Being the First Entrant and Getting Stuck in the Middle:

The Disadvantage of the Intermediate Pioneer

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ABSTRACT

Building on prior work on pioneering advantage and extreme aversion, this research moves toward understanding how the choice share of a pioneer realigns, as a result of new product entries generating compromise-like scenarios. Four studies show that when a first entrant becomes an intermediate alternative in a choice set as the result of another entry, its share is adversely affected, leading to the rise of a pioneering disadvantage. We show that the disadvantage of the intermediate pioneer depends on consumers' propensity to use noncompensatory decision rules in the presence of a pioneering alternative. We also document that the disadvantage of the intermediate pioneer can be overcome when the reasons for selecting an intermediate alternative based on a compensatory decision rule are restored. We discuss the theoretical and practical implications of this research.

Keywords: Pioneering Advantage, Compromise Effect, Trade-offs, Decision Processes, Choice

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1. Introduction

In 1999 Research in Motion, a Canadian telecommunications company, introduced what is considered the first *successful* smartphone in the global market(Wikipedia).The Blackberry rapidly gained popularityworldwide because of its unique features, including push-email, a friendly keyboard,and Internet navigation.Although in 2009 RIM still enjoyed 20.1% of the global market share in the smartphone industry (Gillett & Hart, 2015), in 2007 Apple had already introduced its sleeker and pricey iPhone. Relative to Apple, Blackberry had come to be seen as an affordable smartphone,primarily thanks to its low-cost Curve (Woyke, 2011). But Blackberry's positioning was rapidly threatened when, a few years later, low-cost producers like Huaweibegan to commercialize Google Android handsets at significantly lower prices. In fact, the entries of high- and low-end handset manufacturers left Blackberry with an intermediate positioning in terms of both price and quality,a positioning quickly married to a drop in sales.By the end of 2013 Blackberry's market share had plummeted to 0.6% of the global market (Gillett & Hart, 2015). This example indicates that the first entrant's advantage can be overcome by later entrants;moreover,itsuggests that when later entrants exceed the pioneer on relevant product attributes (in this case both quality and price), theyrender it a "stuck in the middle" option, one whose attractiveness seems to vanish faster than in other cases.

These observations lead to the key questions of this research: Does the position of later entrants have a significant effect on the longevity of the pioneering advantage? In other words, how differently is the share of the pioneer affected when it becomes extreme or intermediate in a choice set after entry? What is the psychological process that drives choice in this context? How can the first entrant react? Building on prior work on pioneering advantage and extreme aversion, this research moves toward understanding how the choice share of a pioneer realigns as a consequence of new product entries generating compromise-like scenarios.

2. Literature review and theoretical development

2.1 Pioneering advantage

An important stream of literature on pioneering advantage is interested in explaining the consequences of order of entry from a behavioral perspective. Carpenter and Nakamoto (1989) and Kardes and Kalyanaram (1992) explored the cognitive mechanism underlying this phenomenon, indicating that a consistent portion of the pioneering advantage can be ascribed to cognitive mechanisms.More specifically, Carpenter and Nakamoto (1989) suggested that the pioneering advantage is the outcome of consumers' learning process as well as preference formation. More recently, literature in marketing and consumer behavior has questioned the robustness of the order-of-entry effect; consequently, the existence of the follower's advantage has been explored.It is widely recognized that the first mover tends to become the category standard for consumers and that later entrants can be evaluated as its mere imitations (Carpenter & Nakamoto, 1989). Later entrants, however,enjoy, on average,a cost advantage (Boulding& Christen, 2008) and/or advantages related to the stage of the life cycle in which they enter (Shankar, Carpenter,&Krishnamurthi,1999). Furthermore, late entrants can differentiate by positioning themselves as superior on one or more determinant dimensions (Sujan&Bettman, 1989). In this line, Zhang and Markman (1998) examine when and how later entrants can overcome the first-mover advantage. They show that followers stand a greater chance of surpassing the first entrant when they opt for an "enhanced late entrantstrategy"—that is, when they differentiate along alignable rather than nonalignable attributes. While doing so, a third entrant can also propose a product-attribute combination that generates context effects, including the compromise effect (Simonson, 1989).

2.2 Compromise effect

The compromise effect arises when a brand gains share after becoming the intermediate alternative in a choice set:when consumers are unsure of their preferences, they tend to avoid the extreme options and opt for a middle, compromise alternative that offers only small disadvantages compared with the other extreme options. Prior research indicates that marketers can leverage this context-based effect to manage product assortment (Simonson &Tversky, 1992) or to persuade consumers to choose the middle option (Hamilton, 2003).The compromise effect has been shown to be robust and to systematically affect choice under different conditions, product categories,and choice purposes,even in real-life purchase decisions(Simonson, 1989; Nowlis& Simonson, 2000;Chernev, 2004; Sheng, Parker,& Nakamoto,2005; Maimaran& Simonson, 2011; Chang, Chuang, Cheng,& Huang, 2012; Müller, Vogt, & Kroll, 2012).The literature shows that the premium traditionally related to the intermediate option is associated with a cognitively complex choice based on a compensatory trade-off (Dhar, Nowlis,& Sherman, 2000; Dhar& Simonson, 2003). In particular, prior research showed that customers selecting the intermediate option reconcile conflicting criteria and minimize the disadvantages compared with extreme options (Simonson &Tversky, 1992; Dhar& Simonson, 2003).

Simonson (1989) showed that the selection of the intermediate alternative is naturally related to its positioning in the choice set and is thus based on a compensatory trade-off across the options' attributes. Because of the selected decision-making process, choice of the middle option is seen as conventional, rather thanas unique or identity-signaling (Nowlis& Simonson, 2000; Maimaran& Simonson, 2011).

