(2, 593) = 9.23, p < 0.001$). Contrasts revealed that both Conditions C and D were perceived to exist as part of a larger product program relative to Condition B ($M_B = 6.29, SD = 2.41$; $M_C = 7.03, SD = 2.08$; $M_D = 7.17, SD = 2.11$; B vs. C: $F(2, 593) = 11.56, p = 0.007$; B vs. D: $F(2, 593) = 15.84, p < 0.001$), but there was no difference between Conditions C and D ($p = 0.55$).

Visualization manipulation check Moving from Condition C to Condition D, we added visual emphasis (cf., Cheema & Bagchi, 2011), predicting it would increase feelings of incompleteness (How noticeable was the completeness [incompleteness] of the program based on the visual presentation in the product configurator? 1 = *Not noticeable at all*, 10 = *Very noticeable*). A oneway ANOVA confirmed that salience of incompleteness differed between groups ($F(3, 789) = 44.84, p < 0.001$). Participants in the Panini condition (Condition D) ($M_D = 7.56, SD = 2.12$) reported significantly higher salience of incompleteness than those in Condition C ($M_C = 6.47, SD = 2.53$; $F(3, 789) = 19.54, p < 0.001$), Condition B ($M_B = 6.03, SD = 2.43$; $F(3, 789) = 38.69, p < 0.001$), or Condition A ($M_A = 5.73, SD = 2.64$; $F(3, 789) = 55.06, p < 0.001$). Those in Condition C also reported significantly higher salience of incompleteness compared to Condition A ($F(3, 789) = 9.18, p = 0.003$); there were no other significant differences.

Main analysis We first tested the effects of our manipulations on completion of the product program (i.e., purchasing a product from each of the five categories). A chi-square test of independence showed a significant effect of condition on completion ($\chi^2(3, N = 793) = 147.20; p < 0.001, \phi = 0.43$). Hypothesis 1 predicted a monotonically increasing percentage of participants purchasing an item in all five product categories. Consistent with this prediction, 20.3% of participants completed the program in Condition A, while in Conditions B and C, 37.7% and 55.7% of participants respectively made selections from each category. Finally, in Condition D, 78.6% of participants completed the program—almost four times as many as when product categories were presented individually. Further, the percent of completed programs in each condition was significantly different from each other condition (all $ps < 0.001$) (see Table 3).

Next, a oneway ANOVA revealed a significant main effect of condition on the average number of product categories purchased ($F(3, 789) = 69.72, p < 0.001, \eta^2 = 0.21$). Planned contrasts showed significant differences between groups, supporting the monotonic increase predicted by Hypothesis 1. Specifically, participants in Condition B ($M_B = 3.68, SD = 1.32$) purchased more products than those in Condition A ($M_A = 3.11, SD = 1.34$; $F(1, 789) = 25.54; p < 0.001$) and participants in Condition C ($M_C = 4.30, SD = 1.34$) purchased more products than those in Condition B ($F(1, 789) = 29.34; p < 0.001$). Participants in Condition D ($M_D = 4.63, SD = 1.34$) purchased more products than those in Condition C ($F(1, 789) = 8.59; p < 0.001$).

² We use Panini column as colloquial shorthand to label this manipulation as it conceptually corresponds to the idea of an obvious, visually missing sticker in a Panini sticker collection album.

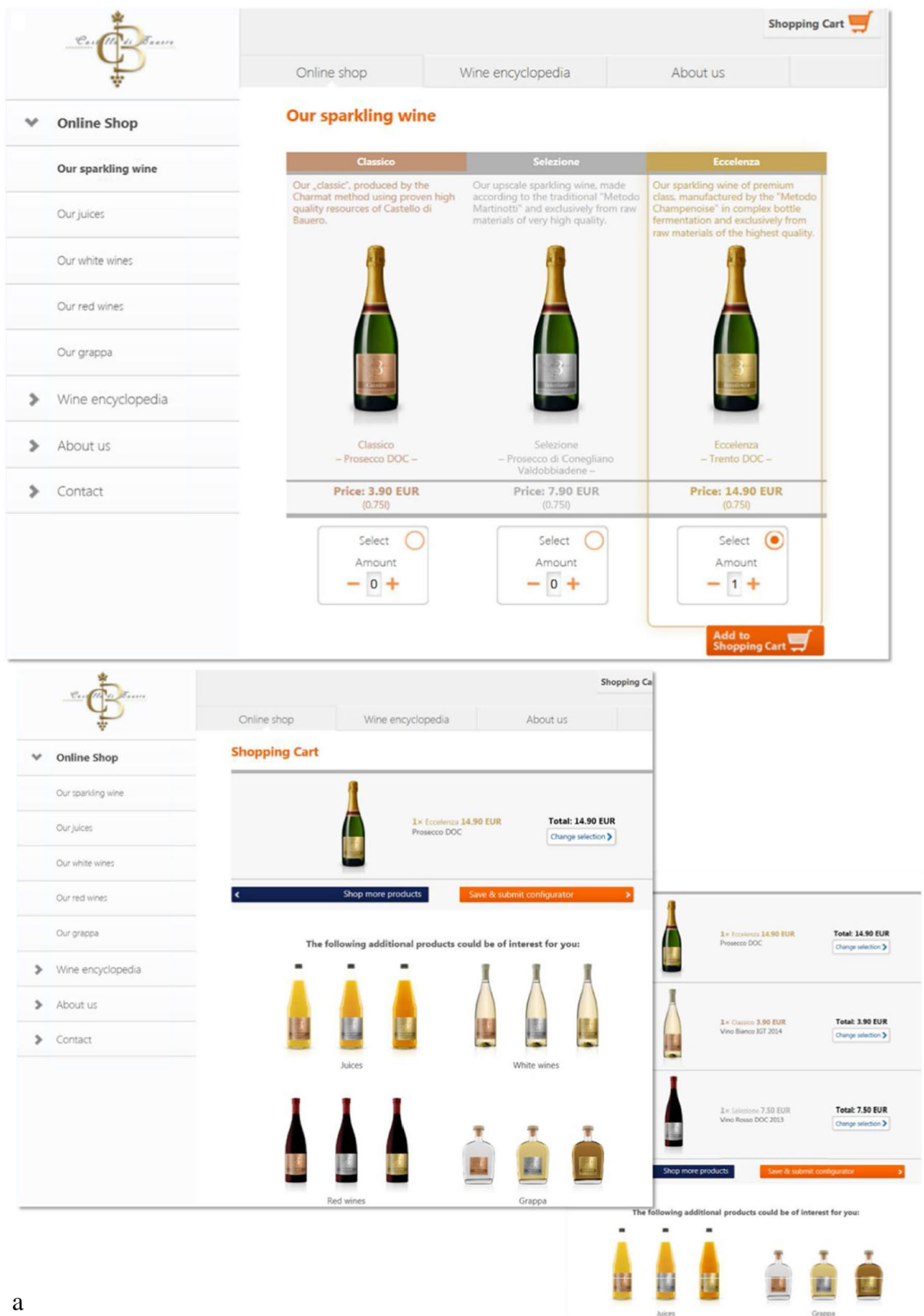


Fig. 3 3a. Study 1 – Condition A: Individually presented product categories. 3b. Study 1 – Condition B: Basic configurator. 3c. Study 1 – Condition C: Configurator with products as part of an interrelated set.

3d. Study 1 – Condition D: Configurator with products presented as an interrelated set and increased visual salience

Our product categories at a glance

Use our configurator to select products in the categories you prefer.

Configurator

Start

Our sparkling wine

Our juices

Our white wines

Our red wines

Our grappa

Go to Shopping Cart

Online shop

Wine encyclopedia

About us

Our product categories at a glance

Use our configurator to select products in the categories you prefer.

Configurator

Our sparkling wine : Sparkling wine Eccellenza

back

Our sparkling wine

Classico	Selezione	Eccellenza
Our „classic“, produced by the Charmat method using proven high quality resources of Castello di Baurero.  Classico – Prosecco DOC – Price: 3.90 EUR (0.75l)	Our upscale sparkling wine, made according to the traditional “Metodo Martinotti” and exclusively from raw materials of very high quality.  Selezione – Prosecco di Conegliano Valdobbiadene – Price: 7.90 EUR (0.75l)	Our sparkling wine of premium class, manufactured by the “Metodo Champenoise” in complex bottle fermentation and exclusively from raw materials of the highest quality.  Eccellenza – Trento DOC – Price: 14.90 EUR (0.75l)
Select Amount 0 +	Select Amount 0 +	Select Amount 1 +
No selection		

next

Our juices

Our white wines

Our product categories at a glance

Use our configurator to select products in the categories you prefer.