3. Hypotheses development

The behavioral literature shows that the pioneering advantage is the outcome of a learning process (Carpenter & Nakamoto, 1989) that takes place through the consumer's repeated exposures to the pioneering brand. This process generates two positive outcomes. First, consumers tend to compare a new brand with the pioneering prototypical brand; second, they closely associate the pioneer with the product category. Following the attribute-alignability literature, Zhang andMarkman (1998) further showed that consumers learn about new brands by comparing them with existing brands. This comparison, however, might not reward the pioneer when a follower enhances it on alignable product attributes, because alignable differences are more memorable than nonalignable differences. Notably,Zhang and Markman'swork examines the case in which a follower extends the pioneer on one dimension, leaving the others unmodified. Our work focuses, instead, on the circumstance in which followers enhance the pioneer on one dimensionbut are outperformed by it on another. This situation is quite common when a follower improves a quality-related attribute and, as a consequence, increases price.For instance, in a price–quality attribute space, in which a second entrant A (see Fig.1A) challenges the pioneer (B)with a low-price, low-quality productand a third (C) differentiates through the opposite strategy (i.e.,high-price,high-quality), the first entrant becomes a compromise alternative (Simonson, 1989). By contrast, when a third entrant C (see Fig.1B) extends the second (B) on price and reduces quality, it renders the pioneering brand (A) extreme in a choice set and the second entrant (B) a compromise alternative.In all of these cases, we would expect consumers to see the pioneer as the standard against which both later entrants are compared but, at the same time, to strive to manage aversion to the extremes (Simonson, 1989).

When the pioneering brand enters, consumers are exposed to its attribute combination and judgeit favorably. According to Carpenter and Nakamoto (1989), this happens because individuals move their ideal points close to the pioneer's position and occurs independently of the

pioneer's characteristics. Moreover, consumers also adjustattribute weights accordingly.This shift defines the relative attribute importance in brand evaluation and choice and generates a share premium for the first entrant.We contend that in a two-attributespace, when a second entrant extends the pioneering product on an alignable attribute but is dominated by it on another,consumers learn that a new range is established for both attributes characterizing the products (Bertini,Ofek,&Ariely, 2009; Janiszewski& Lichtenstein, 1999; Parducci, 1968; Yeung&Soman, 2005). The pioneer (follower) defines the higher (lower) bound for one attribute, whereas the follower (pioneer) defines the higher (lower) bound for the other.After entry, consumers will have learned that the pioneer continues to dominate on one attribute but is now weaker on the other. Consistent with range theory suggesting that the attractiveness of a stimulus depends on its position within the range of possible values, we then anticipate that consumers will value favorably the pioneer for the attribute on which it is stronger and less favorably forthe attribute on which it is weaker.Further, we argue that consumers will still value more the attribute on which the pioneer represents the upper bound, because the pioneer is strong on that dimension, and will find another to be less valuable (Carpenter & Nakamoto, 1989). This also implies that when choosing between the pioneer and the second entrant, consumers apply a lexicographic decision rule,selecting the alternative with the best value on the most important attribute (Fishburn, 1974).

The arrival of a third entrant can position the pioneer now as the intermediate brand in the choice set or as the extreme brand in the choice set.When the entry of a third productrenders the pioneer an intermediate alternative, consumers learn that the range of variation for the attribute on which the pioneer previouslyled is now extended by the last follower and that the pioneer is dominated on both product attributes. Notably, the intermediate positioning, in the absence of order-of-entry information, is favorable because a good attribute balance reduces the disadvantages associated with the extreme alternatives (extremeness aversion; Simonson &Tversky, 1992). By contrast, we predict that when the pioneer becomes the compromise alternative,consumers will instead favor one of the extreme followers.We contend that this happens because the decision-making process associated with evaluating the pioneering product leads to the use of a noncompensatory rule. Noncompensatory rules, including the lexicographic decision rule, do not allow attribute trade-offs and consider only part of the available information. Notably,using these rules leads to excluding the choice of an intermediate alternative that does not excel on any attribute. The choice of a compromise alternative requires, instead, a trade-off processing (Simonson, 1989) which permits the weighting and integration of attribute values (Payne, Bettman, & Johnson, 1988).

In summary, when the first entrant is alone, it sets the standard for comparison, and it is chosen because it represents the ideal attribute combination. When a follower joins the market by extending the pioneer on an alignable attribute, consumers make decisions based on a noncompensatory decision rule.This means that they canchoose either the pioneer or the follower based on the relative strengths of the two. Nonetheless, we contend that consumers are more likely to choose the first entrant because they tend to value more the attribute on which the pioneer excels. The arrival of an extreme third entrant,rendering the pioneer the compromise option,makes it impossible for consumers to choose the pioneer while using a noncompensatory rule (Simonson, 1989). In other words, when the pioneer is overtaken on the attribute for which it dominates the second entrant, consumers revise their decision framing and choose the alternative that best fits their preferences, thus applying a noncompensatory rule that by construction penalizes the compromise option. Under these conditions, consumers will be extreme-prone and will choose one of the two extreme followers dominating the pioneer on at least one dimension.

H1: When the pioneer product becomes the intermediate option after entry, its pioneer advantage is reduced.
H2. When the pioneer product becomes the intermediate option after entry, consumers will rely less on specific attribute-level trade-offs than when the order of entry is unknown.

The entry of a third entrant can also render the pioneering product the extreme option in a choice set. In this case, we anticipate two effects: (i) a decrease of advantage of the extreme pioneer due to the arrival of the third entrant, and(ii)an increase in the share of the extreme pioneer compared to the share it would have, had it not been the first entrant. Let us start with the first effect. By enhancing their products along the pioneer's weakest attribute, followers signal to consumers that the product category is evolving away from the pioneer's positioning, making loom larger the perceived expected loss associated with wrongly choosing the pioneer. Consumers learn through sequential entry that the pioneer represents the lower bound of a product-attribute range and the higher bound of another when the second entrant arrives. Then, when the last entrant joins the market, it further stretches both attribute ranges, making the pioneer's strength and weakness on the product attributes more prominent. We predict that this will trigger extremeness aversion and lead to a reduction in the extreme pioneer's share compared with when there are only two players in the market.

H3a: When the pioneer product becomes the extreme option after entry, its share is reduced.

We now examine the second effect. The variation in the share of the extreme pioneer compared with when it is not the first entrant is due to the presence of two effects: the pioneering advantage and extremeness aversion. It should be noted that diagnosticity theorypredicts that additional cues decrease the predictive validity of a single cue (Miyazaki et al., 2005; Purohit&Srivastava, 2001); therefore, the predictability of the order effect will be diminished by the presence of a context effect. Nonetheless, the pioneering cue is more likely to allow customers to form more and varied inferences about a new product than will its relative position in the choice set. According to Amir andLevav (2008), preferences developed through lexicographic decision strategies are not context-specific and are both more stable and more portable.By contrast, when faced with a context, consumers learn how to construct a choice and do learn their preferences for attribute values. This means that when the pioneering brand becomes extreme in a choice set, its dominant attribute represents a guide for evaluating each option. We therefore anticipate that consumers will be less likely to rely on context-specific choice strategy when they have learned their preference through exposure to the order-of-entry effect. Thus, we expect that when the pioneer becomes extreme, consumers' reliance on extremeness aversion will be reduced.

H3b: When the pioneer product becomes the extreme option, the share of the compromise alternative is less than it would be in the absence of the order-of-entry effect.

4. Study 1

The purpose of Study 1 is to test whether the context created by a third entrant affects the share of the first entrant. Specifically, we investigate how the choice share of a pioneer realigns as a consequence of new product entries generating a compromise-like scenario.Moreover, we seek to provide evidence for the processes underlying the effect. Specifically, using a choice set where

the pioneer brand becomes alternatively an extreme or a compromise option, we analyze participants' explanations for their choices. We predict that the availability of order-of-entry cues will reduce the likelihood of consumers recurring to the compensatory decision rule and that this will therefore reduce the compromise effect.

4.1 Design and procedure

From an online panel we recruited 210 subjects to participate in the study; 10 either gave incomplete responses or took less than 5 minutes to complete the task and were therefore excluded from the analysis, resulting in a sample of 200 respondents.

We randomly assigned participants to one of six conditions defined by a 3 (pioneering positioning: intermediate vs. extreme vs. no order of entry) × 2 (set size: two vs. three products set) between-subjects design. In the two conditions where subjects receivedno cues related to order of entry (control duplet and control triplet), participants were told to imagine that while surfing the Internet they had come across a (fictitious) new product category (wireless power bank); they were also told either that two or that three alternatives were currently available. Finally, they were asked to choose which one they were more likely to buy. Products were described in terms of capacity and size. In the pioneering conditions, whereby the first entrant brand became either intermediate or extreme in the choice set, we generated an order-of-entry effect by exposing respondents to the pioneer three times before choice. To do so we asked participants to imagine that while surfing the Internet they had found information on a new product category (wireless power bank) that was available in just one version. To mimic an interruption in their surfing experience, we asked respondents to complete a first filler task, and then reminded themof the product category and the pioneering alternative. After carrying out a second filler task, participants were told that either one or two alternatives had arrived on the market depending on the condition they were in, and they were asked to make a choice.

After choosing, participantswere asked to explain the reasons for their decisionsas if they were thinking aloud and to write down their thoughts. A coding scheme of the choice protocols was designed to measure the extent to which respondents based their decision on attribute-level trade-offs as opposed to noncompensatory rules.

Two independent coders classified respondents' choice explanations into three categories. They assigned to the first categoryanswers that mentioned (i) only one attribute (lexicographic rule)or (ii) the superiority of one attribute over another; these reflected a *noncompensatory decision*. Theyassigned to the second category statements referring to an equal weighting of the two attributes' values or to a compromise criterion; these reflected a *compensatorydecision*. Finally, theygrouped in a third category explanations based on other rules,such as preference fit, convenience,or order of entry. Inter-judge reliability (Cohen's Kappa; Landis & Koch, 1977) was 90.9%. Disagreement was resolved through discussion.

Finally, we collected a measure of stress with the choice made.

4.2 Results

Before analyzing the results, we excluded from the sample participants who failed the attention check (Oppenheimer, Meyvis,&Davidenko, 2009) and misidentified the pioneering brand at the end of the questionnaire (the question applied only to respondents in the "pioneering" conditions), which left us with 186 respondents.Results regarding the share of the intermediate option across experimental conditions appear in Table 1. Data collected using a between-subjects design are consistent with our contentions.

Table 1: Choice share (Study 1).

Condition	A (%)	B (%)	C (%)	*n*
Control condition duplets	63.9	36.1	−	36
Control condition triplets	31.4	62.9	5.7	35
Extreme pioneer duplets (option A)	85.7	14.3	−	21
Extreme pioneer triplets (option A)	51.6	35.5	12.9	31
Intermediate pioneer duplets (option B)	40.7	59.3	−	27
Intermediate pioneer triplets (option B)	52.8	41.7	5.6	36

We run a logistic regression where a dummy variable on the choice of intermediate alternative (in relation to extreme option A) served as a dependent variable.Results from the logistic regression confirm that both the compromise effect (*Wald* $\chi^2 = 6.22$,$p = .01$) and the pioneering advantage increase the share of option B (although marginally, *Wald* $\chi^2 = 3.26$,$p = .07$). Again, results document a significant decrease in the share of the pioneering intermediate option (*Wald*= 6.64,$p = .01$), supporting hypothesis 1.Similar to previous studies, we also tested hypotheses 3a and 3b usingplanned contrasts and found support for both hypotheses. In particular, the share of the extreme pioneer is significantly reduced when a third follower arrives ($\beta = -1.42$, *SE* =.74, *Wald* $\chi^2 = 3.70$,$p = .05$), but at the same time the share of the compromise option is reduced in the presence of an extreme pioneer ($\beta = -1.07$, *SE* = .54, *Wald*= 3.93,$p = .05$).