Configurator

Our sparkling wine : Sparkling wine Eccellenza

[Change selection](#)

Our juices : No juice

[Change selection](#)

Our white wines : White wine Classico

[Change selection](#)

Our red wines : Red wine Selezione

[Change selection](#)

Our grappa : No grappa

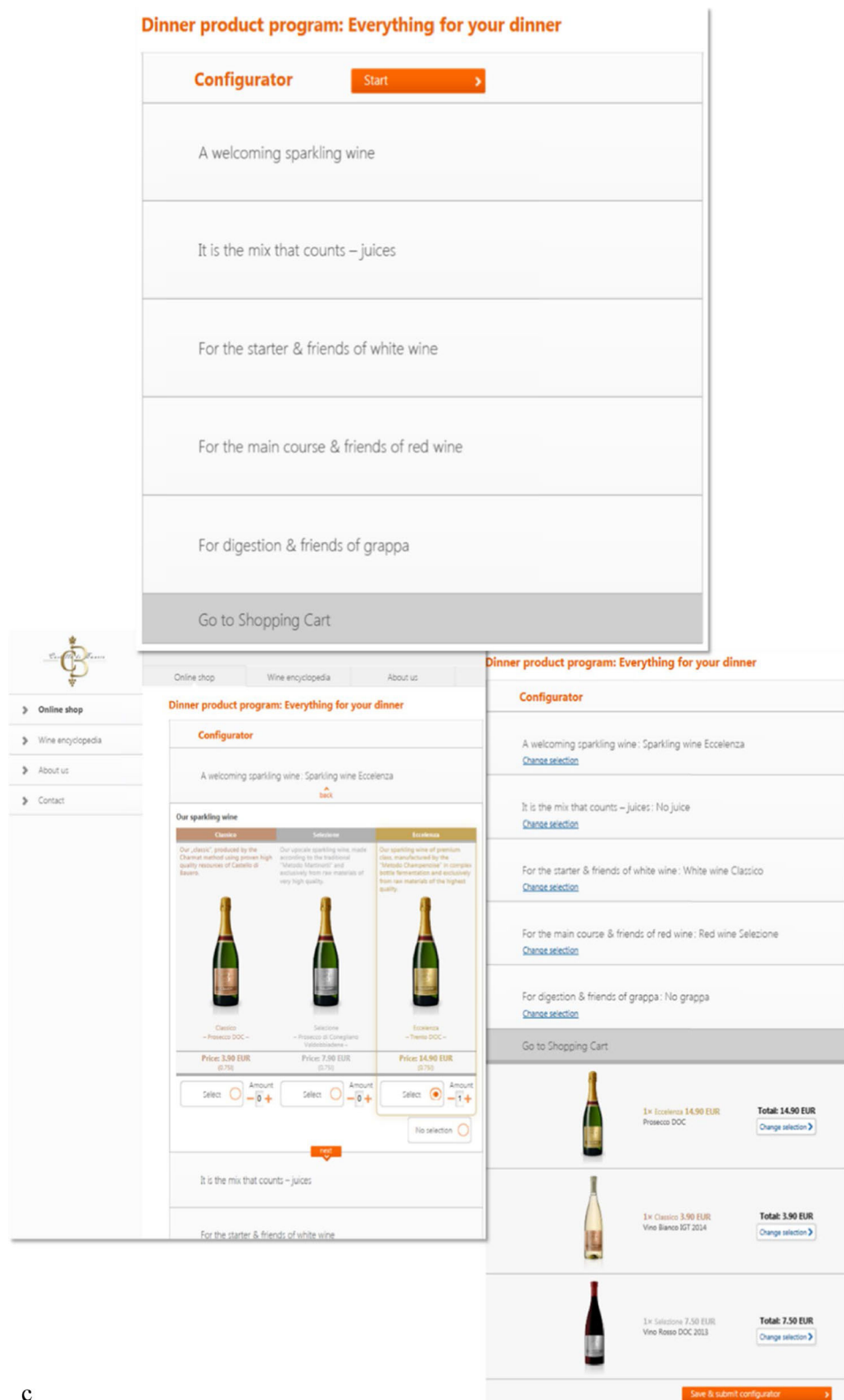
[Change selection](#)

Go to Shopping Cart

b

Fig. 3 (continued)

 Springer



C

Fig. 3 (continued)

Dinner product program: Everything for your dinner

Configurator [Start](#)

Your **B** dinner program consisting of 5 parts

- 1 A welcoming sparkling wine
- 2 It is the mix that counts – juices
- 3 For the starter & friends of white wine
- 4 For the main course & friends of red wine
- 5 For digestion & friends of grappa

Go to Shopping Cart

Program completed up to: 0%

Dinner product program: Everything for your dinner

Configurator [Start](#)

Your **B** dinner program consisting of 5 parts

- 1 A welcoming sparkling wine [Change selection](#)
- 2 It is the mix that counts – juices [Change selection](#)
- 3 For the starter & friends of white wine [Change selection](#)
- 4 For the main course & friends of red wine [Change selection](#)
- 5 For digestion & friends of grappa [Change selection](#)

Go to Shopping Cart

Program completed up to: 60%

Our sparkling wine

Classico	Selezione	Eccelesio
Our "classico" produced by the Charmat method using proven high quality resources of Castello di Beaulieu.	Our sparkling wine made according to the traditional "Metodo Martinotti" and exclusively from raw materials of very high quality.	Our sparkling wine of premium class, manufactured by the "Metodo Champenois" in complete bottle fermentation and exclusively from raw materials of the highest quality.
		
Classico – Prosecco DOC –	Selezione – Prosecco di Conegliano Valdobbiadene –	Eccelesio – Trento DOC –
Price: 3.90 EUR (0.75)	Price: 7.90 EUR (0.75)	Price: 14.90 EUR (0.75)
Select ☐ Amount 0	Select ☐ Amount 0	Select ☐ Amount 1
No selection		

1x Eccelesio 14.90 EUR
Prosecco DOC
Total: 14.90 EUR
[Change selection](#)

1x Classico 3.90 EUR
Vino Bianco IGT 2014
Total: 3.90 EUR
[Change selection](#)

1x Selezione 7.50 EUR
Vino Rosso DOC 2013
Total: 7.50 EUR
[Change selection](#)

[Save & submit configurator](#)

d

Fig. 3 (continued)

Table 2 Study 1 – Measures

Measures		Anchors
Condition A vs. B		
<i>Mediator</i>		
# of Categories Considered	Number of category pages browsed (max. 5)	
Condition B vs. C		
<i>Manipulation Check</i>		
Product Program Perception	To what extent do you perceive the products as part of a product program that is designed to be fully utilized?	1=Not at all 10=Very much
<i>Mediators</i>		
Completion Impulse	To what extent did you experience the impulse to buy a product in all five categories?	1=Not at all 10=Very much
# of Categories considered	Number of category pages browsed (max. 5)	
Condition C vs. D		
<i>Manipulation Check</i>		
Visual Emphasis of Incompletion	You have [not] completed the dinner program: How noticeable was the completeness [incompleteness] of the program based on the visual presentation in the product configurator?	1=Not noticeable at all 10=Very noticeable
<i>Mediators</i>		
Perception of Incompleteness	To what extent did the non-selection of products leave the impression of an incomplete product program?	1=Not at all 10=Very much
Completion Impulse	To what extent did you experience the impulse to buy a product in all five categories?	
# of Categories Considered	Number of category pages browsed (max. 5)	
<i>Product Evaluations</i>		
	How attractive was the juice you viewed?	1=Not attractive at all
	How attractive was the grappa you viewed?	7=Very attractive *Participants could select “not sure”
<i>Potential Confounds ($\alpha=.94$)</i>		
Fairness	How do you evaluate the product configuration regarding FAIRNESS?	1=Very bad
Complexity	How do you evaluate the product configuration regarding SIMPLICITY?	7=Very good
	How do you evaluate the product configuration regarding CLARITY?	
User Friendliness	How do you evaluate the product configuration regarding USABILITY?	
	How do you evaluate the product configuration regarding LAYOUT?	
<i>Satisfaction & Quality</i>		
Quality	How did the online store you viewed compare to other online stores known to you?	1=Much worse 7=Much better
Satisfaction	How satisfied were you with the configured solution?	1=Very dissatisfied 7=Very satisfied

All variables were translated to English from original participant questionnaire in German

Product categories presented individually (Condition A) vs. basic configurator presentation (Condition B) Recall that our product configurator offered identical products at identical prices but embedded the products in a configurator guiding consumers through each product category. Hypothesis 2 predicted the number of products purchased would increase because a configurator (vs. conventional online store) forces consumers to browse more product categories. We compare Conditions A and B to test the basic effect of using an online product configurator. In Condition A, the number of purchased products ($M = 3.11$) was almost equal to the number of product category pages viewed ($M = 3.55$),

suggesting participants did little browsing and only viewed products relevant to them. The grappa, for example, was viewed by fewer than 50% of participants in Condition A. In Condition B, however, participants were guided through the products by the configurator (although it was possible to skip a category). Indeed, the number of product categories considered was significantly higher in Condition B ($M_B = 4.76$, $SD = 0.58$) than in Condition A ($M_A = 3.55$, $SD = 1.34$; $F(1, 394) = 138.32$; $p < 0.001$, $\eta^2 = 0.26$). Thus, it seems that moving through product categories via a configurator underlies the positive effects of product configurator use on cross-buying. Testing the causal relationship between the number of

Table 3 Study 1 – Results supporting Hypothesis 1

	Condition A	Condition B	Condition C	Condition D
Participant N	195	199	201	196
Percentage of participants purchasing complete set of all 5 products	20.3% _a	37.7% _b	55.7% _c	78.6% _d
Mean (SD) number of product categories purchased (maximum 5)	3.11 _a (1.34)	3.68 _b (1.32)	4.30 _c (1.34)	4.63 _d (1.34)

Different subscripts reflect significant differences between groups at $p < .01$

observed categories and set completion using PROCESS (Model 4; Hayes, 2017), we found that the indirect effect of condition on completion through number of product categories viewed was significant ($b = 5.34$, $SE = 7.73$, 95% CI: 3.62, 23.53; see Fig. 4), confirming Hypothesis 2.