To understand the mechanics underlying this effect, we analyzed statements explaining participants' choices.Of the 186 responses, 24 mentioned unrelated explanations and 7 unequal attribute weighting. Onehundredfour of the remaining 155 protocols reflectednoncompensatory processing, and 51 statements were coded as compensatory.

Table 2: Protocol analysis (Study 1).

	Decision rule (%)			
Condition	Noncompensatory	Compensatory	Other	*n*
Control condition duplets	77.8	13.89	8.33	36
Control condition triplets	25.71	60.00	14.29	35
Extreme pioneer duplets (option A)	61.90	4.67	33.33	21
Extreme pioneer triplets (option A)	61.29	32.26	6.45	31
Intermediate pioneer duplets (option B)	62.96	11.11	25.93	27
Intermediate pioneer triplets (option B)	55.56	33.330	11.11	36

In Table 2, as expected, results show that in the duplet conditions the dominant decision rule is noncompensatory. Consistent with literature on the compromise effect, in the control triplet we observe a significant increase in the use of a compensatory rule compared with the duplet (13.89% vs. 60.00%; $t = 4.57$, $p < .01$), showing that, in the compromise condition, respondents use trade-off processing. Instead, when the extreme option is the pioneer, we observe a prevalence of the noncompensatory rule in both the duplet and the triplet. Notably, when the pioneer becomes extreme, we find a significant difference between the extreme pioneering condition and the control, indicating a pervasive use of noncompensatory decision rules (25.71% vs. 61.29%; $t = 3.11$, $p < .01$). More interestingly, as predicted in hypothesis 2, when the pioneer becomes intermediate, a noncompensatory decision rule is most frequently used. Compared to the

triplet control condition, the use of a noncompensatory decision rule significantly increases (25.71% vs. 55.56%; $t = 2.69$, $p = .01$), showing that when the pioneer becomes the compromise option, trade-off processing no longer drives choice.

We then run a mediation model of the decision rule on the relationship between order of entry and the choice of the compromise alternative (Khan, Zhu, &Kalra, 2011). We run the analysis only on ternary choice sets. We excluded from the analysis the statements coded in category 3 (other explanations and unequal attribute weighting) and created a dummy variable coded 1 if the decision process was noncompensatory and 0 if it was compensatory.[1]The information on order of entry had a significant effect on whether participants based their decision on a noncompensatory rule ($\beta = .34$, $t = 3.18$, $SE = .11$, $p < .01$). Information on order of entry influenced choice of the middle option ($\beta = -.27$, $t = -2.51$, $SE = .11$, $p = .01$),as did the use of a noncompensatory decision rule ($\beta = -89$, $t = -18.43$, $SE = .05$, $p < .01$). Finally, when we regressed choice of the middle option on both order of entry and noncompensatory decision rules, the effect of order of entry became not significant ($\beta = .03$, $t = .59$, $SE = .05$, $p = .55$), whereas the effect of the decision rule remained significant ($\beta = -.91$, $t = -7.19$, $SE = .05$, $p < .001$). A significant *Sobel test* (-3.13, $p < .01$) confirmed that the use of a noncompensatory decision rule mediates the effect of order of entry on the likelihood of choosing the compromise option.

To corroborate these findings, we also analyzed how stressful it was to choose. We first examined the responses of participants who chose the intermediate alternative across ternary conditions. We found no difference in the level of stress when these respondents selected the intermediate alternative across conditions ($M_{control\_triplet} = 3.22$; $M_{intemediate\_pioneer\_triplet} = 3.80$; $M_{extreme\_pioneer\_triplet} = 3.63$,$F(2,48) = .75$, $p = .47$). This suggests that the stress associated with the process leading to choosing an intermediate alternative is not affected by the presence of either an extreme or an intermediate pioneer. By contrast, when we examined the respondents who chose an extreme alternative, we found that choosing an extreme is less stressful when the first entrant is the compromise option ($M_{control\_triplet} = 4.61$ vs. $M_{intemediate\_pioneer\_triplet} = 3.38$, $F(1, 34) = 5.93$, $p = .02$) or when the first entrant is the extreme ($M_{control\_triplet} = 4.61$ vs. $M_{extreme\_pioneer\_triplet} = 2.75$, $F(1,33) = 12.35$, $p < .01$). These results indicate that the presence of a pioneer makes the process of choosing an extreme alternative less stressful, thus making the selection of an extreme alternative more likely,even in the presence of a compromise-like scenario. This is consistent with previous work showing that the use of lexicographic decision strategies is less effortful than other decision rules, including trade-off processing (Bettman, Johnson,& Payne, 1990).

4.3 Discussion

Our results confirm that the rise of a context plays a role in reducing the share of a pioneering option. More importantly, Study 1 suggests why this might happen. We show that the advantage of the early entrant dissolves when it becomes intermediate in a choice set and that this depends on the decisional rule that consumers are more likely to apply in these circumstances. When information on order of entry is not provided, coherent with literature on the compromise effect, consumers use a compensatory decision rule. By contrast, when the pioneer becomes the intermediate option, consumers donot use a compensatory decision rule and prefer instead to use a noncompensatory heuristic, leading them to opt for an extreme alternative.Our explanation is that through sequential exposures to the first entrant, consumers have learned to prefer it because

[1] Results do not change if statementsmentioning unequal attribute weightings are included in the noncompensatory category.

of its dominant attribute. This logic, however, clashes with the pioneer's emerging intermediate positioning, which is now groundedin the use of a trade-off heuristic. Moreover, the incompatibility between what was learned through sequential exposures and the compromise-based positioningdrives consumers to re-evaluate all alternatives and to selectan extreme alternative, which, consistent with a noncompensatory criterion, dominates on at least one attribute.By contrast, when the first entrant becomes extreme in the choice set, consumers can still apply a noncompensatory decision rule; therefore, they choose the first entrant.

5. Study 2

Hypothesis 2 proposes that the dissipation of the advantage of the pioneer brand could depend on a change in the decision process triggered when a later entrant renders the pioneer intermediate in a choice set. Study1 indicates that there is indeed a loss of pioneering advantage for the extreme and intermediate first entrant. Moreover it shows the mediating role of the decision process in driving the choice of the extreme followers. In the current study, we seek to present further evidence for the process underlying the effect. If a change in the decision process is the main reason for the dissipation of the advantage of the pioneer, then restoring the reasons to choose it should re-create the effect. To do so, we make the pioneer's ideal attribute combination unambiguous to participants (Carpenter & Nakamoto, 1989). More specifically, by stressing the value of the pioneer's attribute composition, we attempt to re-establish consumers' motives to choose the first, now intermediate/extreme, mover.

5.1 Design and procedure

Study 2uses a 2 (set size: two vs. three products set) × 3 (pioneering positioning: extreme vs. intermediate vs. no order of entry) × 3 (noncompensatory information favoring the intermediate vs. compensatory information favoring the extreme vs. no information)mixedfactorial design. As in Studies 1A and 1B, set size was manipulated withinsubjects: participants were first asked to read about a first entrant (Session1);next, after a first filler task, they were asked to choosefrom a binary choice set (Session 2);and then, after completing a filler task, they undertook a similar choice task but from a ternary choice set (Session 3). The two remaining factors (pioneering status and noncompensatory information) were manipulated between subjects. As Studies 1A, 1B, and 2 showed no differences between the within and the between manipulations, we run a within-subject study to increase efficiency.

The size of this design could make the data collection very costly. We therefore did not collect data on the conditions (i) when the pioneer intermediate is combined with information stressing one of its attributes (noncompensatory) and (ii) when the pioneer extreme is combined with information stressing the value of a good balance between attributes, because these conditions are not the focus of this study. Additionally, as we want to examine whether it is possible to re-create the pioneering-advantage effect through information and since we are not interested in testing again the presence of a compromise effect, we did not collect data on the duplet and triplet cases when neither order of entry nor information was manipulated.

Five hundred participants competed the study online via MTurk and were compensated $4.50 for their responses. We excluded from the sample those respondents who took less than 5 minutes to complete the questionnaire (105) and those who failed the attention check (12),which was, in the pioneering condition, identifying the pioneer brand at the end of the questionnaire;this left us with 383 respondents.

As in Study 1, we exposed respondents to the sequential entry of the three alternatives, which made the pioneer either an extreme alternative or an intermediate alternative, and the arrivals of the brandswere separatedby a filler task. To increase realism, after the choice in the

binary set, we asked respondents to imagine that they had received an email from the digital retailer they had just purchased from. In the email, the retailer was offering them the opportunity to modify their previous purchaseto account for the arrival in the market of a third alternative,as the order had not been processed yet (the email specified that the new order would be processed soon without incurring any further delay in delivery).

We manipulated the information on the ideal product combination by asking subjects to read an extract from an online article specifying the ideal product-attribute combination in the product category. More specifically, during the second and third exposures, when the pioneer was to become an extreme alternative in the choice set, we showed participants an extract of an article in which the dominating attribute of the pioneer (noncompensatory information) was presented as critical to the use of the product. By contrast, when the first entrant was to become the intermediate alternative, the same report indicated that a balance between the attributes (compensatory information) was advisable again for the use of the product. Note that while the noncompensatory information favors the extreme option both in the duplets and in the triplets, the compensatory information favors the intermediate option only in the triplets, as the superiority of the compromise attribute combination is relevant only in a ternary choice set.Participants were randomly allocated to the experimental conditions and were asked to imagine that they were involved in a real purchasing situation when completing the choice task. Each participant made choices in a product category, smartwatch, that had not yet been introduced or had not yet reached significant penetration among the respondents at the time of data collection. Products were described in terms of screen resolution and battery life. Last, we collected process measures of perceived innovativeness, and attitude toward the productin order to rule out alternative accounts.

5.2 Results

Results regarding the share of the intermediate option across experimental conditions appear in Table 4. Data show that the intermediate pioneer gains share when compensatory information is provided (45.2% vs. 81.6%;*Pearson* $\chi^2(1) = 19.96, p < .01$), showing that it is possible to restore the pioneering advantage for the intermediate option. In other words, by re-establishing the value of its intermediate positioning, the pioneer can regenerate its advantage. In a similar vein, the extreme pioneer also gains share when the value of its dominant attribute is emphasized(50.8% vs. 73.2%;*Pearson* $\chi^2(1) = 6.19$, $p = .01$), suggesting that when consumers are given a reason to buy an extreme alternative, they do so.

Table 3: Choice share (Study 2).

	Time 2			Time 3			
Condition	A (%)	B (%)	*n*	A (%)	B (%)	C (%)	*n*
Compensatory information	68.0	32.0	75	36.0	56.0	8.0	75
Noncompensatory information	79.2	20.8	53	81.1	15.1	3.8	53
Extreme pioneer	54.1	45.9	61	50.8	31.1	18.0	61
Intermediate pioneer	41.9	58.1	62	38.7	45.2	16.1	62
Compensatory info ×Interm.pioneer	35.5	64.5	76	0.0	81.6	18.4	76
Noncompensatory info × Extr.pioneer	76.8	23.2	56	73.2	21.4	5.4	56

To account for repeated observations, we run a logistic regression using the GEE approach (see Table 5) where the condition in which compensatory information favoring one of the alternatives in the duplet serves as a benchmark; as a dependent variable we created a dummy variable for which the choice of intermediate option B was coded as 1, and 0 otherwise. Note that we coded as 0 choices of both extremes, as no respondents chose the extreme option A when compensatory information on the intermediate pioneer was provided. We run the model selecting only the three conditions involving the intermediate option where(1) compensatory information favoring the intermediate option is provided,(2) the pioneer becomes intermediate in the choice set,and (3) compensatory information favoring the intermediate pioneer is provided. Because the condition where compensatory information favoring the intermediate option serves as a benchmark, our model has three main effects (pioneering status, compromise, and compensatory information favoring the intermediate pioneer) and two interactions (pioneering status × compromise; compensatory information favoring the intermediate pioneer × compromise).