Basic configurator presentation (Condition B) vs. Products presented as part of interrelated set (Condition C) We next compared Condition B with Condition C to test the impact of offering products as part of a “larger whole” or set in a configurator. Our theoretical reasoning predicted that when products were embedded in a larger whole, participants would experience a greater impulse to complete the program (To what extent did you experience an impulse to buy a product in all five categories? 1 = *Not at all*, 10 = *Very Much*). Indeed, participants in Condition C reported a significantly stronger impulse to complete the program ($M_C = 6.26$, $SD = 2.71$) than those in Condition B ($M_B = 5.38$, $SD = 2.86$; $F(1, 398) = 10.13$, $p = 0.002$). Next, we tested our hypothesis that an increased impulse to complete the program would lead participants to consider more categories and ultimately complete the program. Using PROCESS (Model 6; Hayes, 2017), we found a significant indirect effect, as the confidence interval did not contain zero ($b = 5.34$, $SE = 1.75$, 95% CI: 2.08, 8.92), supporting Hypothesis 3 (see Fig. 5). Thus, embedding product categories in an interrelated “larger whole” program was more likely to activate a completion impulse that in turn led participants to consider more product categories, and eventually to purchase the full set of products offered.

Although participants felt a stronger completion impulse in Condition C associated with the larger story connecting the products, the textual depiction of a non-selected product did not elicit a strong effect of incompleteness. Perceived sense of incompleteness (To what extent did the non-selection of products leave the impression of an incomplete product program? 1 = *Not at all*, 10 = *Very Much*) did not significantly differ between Conditions B and C ($F(1, 399) = 0.46$, $p = 0.50$). However, we predicted this stronger feeling of incompleteness to manifest in the Panini condition, which we test next.

Products presented as part of interrelated set (Condition C) vs. Products linked visually (Condition D) Recall our prediction that visual salience of incompleteness should lead to greater perceptions of incompleteness using the Panini column, thereby strengthening the completion impulse, leading to

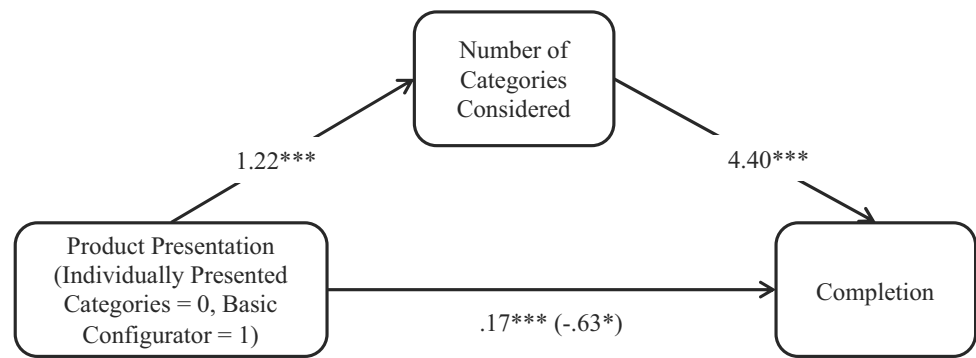
consideration of more product categories and resulting in higher completion percentages. A PROCESS model (Model 6; Hayes, 2017) found the indirect effect of condition on completion through: (1) perceptions of incompleteness, (2) completion impulse, and (3) number of categories considered, was not significant ($b = 0.0004$, $SE = 0.009$; 95% CI: -0.02, 0.02). Looking at each indirect path, however, we observed that the effect of condition on completion through (1) perceptions of incompleteness and (2) completion impulse was positive and significant ($b = 0.06$, $SE = 0.03$; 95% CI: 0.02, 0.12; see Fig. 6). We attribute the lack of a significant indirect effect through number of categories considered to a ceiling effect. Indeed, the mean number of categories considered for both conditions C and D neared the maximum (4.93 and 4.97 categories, respectively). Thus, we find partial support for Hypothesis 4.

Cross-buying products As predicted by Hypothesis 5, differences between conditions for purchases and attractiveness should be pronounced for the cross-buying products as compared to the primary offerings. We found that significantly more participants in Condition D purchased grappa and juice as compared to those in Condition C (Grappa: 87% vs. 77%; $F(1, 395) = 7.02$, $p = 0.008$, $\eta^2 = 0.02$; Juice: 91% vs. 76%; $F(1, 395) = 18.39$, $p < 0.001$, $\eta^2 = 0.04$). Additionally, as predicted, all participants in Condition D spent more time looking at grappa and juice than participants in Condition C (Grappa: $M_D = 18.89$ s; $M_C = 15.30$ s; $F(1, 395) = 6.11$, $p = 0.01$, $\eta^2 = 0.02$; Juice: $M_D = 24.15$ s; $M_C = 20.28$ s; $F(1, 395) = 4.62$, $p = 0.03$, $\eta^2 = 0.01$). Finally, participants evaluated grappa significantly more positively (1 = *Not attractive*, 7 = *Attractive*) in Condition D versus Condition C ($M_D = 5.24$, $M_C = 4.82$; $F(1, 367) = 7.99$, $p = 0.011$; $\eta^2 = 0.02$) and the difference between conditions for juice was marginally significant in the predicted direction ($M_D = 4.96$, $M_C = 4.67$; $F(1, 380) = 3.69$, $p = 0.057$; $\eta^2 = 0.01$).³ In contrast, there were no differences across conditions for any of the primary offerings regarding purchase rate or attractiveness (see Table 4 for all results). Thus, Hypothesis 5 was supported.

Potential confounds Consultation with managerial and academic marketing professionals before running Study 1 suggested some possible confounds. Specifically, the Panini column may be perceived as: (1) an unfair representation of products, (2) not

³ Participants who selected “Not sure” ($N = 28$ for grappa, $N = 15$ for juice) regarding attractiveness of each product were excluded from this analysis.

Fig. 4 Study 1 – Mediating effect of number of categories considered on completion (Condition A vs. B). *Note.* All coefficients are unstandardized, and the value in parentheses is the coefficient when including the mediator in the regression. * $p < .05$, ** $p < .01$, *** $p < .001$



user friendly, or (3) more complex than typical online stores. We tested for these confounds after participants completed their shopping exercise. These variables (Fairness, Simplicity, Clarity, Usability, Layout, 1 = *Very bad*, 7 = *Very good*) loaded onto a single factor and therefore were combined for analysis ($\alpha = 0.94$). There were no significant differences across conditions ($F(3, 789) = 0.79, p > 0.50$). Additionally, one question assessing how the online store in the study compared to other online stores (How did the online store you viewed compare to other online stores known to you? 1 = *Much worse*, 7 = *Much better*) revealed no significant differences in perceived quality across conditions ($F(3, 789) = 2.04, p = 0.11$). Another question regarded the impact on customer satisfaction of our Condition D; critical observers may consider the Panini-configurator a somewhat sneaky marketing manipulation that could create customer dissatisfaction. While somewhat obliquely addressing this criticism, we asked participants how satisfied they were with their configured solution (1 = *Very dissatisfied*, 7 = *Very satisfied*). No differences across conditions ($F(1, 789) = 1.04, p = 0.35$) suggested no evidence of unease with the Panini method.

Study 2: Banking study

Participants and procedure

Study 2 is a straightforward replication of Study 1 exploring the incompleteness effect in the context of banking services—an industry where cross-selling is a prominent management topic. This study was conducted through a commercial market research company with 634 employed German adults aged 25–50 (46.0% Female). Participants were asked to consider the following purchase scenario:

You decided to accept a new job offer in Austria and move there. On recommendation of your new employer, you want to open a salary account at the BANK (anonymized, prestigious Austrian banking institution). The following website shows the respective product category “Account & Cards.” Please choose an account plus possible complementary products from this category. Click on “Save & Submit” in the Shopping Cart to finalize the online purchase. You will then be forwarded to a questionnaire. There we ask you about your selection.