Results show a positive effect of choice-set composition (*Wald* $\chi^2 = 13.57$, $p < .01$) and pioneering status (*Wald* $\chi^2 = 9.53$, $p < .01$) on the share of the intermediate option. Moreover, in line with our previous findings, when the pioneer becomes intermediate its share decreases (*Wald* $\chi^2 = 18.61$, $p < .01$). As expected, the provision of a compensatory cue favoring the pioneering alternative in the duplet option has no impact on itsshare (*Wald* $\chi^2 = .52$, $p = .47$), as in this context consumers cannot actually compensate. Interestingly, this cue becomes significant when it refers to the intermediate alternativein the triplet (*Wald* $\chi^2 = 8.98$, $p < .01$), showing that the intermediate pioneer can restore its pioneering advantage when the use of the compensatory rule is recommended.To rule out alternative accounts, we test whether the recommendation of a particular attribute combination could have determined a variation in the perceived innovativeness or liking of the products across conditions.Neither the innovativeness nor the liking measures differed significantly across conditions.

5.3 Discussion

The main goal of this study was to provide further evidence for the process explanation outlined in Study 1. To do so, we examined whether presenting the intermediate pioneering alternative's compromising mix of attributes as ideal could restore its advantage. We found that, indeed,the advantage of the intermediate pioneer can be re-created when the use of a compensatory decision rule is made compatible with the presence of an order-of-entry effect. The resurrection of the pioneering advantage for the intermediate option following the provision of compensatory information corroborates the prediction that the intermediate pioneering disadvantage is driven by consumers' propensity to stick to noncompensatory rules when order of entry is known.

6. General discussion

6.1 Summary of main findings

This research examines how pioneering advantage interacts with the compromise effect generated by new product entries. More specifically, we investigate how the choice context generated by the sequential entries of a second and then a third follower enhances or reduces the advantage of the first entrant in a market (Carpenter & Nakamoto, 1989). By focusing on entries generating a compromise-like scenario, we restrict our attention to the case in which the second and the third entrants differentiate their products along alignable attributes only, which means that the products we examine are located on a two-attribute linear frontier. Our work distinguishes what happens to the pioneer's share when it becomes extreme from the case in which the pioneer becomes the intermediate option in the choice set (Simonson, 1989); thus,it differs from previous work

focusing only on the share of the last entrant versus the shares of the first two entrants (Lehmann& Pan, 1994).

Based on extant literature, we propose not only that the share of the pioneer is eroded when it becomes a compromise alterative but also that its position in the choice set can be a source of disadvantage. When the second and the third entrants differentiate their products along alignable attributes and render the pioneer no longer superior on any attribute, consumers are more likely to consider the intermediate alternative to be dominated by later entrants. In two studies, we showed that when a pioneering product becomes intermediate in a choice set, it indeed faces a pioneering disadvantage. We propose that the disadvantage of the intermediate pioneer depends on the dominant decision process consumers use to make their choices in the presence of a pioneering alternative. More specifically, we argue that even when the pioneer becomes intermediate in a choice set, consumers stick to a noncompensatory decision rule and, as a consequence, are more likely to opt for an extreme alternative.

We also propose that the pioneer's share loss can be canceled when the reasons to select an intermediate alternative based on a compensatory decision rule are restored. Our empirical analysis confirms our hypotheses and shows that the decision process drives the dissipation of the advantage of the pioneer, as restoring the reasons to use a trade-off processing recreates the effect.In this work, we also predict changes in the pioneer's share when it becomes extreme. We anticipate that the extreme pioneer will lose part of its advantagebut that the magnitude of such loss will be lower than one would observe if order of entry were unknown. This is in line with the notion that consumers are more likely to use a noncompensatory decision rule when considering a pioneering product, and therefore to prefer the first entrant.Notably, in this case, we argue that some consumers will nonetheless minimize extremeness aversion and opt for the intermediate follower. We indeed find support for these hypotheses in the first study.

These main findings contribute to the literatures on pioneering advantage and on thecompromise effect. By providing evidence of potential sources of first-entrant disadvantage and by showing when and how followers can overtake the pioneer, we extend research on followers' advantages (Zhang&Markman, 1998). Furthermore, our work contributes to the literature on the compromise effect by providing a boundary condition to extremeness aversion (Simonson, 1989; Simonson &Tversky, 1992). These findings suggest that consumers who are aware of the order-of-entry effect are less inclined to engage in trade-off contrastsbetween alternatives and therefore less inclined to place value on the relational property of the context.

6.*2 Managerial implications*

Our work offers some important results for managers. First and foremost, the pioneer should be concerned not only about followers' arrivals but also about their positioning. The first entrantshould avoid being overtaken on both its main attributes by followers. The first entrant should also consider that when it becomes extreme in a choice set, consumers will increasingly see the potential negative consequences associated with choosing it and they will have a negative effect on its share.Our research provides some guidelines alsofor managers wanting to enter product categories where a pioneer already exists. We show that opting for an extreme position that renders the pioneer intermediate can be rewarding for a follower. By contrast, being the second extreme player in a market where the pioneer becomes extreme reduces the expected share of thislast entrant.

Moreover, marketers might use our research to make decisions about the information provided to consumers and its content. Our research provides guidance on how firms can overcome the threat posed by followers making a pioneering product intermediate in the market. We show that marketing managers can strategically design the information given to consumers

by stressing the value of a good balance between attributes (e.g., a good price-to-quality ratio),as this can reduce consumers' tendency toavoidthe intermediate pioneer.