Participants were randomly assigned to one of three online shopping conditions identical to Conditions A, C, and D from Study 1, and therefore we label our conditions as such. Seeing

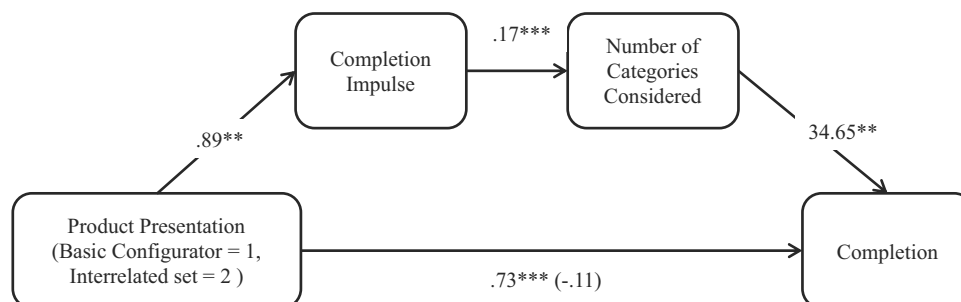


Fig. 5 Study 1 – Serial mediation effect of completion impulse and categories considered on completion (Condition B vs. C). *Note.* Figure 5 depicts the indirect effect of condition on completion via 1) impulse to

complete and 2) number of categories considered. All coefficients are unstandardized, and the value in parentheses is the coefficient when including the mediator in the regression. * $p < .05$, ** $p < .01$, *** $p < .001$

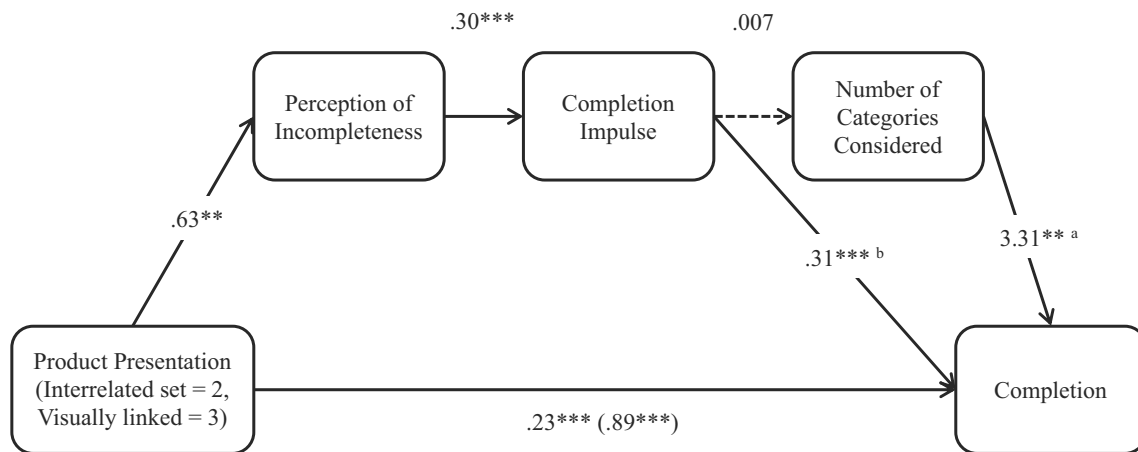


Fig. 6 Study 1 – Serial mediation of feelings of incompleteness, impulse to complete, and number of products considered on completion (Condition C vs. D). *Note.* All coefficients are unstandardized, and the value in parentheses is the coefficient when including all mediators in the regression. * $p < .05$, ** $p < .01$, *** $p < .001$. ^a The indirect effect of

condition on completion via 1) feelings of incompleteness, 2) impulse to complete, and 3) number of categories considered is not significant ($b = .0004$, 95% CI: $-.02, .02$). ^b The indirect effect of condition on completion via 1) feelings of incompleteness and 2) impulse to complete is significant ($b = .06$, 95% CI: $.02, .12$)

marginal benefit of inclusion of the basic product configurator (Study 1, Condition B), and desiring to simplify operationalization of Study 2, we focus on the “larger whole” and the visual salience of incompleteness relative to baseline Condition A. The home screen and product configurators followed the design of Study 1, and Fig. 7 shows the banking product configurator with visual salience (Condition D). The top image in the figure shows the start screen, and the bottom left image shows the credit card offerings (one of the two optional cross-buying products). The bottom right image displays the shopping cart view after selection or non-selection of the four product categories. The primary offerings (i.e., account tariff and debit card) and one cross-buying product (i.e., overdraft facility) have been selected, but not the second cross-buying product (i.e., credit card).

As in Study 1, Condition A was a conventional homepage (see Methodological Details Appendix for all stimuli). Participants viewed the bank’s promise of performance and product categories could be seen in the menu bar on the left. All participants were required to choose an option from each of the two primary offerings (account tariff and debit card). After clicking “Select” and “Add to Cart,” participants were navigated to the shopping cart view where they saw the text, “The following additional products could be of interest to you,” accompanying any missing products. Participants could click a “Shop more” button to view and select the optional cross-buying products (i.e., credit card and overdraft facility), which served as dependent measures. Participants submitted their purchases by clicking “Save configuration and send.”

In Condition C, the start page and all products were embedded together in a product configurator as part of a “larger whole.” The program was given a title (“Our account and cards solution—All about your daily banking”) and the

product offerings were numbered. After the start page, participants were guided through each page of the configurator. Once a participant clicked “Select,” their chosen product was listed using text next to the category name in the configurator. Participants had to choose a product for each primary offering, but they could choose “No selection” for the optional cross-buying product categories.

Condition D (shown in Fig. 7) builds upon the idea of a “larger whole” with the intention of making incompleteness more prominent and easier to visualize, increasing likelihood that customers would purchase cross-buying options to complete the product program. As in Study 1, the addition of a Panini column with “digital stickers” enabled customers to more easily envision incompleteness by visually representing unselected products. Participants were again guided through the configurator, but the selected options were presented with pictures (vs. text), and the unselected products with visual placeholders. After submitting their purchases, all participants completed two questions assessing the effectiveness of our manipulations.

Results

A oneway ANOVA confirmed an effective product program manipulation (To what extent did you perceive the offerings as part of a product program designed to be completely utilized? 1 = *Not at all*; 10 = *Very much*), ($F(2, 629) = 8.83, p < 0.001, \eta^2 = 0.03$). Specifically, Condition A ($M_A = 6.31, SD = 2.41$) was perceived to be significantly less a part of a product program designed to be completely utilized than Condition C ($M_B = 7.11, SD = 2.27; F(2, 629) = 12.80, p < 0.001$) or Condition D ($M_C = 7.14, SD = 2.22; F(2, 629) = 13.54, p < 0.001$). An

Table 4 Study 1 – Results for Hypothesis 5

Cross-buying products									
	Juice				Grappa				
	Condition C	Condition D	<i>p</i>		Condition C	Condition D	<i>p</i>		
Percent purchased	76%	91%	<0.001		77%	87%	0.008		
Time spent browsing in seconds (SD)	20.28 (16.84)	24.15 (19.01)	0.030		15.30 (10.55)	18.89 (17.57)	0.010		
Attractiveness (SD)	4.63 (1.63)	4.96 (1.66)	0.057		4.82 (1.57)	5.24 (1.53)	0.011		
Primary Offerings									
	Red Wine				White Wine			Sparkling Wine	
	Condition C	Condition D	<i>p</i>		Condition C	Condition D	<i>p</i>	Condition C	Condition D
Percent purchased	97%	98%	0.38		86%	91%	0.11	95%	96%
Time spent browsing in seconds (SD)	20.81 (20.50)	20.30 (19.34)	0.80		23.63 (18.66)	24.90 (21.39)	0.53	31.49 (21.69)	31.68 (20.54)
Attractiveness (SD)	5.42 (1.37)	5.64 (1.32)	0.13		5.29 (1.39)	5.52 (1.38)	0.11	5.17 (1.48)	5.44 (1.45)

additional manipulation check (You have [not] completed our basic banking program: How noticeable was the [in]completeness of the program based on the type of visual presentation in the product configurator? 1 = *Not noticeable at all*; 10 = *Very noticeable*), compared effectiveness of the incompleteness visualization manipulation between Conditions C and D (i.e., both conditions with product configurators). A oneway ANOVA revealed that participants in Condition D ($M_C = 7.52$, $SD = 2.34$) reported incompleteness as more noticeable than those in Condition C ($M_B = 6.44$, $SD = 2.54$; $F(1, 418) = 20.54$, $p < 0.001$, $\eta^2 = 0.05$).

Recall that Hypothesis 1 predicted that a product configurator would lead to more set completions than a conventional homepage, and salient visualization of an incomplete set would further increase completion compared to text-only presentation of offerings. Supporting this prediction, only 9.8% of participants in Condition A completed the set (i.e., chose the two cross-buying products) compared to 46.4% of participants in Condition C ($\chi^2(1, N = 425) = 70.72$, $p < 0.001$, $\phi = 0.41$). Further, a significantly higher proportion of participants in Condition D (65.6%) selected the complete set of offered products as compared to Condition C (46.4%; $\chi^2(1, N = 420) = 15.55$, $p < 0.001$, $\phi = 0.19$).

These findings were supported by a oneway ANOVA comparing the number of products purchased by conditions. A main effect of condition was found ($F(2, 631) = 131.28$, $p < 0.001$, $\eta^2 = 0.29$) and pairwise comparisons confirmed a monotonically increasing pattern such that participants in Condition D ($M_D = 3.53$, $SD = 0.71$) purchased significantly more products than those in Condition C ($M_C = 3.26$, $SD = 0.79$; D vs. C: $F(2, 631) = 15.25$, $p < 0.001$) who purchased significantly more products than those in Condition A ($M_A = 2.44$, $SD = 0.67$; C vs. A: $F(2, 631) = 135.93$, $p < 0.001$). Across conditions, then, we again find support for Hypothesis 1 and replicate the findings of Study 1 in a different domain.

Discussion and further hypotheses

Studies 1 and 2 supported our hypotheses regarding people's desire to complete an unfinished set in two different shopping contexts. These two experiments involved situations of online cross-selling and simultaneous purchase decisions for products and services. In Study 3, we turn to decision-making in the case of services customers buy *over time*, as there are often situations in which purchases do not occur all at once. For example, people may buy an iPad, iPhone, iMac, and an Apple watch, but rarely purchase them simultaneously. Similarly, in the case of banking products or services, people may not decide on a savings account, an insurance plan, and a pension at a single point in time. In such situations, we believe the incompleteness effect can be used to create a “set” of products or services that customers will want to “complete” over time. We also consider a different marketing stimulus for presenting an incomplete task—that of a visually incomplete puzzle, the pieces of which represent chosen (and missing) services. Importantly, in Study 3 we test our moderating hypotheses that the incompleteness effect depends on consumers' perceived feasibility of set completion and purchase rationalizations.

Feasibility Boundary conditions for the incompleteness effect suggested in the literature include feasibility. The perceived feasibility of a task has been shown to moderate completion of a task across a variety of situations (Locke & Latham, 1990). As a task decreases regarding perceived feasibility, participants should become less likely to remember their prior performance (Zeigarnik, 1927, 1938) or resume interrupted actions (Ovsiankina, 1928). If a task is perceived to be too difficult or unattainable, people's motivation to engage in said task is lower (Locke, 1982; Locke & Latham, 1990). In other words, setting goals that are too high can have a negative effect on performance (Locke, 1982). Related research has

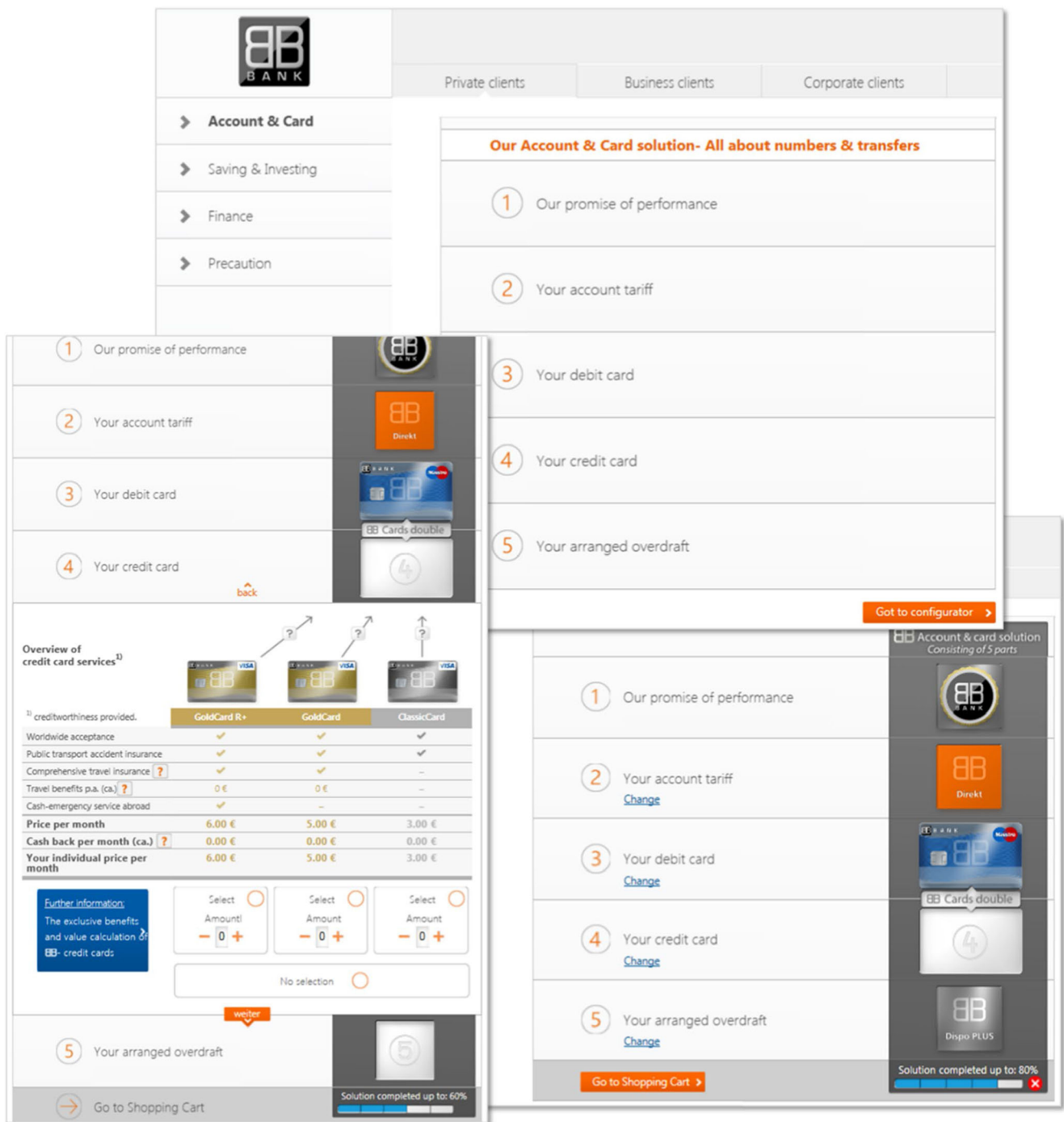


Fig. 7 Study 2 – Condition D: Configurator with products presented as part of an interrelated set and increased visual salience

shown that as confidence in ability to complete a task increases, so too does performance (Bandura, 1986; Bandura & Cervone, 1983; Dachler & Mobley, 1973). However, the risk that people may abandon a task altogether does exist, in that a task deemed already partially failed, or an “all-or-nothing” type of goal can kill motivation (Cochran & Tesser, 1996; Soman & Cheema, 2004). As related to the current work, the incompleteness effect should be less likely to occur

if product program completion is perceived as too difficult to attain. Formally:

H6 Feasibility will moderate the incompleteness effect such that if product program completion is deemed unfeasible by the consumer, consumers will be less likely to complete the program.

Rationalization Another potential moderator relates to a person's task justification or rationalization for their actions. The degree to which one remembers prior performance (Zeigarnik, 1927, 1938) and likelihood of resuming interrupted tasks (Ovsiankina, 1928) depends on the degree to which people were involved in their initial task-related actions, as well as the degree to which they were initially committed to completing a task. People are more motivated to stay engaged (or complete a task) when it is personally relevant. A personally relevant goal is associated with greater importance, thereby creating greater internal tension which results in greater motivation to complete the task (Locke & Latham, 2006).

Justification of need was shown by Zeigarnik (1927, 1938) and Ovsiankina (1928) to be associated with increased tension resulting in greater probability of task completion. Failure, or inability, to justify or rationalize purchase of products from a single source will hamper likelihood of increased purchase of a complete set of offerings. Relatedly, the concept of commitment has been found to moderate goal pursuit (Lewin, 1935; Locke & Latham, 1990). If commitment is absent, motivation to complete a task will also be absent (Erez & Zidon, 1984; Naylor et al., 2013; see Locke et al., 1988 for a review). For example, Kivetz et al. (2006) manipulated goal commitment in a coffee stamp card experiment; in their control condition, participants received stamp cards with no incentive to complete the goal (i.e., they received payment regardless of card completion), and no goal gradient effect was observed (i.e., there was no decrease in time between visits as customers neared completion). These authors argued that the urge to complete the stamp card was cognitively overridden and eliminated. Following this logic, we hypothesize:

- H7** Consumer rationalization for completion will moderate the incompleteness effect such that it will be attenuated as reasons for program completion decrease.

Study 3: Banking field study

Participants and procedure

Study 3 was conducted in the context of an actual cross-selling optimization project for a German regional bank. An individualized link invited customers to participate in exchange for a chance to win an iPad or 100 euros. Customers who opted in were informed that the bank's products had been combined into new *categories-of-need*, where each category focused on

a specific financial need. The largest percentage of customers currently had only the "Liquidity" category-of-need filled (i.e., used only their checking account and/or credit cards at the bank); the study was conducted using customers from this group who had online banking access. Participants were randomly assigned to one of three conditions illustrated in Fig. 8. Of the 5,000 qualified customers, 459 usable surveys were completed ($N_A = 180$, $N_B = 133$, $N_C = 146$; 40.2% female; 15 – 80 years old).

In Condition A, participants saw only their current status of product use in textual form (e.g., the Group A participant in Fig. 8 only uses the "Liquidity" category). Next, participants were told they would be informed at regular intervals regarding remaining categories-of-need. Participants were not told how many remaining categories-of-need there were, thereby preventing them from having a clear completion goal at the outset.

Condition B embedded the participant's current usage in a larger product program (see Group B in Fig. 8) consisting of five categories promising "holistic care" of all financial needs when fully completed. The five categories were visually depicted as five blue squares. However, the only indication of fulfilled categories-of-need was a text label "Yes," whereas those not yet fulfilled were labeled "No." That is, the blue boxes looked the same across in-use versus not-in-use categories. Participants were told they would receive information at regular intervals regarding their current category usage. In contrast to Condition A, participants in Condition B knew how many categories-of-need comprised the product program (and therefore how many were needed to complete the set). Finally, in Condition C, the information was again presented as a holistic product program; each of the five categories-of-need was visually represented as a separate piece of a jigsaw puzzle (see Figs. 8 and 9). Corresponding jigsaw puzzle pieces were filled when at least one product in a category-of-need was selected. Participants were told that their current "categories-of-need jigsaw puzzle" would be sent at regular intervals in the future and viewable in their online banking login area.