6.*3 Limitations and future research directions*

This paper has some limitations. First, although the experiments are consistent with existing literature, they are imaginary, and no real choice is made. This might influence the level of participants' involvement and the reliability of the answers. In future research, a field experiment could be run to test whether results hold true in real settings (Kivetz, Netzer, &Srinivasan, 2004). Second, our work assumes that product combinations differ in terms of two product attributes only. It might be interesting to investigate whether our findings hold when additional alignable attributes are considered. Additionally, prior work has shown how the introduction of nonalignable attributes influences both context effects (Gourville&Soman, 2007) and first-mover advantage (Zhang &Markman, 1998); future research could extend this literature by examining their interaction in the presence of new nonalignable attributes. Specifically, Ha, Park, and Ahn (2009) showed that information on both categorical and quantitative attributes can affect the decision-making process and the existence of context effects. They demonstrate that a categorical attribute triggers category-based grouping of options and can mitigate the presence of the attraction but not the compromise effect. Future research could investigate the role played by categorical attributes in the interaction between choice context and order-of-entry strategies.Third, we explore sequential market entry and the rise of a choice context. Amir and Levav (2008) showed the evidence for an instability of preference learned in context (such as an asymmetric dominance context, or a compromise-like context) compared to preferences learned through repeated binary trade-off comparisons. In the latter case, the learning process leads to preferences being stable across different choice contexts. This framing could be particularly interesting when referring to preferences expressed for the pioneer versus later entrant. Future research might consider different choice-context scenarios and test for the stability of preferences expressed for the pioneer over preferences expressed for the intermediate option.

REFERENCES

Amir, O.,&Levav, J. (2008). Choice construction versus preference construction: The instability of preferences learned in context. *Journal of Marketing Research, 45*(2), 145–158. http://dx.doi.org/10.1509/jmkr.45.2.145

Bertini, M., Ofek, E., &Ariely, D. (2009).The impact of add- on features on consumer product evaluations. *Journal of Consumer Research, 36*(1), 17–28. http://dx.doi.org/10.1086/596717

Bettman, J.R., Johnson, E.J., & Payne, J.W. (1990). A componential analysis of cognitive effort in choice.*Organizational Behavior and Human Decision Processes, 45*(1), 111–139. http://dx.doi.org/10.1016/0749-5978(90)90007-V

Boulding, W., & Christen, M. (2008). Disentangling pioneering cost advantages and disadvantages. *Marketing Science, 27,* 699–716. http://dx.doi.org/10.1287/mksc.1070.0324

Carpenter, G. S., & Nakamoto, K. (1989).Consumer preference formation and pioneering advantage.*Journal of Marketing Research, 26,* 285–98. http://dx.doi.org/10.2307/3172901

Chang, C.C., Chuang, S.C., Cheng, Y. H.,& Huang, T.-Y. (2012). The compromise effect in choosing for others.*Journal of Behavioral Decision Making, 25,*109–122. http://dx.doi.org/10.1002/bdm.720

Chang, C.C., & Liu, H. (2008). Information format-option characteristics compatibility and the compromise effect.*Psychology and Marketing, 25,* 881–900. http://dx.doi.org/10.1002/mar.20242

Chernev, A. (2004). Extremeness aversion and attribute balance effects in choice. *Journal of Consumer Research, 31,* 249–263. http://dx.doi.org/10.1086/422105

Dhar, R., Nowlis, S. M., & Sherman, S. J. (2000). Trying hard or hardly trying: An analysis of context effects in choice. *Journal of Consumer Psychology, 9*(4), 189–200. http://dx.doi.org/10.1207/S15327663JCP0904_1

Dhar, R.,& Simonson, I. (2003). The effect of forced choice on choice.*Journal of Marketing Research, 40*(2), 146–160.http://dx.doi.org/10.1509/jmkr.40.2.146.19229

Fishburn, P. C. (1974). Lexicographic orders, utilities and decision rules: A survey. *Management Science, 20,* 1442–1471. http://dx.doi.org/10.1287/mnsc.20.11.1442

Gillett, M.,& Hart, M. (2015).*Blackberry 10*(Case Study Reference No. 9B15B008).Ivey Business School, London, Ontario, Canada: Ivey Publishing.

Gourville, J. T., &Soman, D. (2007). *Extremeness seeking: When and why consumers prefer the extremes*(HBS Marketing Research Paper No. 07-092). http://dx.doi.org/10.2139/ssrn.987336

Ha, Y. W., Park, S., &Ahn, H. (2009). The influence of categorical attributes on choice context effects. *Journal of Consumer Research, 36*(3), 463–477.http://dx.doi.org/10.1086/599045

Hamilton, R. W. (2003). Why do people suggest what they do not want? Using context effects to influence others' choices. *Journal of Consumer Research, 29,* 492–506. http://dx.doi.org/10.1086/346245

Hauser, J. R.,&Shugan, S. M. (1983). Defensive marketing strategies.*Marketing Science, 2,* 319–360. http://dx.doi.org/10.1287/mksc.2.4.319

Janiszewski, C.,& Lichtenstein, D. R. (1999).A range theory account of price perception.*Journal of Consumer Research, 25*(4), 353–368.http://dx.doi.org/10.1086/209544

Kardes, F. R., &Kalyanaram, G. (1992). Order-of-entry effects on consumer memory and judgment: An informational integration perspective. *Journal of Marketing Research, 29,* 343–357. http://dx.doi.org/10.2307/3172744

Khan, U., Zhu, M., &Kalra, A. (2011). When trade-offs matter: The effect of choice construal on context effect. *Journal of Marketing Research, 48*(1), 62–71.http://dx.doi.org/10.1509/jmkr.48.1.62

Kivetz, R., Netzer, O., &Srinivasan, V. (2004). Extending compromise effect models to complex buying situations and other context effects. *Journal of Marketing Research, 41,* 262–268. http://dx.doi.org/10.1509/jmkr.41.3.262.35993

Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement for categorical data.*Biometrics, 33*(1), 159–174. http://dx.doi.org/10.2307/2529310

Law, S. (2002). Can repeating a brand claim lead to memory confusion? The effect of claim similarity and concurrent repetition.*Journal of Marketing Research, 39,* 366–78. http://dx.doi.org/10.1509/jmkr.39.3.366.19104

Lehmann, D., & Pan, Y. (1994). Context effects, new brand entry, and consideration sets. *Journal of Marketing Research, 31,* 364–374. http://dx.doi.org/10.2307/3152223

Maimaran, M., & Simonson, I. (2011).Multiple routes to self versus other-expression in consumer choice.*Journal of Marketing Research, 48,* 755–766. http://dx.doi.org/10.1509/jmkr.48.4.755

Mao, W. (2016). When one desires too much of a good thing: The compromise effect under maximizing tendency. *Journal of Consumer Psychology,* 26(1), 66–80. http://dx.doi.org/10.1016/j.jcps.2015.04.007

Miyazaki, A. D., Grewal, D., & Goodstein, R. C. (2005). The effect of multiple extrinsic cues on quality perceptions: A matter of consistency. *Journal of Consumer Research, 32,* 146–153. http://dx.doi.org/10.1086/429606

Moore, M. J., Boulding, W., & Goodstein, R. C. (1991). Pioneering and market share: Is entry time endogenous and does it matter? *Journal of Marketing Research, 28,* 97–105. http://dx.doi.org/10.2307/3172729

Müller, H., Vogt, B., & Kroll, E. B. (2012). To be or not to be price conscious—A segment-based analysis of compromise effects in market-like framings. *Psychology and Marketing, 29,* 107–116.http://dx.doi.org/10.1002/mar.20508

Nowlis, S. M., & Simonson, I. (2000). Sales promotions and choice context as competing influences on consumer decision making. *Journal of Consumer Psychology, 9,* 1–16. http://dx.doi.org/10.1207/s15327663jcp0901_1

Oliver, R. L., &Bearden, W. O. (1985). Crossover effects in the theory of reasoned action: A moderating influence attempt. *Journal of Consumer Research, 12*(3), 324–340.http://dx.doi.org/10.1086/208519

Oppenheimer, D. M., Meyvis, T., &Davidenko, N. (2009). Instructional manipulation checks: Detecting satisficing to increase statistical power. *Journal of Experimental Social Psychology, 45,* 867–872. http://dx.doi.org/10.1016/j.jesp.2009.03.009

Pan, Y., & Lehmann, D. (1993). The influence of new brand entry on subjective brand judgments.*Journal of Consumer Research, 20,* 76–86. http://dx.doi.org/10.1086/209334

Parducci, A. (1968). The relativism of absolute judgements.*Scientific American, 291*(6), 84–90. http://dx.doi.org/10.1038/scientificamerican1268-84

Payne, J.W., Bettman, J.R., & Johnson, E.J. (1988). Adaptive strategy selection in decision making. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 14,* 534–552. http://dx.doi.org/10.1037/0278-7393.14.3.534

Porter, M. E. (1980).*Competitive strategy*.New York: Free Press.

Purohit, D., &Srivastava, J. (2001). Effects of manufacturer reputation, retailer reputation, and productwarranty on consumer judgments of product quality: A cue diagnosticity framework. *Journal of Consumer Psychology, 10*(3), 123–134. http://dx.doi.org/10.1207/s15327663jcp1003_1

Robinson, W. T. (1988).Marketing mix reactions to entry.*Marketing Science, 7,* 368–385.http://dx.doi.org/10.1287/mksc.7.4.368

Robinson, W. T., &Fornell, C. (1985). Sources of market pioneer advantages in consumer goods industries. *Journal of Marketing Research, 22,* 305–318. http://dx.doi.org/10.2307/3151427

Schwartz, J., Luce, M.F., &Ariely, D. (2011). Are consumers too trusting? The effects of relationships with expert advisers.*Journal of Marketing Research, 48*(SPL), S163–S176. http://dx.doi.org/10.1509/jmkr.48.SPL.S163

Shankar, V., Carpenter, G. S., &Krishnamurthi, L. (1999). The advantages of entry in the growth stage of the product life cycle: An empirical analysis. *Journal of Marketing Research, 36,* 269–277. http://dx.doi.org/10.2307/3152098

Sheng, S., Parker, A. M., & Nakamoto, K. (2005). Understanding the mechanism and determinants of compromise effects. *Psychology and Marketing, 22,*591–609. http://dx.doi.org/10.1002/mar.20075

Simonson, I. (1989). Choice based on reasons: The case of attraction and compromise effects. *Journal of Consumer Research, 16,* 158–174. http://dx.doi.org/10.1086/209205

Simonson, I., &Tversky, A. (1992). Choice in context: Tradeoff contrast and extremeness aversion. *Journal of Marketing Research, 29,* 281–296. http://dx.doi.org/10.2307/3172740

Sujan, M., &Bettman, J.R. (1989).The effects of brand positioning strategies on consumers' brand and category perceptions: Some insights from schema research. *Journal of Marketing Research, 26,* 454–467. http://dx.doi.org/10.2307/3172765

Woyke, E. (2011). RIM's problem: BlackBerrys "stuck in the middle,"says analyst. *Forbes*,September 16. http://www.forbes.com/sites/elizabethwoyke/2011/09/16/rims-problem-blackberrys-stuck-in-the-middle-says-analyst/#4a84a79153b7

Yeung, C. W. M.,&Soman, D. (2005). Attribute evaluability and the range effect. *Journal of Consumer Research, 32*(3) 363–369.http://dx.doi.org/10.1086/497547

Zhang, C.,&Markman, A. B. (1998). Overcoming the early entrant advantage: The role of alignable and nonalignable differences. *Journal of Marketing Research, 35,* 413–426.http://dx.doi.org/10.2307/3152161