After initial assessment of current categories-of-need usage and introduction to the online program, all participants answered a questionnaire. Each participant viewed the website page in Fig. 9 (matched to condition). We assessed the efficacy of the manipulation by asking participants to report to what extent the not-yet-used product categories were perceived as missing parts of a holistic program (1 = *Not at all*, 7 = *Very much*). Next, each participant shared to what extent they planned to seek more information about each unused category-of-need (1 = *Very unlikely*, 7 = *Very likely*); this measure of seeking information offered by a company over time was viewed as indicative of the desire to purchase a complete set. In Condition A, where participants did not initially know how many total categories-of-need there were,

information about each category-of-need was displayed on a separate page (e.g., Group A in Fig. 9 shows the survey stimulus for the “Assets” category-of-need). For Conditions B and C, information about all categories-of-need were displayed on the same page, with the already-used category information grayed out (see Fig. 9). Additionally, participants could report whether any of the categories were irrelevant or uninteresting (i.e., would never be considered). Finally, participants answered three questions assessing potential rationalizations for completing the program, averaged to create a single measure of rationalization ($\alpha = 0.80$). See Methodological Details Appendix for all measures.

Results

A oneway ANOVA revealed a main effect of condition on perceptions of a holistic program, ($F(2, 456) = 4.10, p = 0.017, \eta^2 = 0.02$), confirming our manipulation worked as intended. Participants in Condition C ($M_C = 4.15, SD = 1.64$) reported significantly higher perceptions of a holistic program than either Condition A ($M_A = 3.67, SD = 1.53; F(2, 456) = 4.10, p = 0.008$) or Condition B ($M_B = 3.71, SD = 1.72; F(2, 456) = 4.10, p = 0.023$). Conditions A and B did not significantly differ from each other ($p = 0.85$).

We were next interested in participants’ intent to inform themselves about each unused category-of-need. We first

calculated the average probability of one’s intention to seek more information online about the remaining four unused categories-of-need. As predicted, the intent to seek more information about the remaining categories-of-need significantly differed across condition ($F(2, 456) = 8.99, p < 0.001, \eta^2 = 0.038$). Specifically, participants in Condition C ($M_C = 3.63, SD = 1.59$) were more likely to seek further information as compared to Condition B ($M_B = 3.04, SD = 1.54; F(2, 456) = 10.38, p = 0.001$) and Condition A ($M_A = 2.94, SD = 1.45; F(2, 456) = 16.14, p < 0.001$). Conditions A and B did not differ from one another ($p = 0.59$). Thus, Study 3 showed partial support for Hypothesis 1.

The jigsaw puzzle of Condition C was designed to be an easier visualization of degree of incompleteness than the textual representation of Condition B. The manipulation check supported this expectation, showing a significantly lower value for Condition B (which was statistically indistinguishable from Condition A) as compared to the jigsaw puzzle of Condition C. The significant difference between Conditions B and C regarding the focal dependent variable of seeking further information about missing categories also supported the hypothesis that visualization better motivated people to inform themselves about unused categories in the future. For the sake of parsimony, given the statistical similarity of Conditions A and B, we omit Condition B for the analyses testing our moderating Hypotheses 6 and 7. We compare Condition A’s conventional homepage with Condition C’s

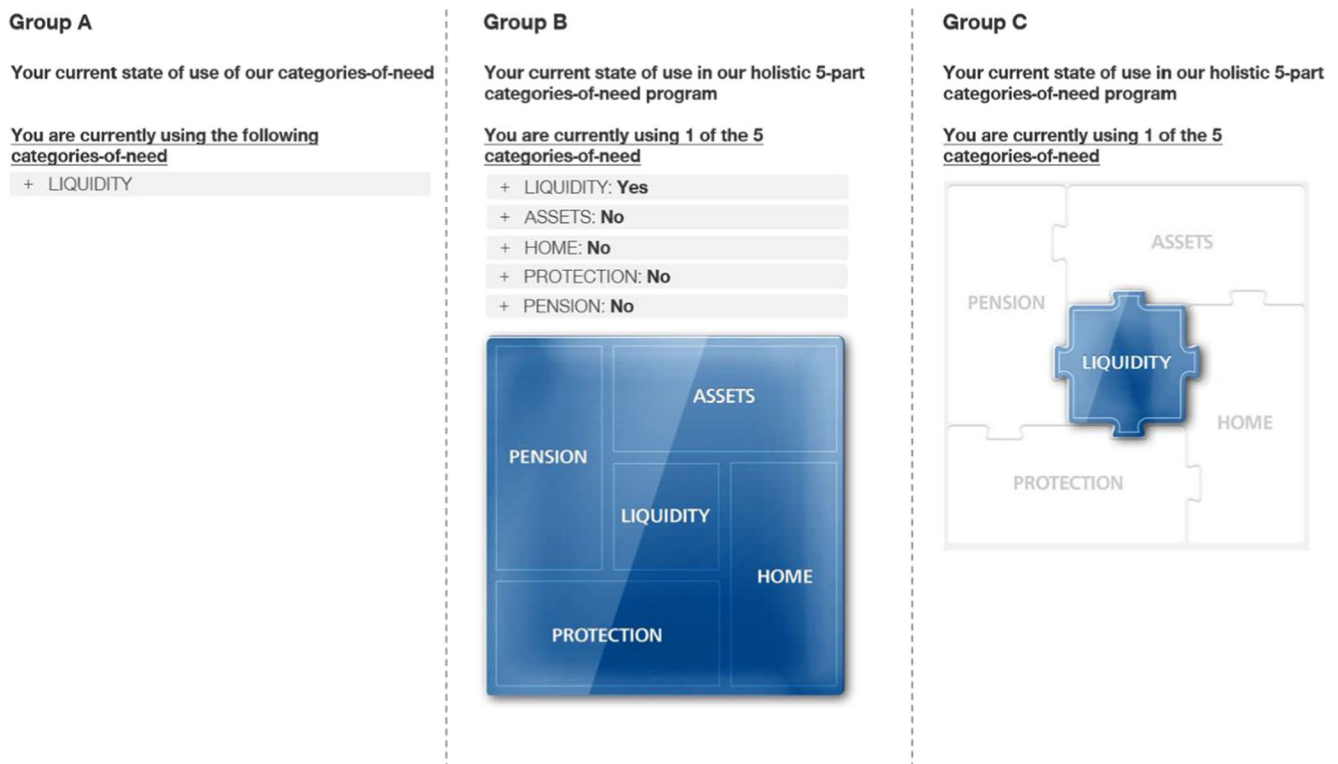


Fig. 8 Study 3 – All condition manipulations

novel jigsaw puzzle format (results remain qualitatively unchanged if we instead combine Conditions A and B).

For each category-of-need, participants could report that they needed no products in the category and would therefore never buy this product (from the bank or other providers). The fact that these participants would never need a product in at least one category would make completion of the program irrelevant or unattainable. Thirty-nine percent of participants in Condition A and 32 percent in Condition C classified at least one category-of-need as irrelevant (we dropped 15 participants in Conditions A and C who stated all four missing categories-of-need were irrelevant). We conducted a 2 (Condition: A vs. C) $\times$ 2 (Completion: possible vs. not possible) ANOVA on likelihood of pursuing more information about yet-unselected categories. Main effects of condition ($F(1, 307) = 7.41, p = 0.007, \eta^2 = 0.024$) and completion ($F(1, 307) = 17.67, p < 0.001, \eta^2 = 0.054$) were qualified by a significant interaction ($F(1, 307) = 4.51, p = 0.035, \eta^2 = 0.014$). When participants did not perceive completion to be possible (i.e., they did not need products from at least one category), there was no difference between Condition A ($M_A = 2.87, SD = 1.63$) and Condition C ($M_C = 2.98, SD = 1.70$; $F(1, 307) = 2.56, p = 0.11$). In contrast, when participants perceived completion to be possible, we again observed the incompleteness effect. Participants in Condition C were significantly more likely to pursue information about yet unselected categories-of-need ($M_C = 4.15, SD = 1.40$) than were customers in Condition A ($M_A = 3.25, SD = 1.48, F(1, 307) = 17.35, p < 0.001$). Figure 10 shows support for Hypothesis 6, wherein the incompleteness effect did not occur for consumers for whom completion was not feasible (i.e., at least one category was not needed).

We next conducted a linear regression examining the effects of condition, rationalization, and their interaction on likelihood of seeking out more information. The regression revealed a significant effect of rationalization ($b = 0.29, t = 3.09, p = 0.002$), a nonsignificant effect of condition ($b = -0.19, t = -0.87, p = 0.38$), and a significant rationalization $\times$ condition interaction ($b = 0.11, t = 2.24, p = 0.026$). A spotlight analysis indicated a significant positive effect of condition on information seeking at 1 SD above the mean of rationalization ($b = 0.43, t(322) = 4.16, p < 0.001$), but no effect at 1 SD below the mean of rationalization ($b = 0.09, t(322) = 0.84, p = 0.40$; see Fig. 11). Furthermore, a floodlight analysis (Spiller et al., 2013) indicated that there was a significant positive effect of condition at any uncentered rationalization score above 3.38 out of 7 ($b_{JN} = 0.17, t(322) = 1.97, p = 0.05$). In support of Hypothesis 7, this result indicated that the incompleteness effect disappeared at low levels of rationalization (i.e., when a customer had lower need for a complete program).

Discussion

Studies 2 and 3 confirmed the main findings of Study 1 in the context of the banking industry where cross-buying/cross-selling is a dominant topic on management's agenda. The jigsaw “whole” of Study 3 showed in a large-scale field study that the incompleteness effect could occur when successive purchases may be made over time. Further, the visual presentation of the product categories (i.e., as puzzle pieces) led more customers to pursue information about yet-unused product categories. Importantly, we also show that the incompleteness effect requires certain conditions to occur. First, the perceived feasibility of program completion is critical. If a customer considers one or more categories to be irrelevant, thus rendering a complete program unattainable, the effect no longer manifests. Second, people need to feel they have reason to obtain all products from a single source. Like feasibility, if customers do not have a genuine need, or care that all products come from the same company, their likelihood of pursuing completion is lower.

General discussion

Three studies provide clear evidence for the incompleteness effect that marketers can use to increase the probability of cross-selling products by presenting them as parts of a collection, set, or other goal to be completed. Our work is grounded in Lewin's (1926, 1935) field theory that suggests people have an inherent desire to achieve a goal or complete something once started. For the current research, we created this drive to completion using a product configurator and marketing variables wherein people visualized unfulfilled product sets (i.e., uncompleted goals), leading them to choose additional cross-buying products and complete a “set.” Practically, we show that firms can use online product configurators to increase cross-buying behavior through increasing the likelihood of set completion—the first demonstration of such an effect in the literature. Importantly, our work also extends theory (highlighted in the farthest right column of Table 1). We turn now to more detailed discussion of those theoretical implications followed by discussion of the managerial relevance of our work.

Fig. 9 Study 3 – Stimuli providing information regarding unused categories-of-need. *Note:* In Condition A, each category was shown on a separate page

Group A



Presentation of the category-of-need in the menu guide of the homepage

Brief overview of the category-of-need ASSETS

ASSETS: Building & Investing of assets

- Savings plans for oneself
- Call deposits, savings deposits as well as security deposits with funds, shares, fixed income securities, and certificates (beyond 5000 EUR total volume in these categories the category-of-need is considered to be filled)

Group B

Your current state of use in our holistic 5-part categories-of-need program

You are currently using 2 of the 5 categories-of-need

- + LIQUIDITY: Yes
- + ASSETS: No
- + HOME: No
- + PROTECTION: Yes
- + PENSION: No



Presentation of the category-of-need use and the category-of-need program in the online banking login area (Available following the introduction of the new category-of-need program)

Brief overview of the unused elements of the program

1) LIQUIDITY: Day-to-day banking as good basis

- Checking accounts
- Credit cards

2) ASSETS: Building & Investing of assets

- Savings plans for oneself
- Call deposits, savings deposits as well as security deposits with funds, shares, fixed income securities, and certificates (beyond 5000 EUR total volume in these categories the category-of-need is considered to be filled)

3) HOME: Living in one's own property and facility

- Financing a property (loan)
- Savings in respect to living (e.g., building society savings)
- Household insurance (also relevant for tenants) and building insurance

4) PROTECTION: Covering financial risks

- Financial cover for the family and monthly income
- Financial cover in the case of illness/need of care
- Financial cover of property and assets
- In cooperation with our partner ABC insurance (anonymized)

5) PENSION: Make provisions for one's own future and the next generation

- Provision solutions for retirement age (different pillars)
- Provision solutions for retirement age (for example, monthly withdrawal plans)
- Savings plans for children/ grandchildren/godchildren, etc., e.g. for educational purposes

Group C

Your current state of use in our holistic 5-part categories-of-need program

You are currently using 2 of the 5 categories-of-need



Presentation of your individual "categories-of-need jigsaw puzzle" in the online banking login area (Available following the introduction of the new category-of-need program)

Brief overview of the unused elements of the program

1) LIQUIDITY: Day-to-day banking as good basis

- Checking accounts
- Credit cards

2) ASSETS: Building & Investing of assets

- Savings plans for oneself
- Call deposits, savings deposits as well as security deposits with funds, shares, fixed income securities, and certificates (beyond 5000 EUR total volume in these categories the category-of-need is considered to be filled)

3) HOME: Living in one's own property and facility

- Financing a property (loan)
- Savings in respect to living (e.g., building society savings)
- Household insurance (also relevant for tenants) and building insurance

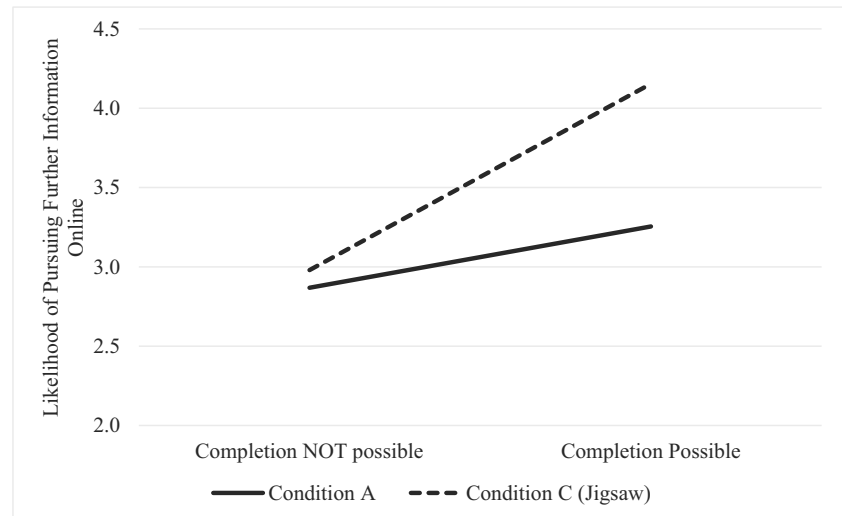
4) PROTECTION: Covering financial risks

- Financial cover for the family and monthly income
- Financial cover in the case of illness/need of care
- Financial cover of property and assets
- In cooperation with our partner ABC insurance (anonymized)

5) PENSION: Make provisions for one's own future and the next generation

- Provision solutions for retirement age (different pillars)
- Provision solutions for retirement age (for example, monthly withdrawal plans)
- Savings plans for children/ grandchildren/godchildren, etc., e.g. for educational purposes

Fig. 10 Study 3 – Feasibility × Condition interaction on likelihood of pursuing further information



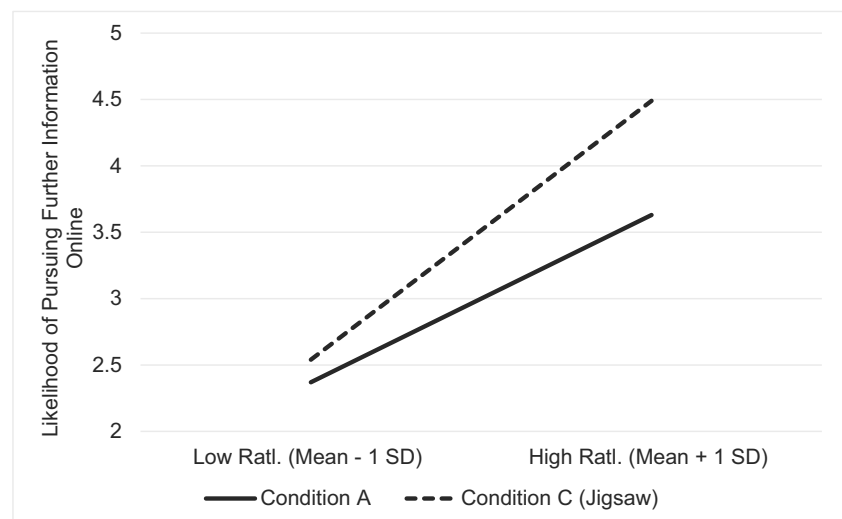
Theoretical implications

Our findings regarding consumers' drive to complete an externally established (e.g., marketer-created) goal builds on field theory (Lewin, 1926, 1935) and contributes to the literature in multiple ways. While prior research that shows completed sets are more valuable (Carey, 2008) or using stamp cards offering rewards for completion (Kivetz et al., 2006; Nunes & Drèze, 2006), we found the incompleteness effect to occur in the absence of extrinsic rewards. In fact, we found the incompleteness effect to manifest in situations where achieving the goal is financially detrimental to consumers (i.e., the cost of purchasing more product offerings). This finding is consistent with work showing that consumers exhibit greater willingness-to-pay for a more expensive (i.e., financially detrimental) car configuration established by the seller than one that is built up from a base model (Herrmann et al., 2013). Relatedly, Gao et al. (2014) demonstrate that an incomplete collection can be viewed as an unfulfilled goal that

motivates people to seek change through further product acquisition associated with greater financial costs to doing so. We maintain that consumers similarly receive intrinsic reward (e.g., positive feelings associated with completion) through goal-fulfilling purchases, and the goal can be established by a marketer-generated stimulus (e.g., online configurator).

In creating product sets and guiding consumers through purchases in such a way as to encourage completion, we also contribute to the literature demonstrating that fixed structures increase likelihood of goal completion (e.g., Jin et al., 2013). Goals are often made up of multiple subtasks (e.g., products to select, options associated with product choice, etc.) and deciding whether to continue goal pursuit after completion of each subtask (vs. completing another subtask of the same nature) requires a cognitively taxing shift in mindset (Hamilton et al., 2011). While our studies do not measure actual reduction of cognitive load, we do show that companies can use a configurator to group products and guide consumers through their shopping experience. Thus, consumers do not need to

Fig. 11 Study 3 – Rationalization × Condition interaction on likelihood of pursuing further information



decide at each step whether to continue goal pursuit and arguably make subtask decisions (e.g., which red wine to purchase) more efficiently (cf. Gollwitzer, 1999). Consistent with Jin et al. (2013), our Study 1 participants made choices in the final product category significantly faster than choices for all other categories ($ps < 0.001$); in fact, their final choice (i.e., the set completion decision) was made three times faster than their starting choice (i.e., first category decision). While this result can arguably be explained by reduced cognitive load associated with use of a configurator, future research is required to clearly ascertain such a conclusion.

We also theoretically contribute to the nascent literature on arbitrary set creation (Barasz et al., 2017) by further investigating the psychological processes leading to behavior change regarding goal completion. Our work provides an empirical demonstration that items can be grouped together as “sets” in such a way as to evoke feelings of incompleteness, thereby compelling consumers to complete the goal (i.e., arbitrary set). We further add to our understanding regarding perceived incompleteness by showing that visualization of a set (Cheema & Bagchi, 2011) increases perceived incompleteness, which increases the drive to complete, resulting in greater likelihood of set completion.

Finally, we explore boundary conditions under which arbitrary set creation may prove ineffective. Suggested by Barasz et al. (2017), we show that feasibility of set completion must be reasonable for the incompleteness effect to manifest. When consumers perceive the set as impossible to complete or irrelevant (e.g., if a customer already owns an offering), the incompleteness effect would be unlikely to occur. In prior goal-related work (e.g., Locke, 1982; Locke & Latham, 1990; Zeigarnik, 1927), when a task was seen as unattainable or less feasible, people were less likely to resume interrupted actions and continue goal pursuit. Consistent with this train of thought, in Study 3 the incompleteness effect was not obtained for customers reporting at least one of the product categories as irrelevant (e.g., pension products for those already retired). We also identify a novel boundary condition, showing rationalization to attenuate the incompleteness effect. Again, in Study 3, consumers who were less able to justify additional purchases were less likely to complete a set.

Managerial implications

In contrast to our three studies, existing marketing-related, goal-completion work based on Lewin’s (1926) seminal field theory has not looked at buying products from a single supplier’s additional product categories. We framed products often viewed as independent offerings (e.g., various vineyard-produced beverages) as “sets” of interrelated offerings, thereby increasing purchase likelihood. Our work therefore suggests practical implications for managers attempting to

increase cross-selling of products. Importantly, we show that the incompleteness effect can manifest even when purchases are made over time (e.g., banking services) as opposed to in a single online shopping experience. Our work suggests that this approach could therefore be implemented across multiple settings where products or services can be presented as a collection or set: cosmetics, dinnerware collections, recipe elements, spa services, workspace, or home furnishings easily come to mind.

When applying this technique, firms should consider factors related to the product program itself (e.g., the collection or set) and features of the completion platform (e.g., the product configurator). When developing the product set or collection, marketers should choose products which, at a minimum, are relevant to and attainable for the target market. If a customer views a collection as irrelevant or if they regard an entire set as unattainable (e.g., if any one product within the set is prohibitively expensive), we would not expect the incompleteness effect to occur. One approach to apply the effect in such cases, however, may be the firm allowing customers to self-selectively “eliminate” unattainable options before shopping. For example, a car company’s primary shopping site could present “complete” options that are realistic and relevant to a specific target market, such as sedans for the average shopper (the high-performance car shopper would be directed to a different site and appropriately equipped models). Marketers could also redefine a “complete” set of service offerings by excluding irrelevant products or features for specific market segments (e.g., don’t present insurance as part of a banking services set to people who are already covered by their work insurance plan). While more research is required, such actions are likely to result in more successful cross-selling, much like Barasz et al. (2017) demonstrated that even though a six pack is the normal reference point for beer purchase, when they created a set of four, they sold more than when people were provided no reference point.

Managers should also consider portrayal and in what order consumers encounter products during a configurator-based shopping process. Following the logic of the goal gradient effect (Hull, 1932), initial offerings should be clearly sought by consumers and easily chosen; if secondary cross-buying options are the first thing customers view, they may not initiate the purchase process at all. Ideally, as the number of items in a customer’s cart increases, motivation to complete the set will increase likelihood of purchasing more cross-buying products toward the end of the configuration. Building on work by Nunes and Dr ze (2006), companies may benefit from placing relatively more expensive items (of which customers may be more likely to forego purchase) at the end of a product configuration process (e.g., grappa in our Study 1). It is also important to regularly remind customers of their incomplete product programs, as being aware of the “presence of incompleteness” is a prerequisite to resuming a task (i.e.,

making more purchases to complete a product program) (Ovsiankina, 1928; Zeigarnik, 1927, 1938). In an online bank setting for instance, current product usage could be displayed at login, or by sending customers individualized links through which they can view and assess their partially completed product program (e.g., our puzzle configurator of Study 3).

Finally, firms should avoid situations where a set or collection contains too many products or possesses an all-or-nothing nature, especially when using a strong visualization technique (e.g., jigsaw puzzle). Such approaches to goal completion have been shown to both demotivate and deteriorate performance when goal targets are not met (Soman & Cheema, 2004; see also Cochran & Tesser, 1996 on the so-called “what the hell” effect). In such cases, completion could feel nearly impossible or too difficult for consumers to track their progress or keep the overarching goal in mind. Although we expect the incompleteness effect could manifest either way, requiring consumers to purchase both a type and quantity of products from a range of product categories may also prove too complex and/or frustrating. But what is the right number of product offerings for a “complete” set? For example, a consumer might be happy with 50 percent of a large line of cosmetics as that amount fulfills 100 percent of their makeup needs. We recommend that firms create a choice program that is moderately easy to complete by choosing a certain quantity of items, rather than distinct items across categories. Such boundary conditions certainly constitute fertile ground for further practical inquiry.

Future research

The findings and limitations of our work certainly motivate future research opportunities. While we ruled out product knowledge, interest, experience, and price sensitivity as possible alternative explanations for our observed incompleteness effects (all $ps > 0.84$), we were unable to completely rule out an emotion-based account. Our closest evidence in this regard relates to finding no differences across conditions regarding complexity, fairness, or layout of online store (all $ps > 0.37$), suggesting consumer frustration did not vary across conditions—a finding related (at least arguably) to emotion. We appreciate that a product configurator with visual representations of products may enhance consumer excitement, and recommend future research directly examine the role of emotions on product engagement and the desire to complete a set.

It could be argued that our observed main effect may be due to the fact that people are generally cognitive misers, and configurators save them time and effort by providing them with a completed “goal” as an option. That is, it may simply be less work for some people (particularly those with sufficient financial resources) to “finish the puzzle” rather than decide what pieces it makes sense to buy and which to leave

undone. Distinctions across such competing explanations for the incompleteness effect constitute interesting opportunity for future research.

There are undoubtedly other factors at play beyond those studied. We earlier stated that people are motivated by playing games and achieving related goals—working toward completion of a task or completing a puzzle are the kinds of things that fundamentally underlie the incompleteness effect. Smartphone gamification applications tapping into such motivations are examples popular in at least some business verticals. Thus, future research could directly test the moderating properties of constructs related to game play, such as motivation, enthusiasm, and perseverance regarding tasks or sub tasks requiring completion. For example, individual differences in grit (Duckworth et al., 2007) may influence commitment and motivation with regard to goals spanning over time. It could also be that status quo bias (Samuelson & Zeckhauser, 1988) moderates the process underlying the incompleteness effect, at least for some. On the one hand, those who disproportionately stick with the status quo may feel more compelled to complete a goal, even when it is no longer optimal for them to “finish the puzzle,” while others may simply not start a puzzle as they do not want to feel compelled to complete it. A further unexplored mechanism is the notion that perceived importance of a task may vary in the minds of people when framed as part of a larger whole, and the magnitude of that larger whole and its importance to those considering their options will likely vary.

Further research on boundary conditions regarding the incompleteness effect should include the impact of the effect varying due to perceived risk (e.g., financial, social, physical) or product category involvement (Wangenheim & Bayón, 2007; Zaichkowsky, 1985). For example, time spent on a page might be considered an indicator of involvement, but in doing so one must consider the level of obligation to view every page felt by participants. We tested the incompleteness effect in two domains—banking and vineyard products—categories arguably differing from each other regarding risk associated with respective decisions and involvement with the product and service categories. While differing from each other, neither of these two domains are representative of many other product or service offerings. Thus, future research should test such boundaries to the effect.

Conclusion

Herein we have demonstrated how marketers can use what we call the *incompleteness effect* to influence cross-buying, thereby encouraging greater purchase of goods and services. The driving force behind our observed effect is the desire to fulfill a goal through purchasing products from a set when they are presented as a collection or a task to be completed rather than

as individual products, and visual presentation enhances this effect. The theoretical insights gained from studying this effect contribute not only to the literature on goal pursuit, but also to marketers' ability to influence cross-buying behaviors of their customers across various contexts—particularly digital environments. The drive to “collect them all” can be powerful and motivate shoppers to purchase products they otherwise may not even consider.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s11747-021-00835-6>.

Declarations

Conflict of Interest The authors declare that they have no conflict of interest.

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