

This is the accepted manuscript of the article:

Nicolau, J. L. (2012). Battle royal: Zero-price effect vs relative vs referent thinking. *Marketing Letters*, 23, 661-669.

<https://doi.org/10.1007/s11002-012-9169-2>

**BATTLE ROYAL:
ZERO-PRICE EFFECT vs RELATIVE vs REFERENT THINKING**

Abstract

This article confronts three psychological influences: relative thinking, referent thinking and the zero-price effect. The experiment, conducted in the context of bundles with complementary components, confirms previous evidence around the dominance patterns between relative and referent thinking when the bargain is a discount; however, when the discount is changed to a free product (worth the same as the discount), the zero-price effect arises. Specifically: (i) if actual price coincides with expected price, relative thinking is the norm, unless the zero-price effect appears; (ii) if actual price moderately deviates from expected price, referent thinking is superior to any other effects, relative thinking and the zero-price effect; and (iii) if the deviation is extreme, a battle royal among influences takes place: relative thinking beats referent thinking as long as the zero-price effect does not appear. If the zero-price effect is present, it will cancel referent thinking and reverse relative thinking.

Keywords: relative thinking; referent thinking; zero-price effect.

INTRODUCTION

In a recent article, Saini et al. (2010) show that, in the context of sales promotions, the amount of deviation from a reference point (reference price) leads to different patterns of dominance between relative thinking -through which a €5 discount is more attractive on a price of €10 than on a price of €20- and referent thinking -where a reference or expected price exists, which people compare with actual prices, reacting more drastically to losses (actual prices > expected prices) than to gains (actual prices < expected prices)-.

When the expected price coincides with the actual price, relative thinking takes place; i.e. a discount on a low price will be more attractive than the same discount on a high price. When a reference price exists, these authors distinguish two situations: moderate and extreme deviations. When the discrepancy between a price and the reference price is moderate, referent thinking takes over; i.e. on account of the steeper value function for losses, a discount will have a stronger impact on the high price rather than the low. In other words, “reducing losses” is preferred to “augmenting gains”. However, when the difference between actual and reference prices becomes extreme, relative thinking dominates referent thinking again. It seems that, despite the preference of “loss reduction” over “gain increase”, when the differences between actual and reference prices are too large, the potential reduction in losses is no longer worth it. In this situation, individuals act as if they did not consider reference points; thus, changing their thinking scheme, from referent to relative. To this “rivalry” between psychological influences, we add the zero-price effect in order to further determine the limits of each force.

The zero value concept has proven to have unexpected consequences in human behavior. Palmeira (2011) has recently demonstrated a zero-comparison effect in which a zero-value attribute removes a reference point for evaluating relative differences. The implication is that a zero value can change an alignable attribute to a nonalignable attribute, which changes decision processes in a fundamental way, as demonstrated in several studies on structural alignability theory (e.g. Zhang and Markman, 1998; Zhang and Fitzsimons, 1999; Zhang and Markman 2001; Zhang et al., 2002). Shampanier et al. (2007) coined the zero-price effect through which a free product becomes so extraordinarily attractive that another much more preferred alternative is foregone by

individuals. These authors show that when people have a choice between two products, -one of them being free-, they favor the free product because zero price not only conveys the idea of no-cost but implicitly adds extra value. They explain this result by empirically demonstrating that a higher positive feeling (affect) arises when people are presented with free offers; an effect that in turn is used to make their decisions. In fact, when they eliminate it from the decision-making process, the zero price effect disappears. They suggest that a positive feeling towards a free offer comes from the fact that it only implies benefits and not costs; another offer with a positive price, no matter how small it is, always conveys both benefits and costs.

In this line of research, Nicolau and Sellers (2012) find that the zero price effect is not only confined to single products (as in Shampanier et al. (2007)) but also applies in two-component products. Even though benefits and costs are always present in bundled products -i.e. opting for the alternative with a free component implies paying a positive price for the other component in the bundle-, a positive feeling is generated towards the free component and, in turn, towards the whole bundle.

On account of these psychological effects (zero-price, relative and referent thinking), the question we attempt to address is: in the context of bundles with complementary components, which effect dominates which?

Absent deviation in a two-complementary-product bundle with a free component: As stated before, when the reference price coincides with the actual price, relative thinking appears, and a discount on a low price will be more attractive than on a high price. When there is a bundle with complementary products, a discount applied globally to the bundle should lead to the same results. However, when the promotion consists of a free product in the bundle the results might change: First, when comparing the “free component” with the “discount”, note that, even though the same amount of money is saved, the latter does not tell the individual whether it covers a whole component of the bundle or not, whereas the former explicitly guarantees that the individual is getting a complete element of the bundle free. In a similar vein, we can argue that this is, in a way, analogous to the certainty effect (Kanheman and Tversky, 1984; Kanheman, 2011; Tversky and Kahneman, 1986): the free product in the bundle can be seen as a type of certainty effect, as the individual is receiving the free component (in its totality) with probability one; and according to this effect, this is perceived to be better than an uncertain chance (lower-than-one probability) of

receiving more than the free component. And second, in a high-priced bundle, having the opportunity to get one of its components for free can convey the idea that the free component is of high quality. Note that, irrespectively of the amount saved, one should be more willing to get a free breakfast in a four-star hotel than in a two-star hotel; i.e., a free component of a bundle can make the high-priced bundle more appealing than the low-priced one. It is important to remember that, while relative and referent thinking are perceptual phenomena, the zero-price effect comes from affective mechanisms (Shampanier et al., 2007) that can have an influence on how people react to a free offer contained in a bundle, whose characteristics (e.g. the quality of the bundle) can affect the value of the free offer attained by individuals.

Moderate deviation in a two-complementary-product bundle with a free component: In this context, the free component should have a stronger impact on a high price rather than a low price, not only because individuals prefer “reducing losses” to “augmenting gains” (paralleling the discount framework), but also because of the aforementioned price-quality association.

Extreme deviation in a two-complementary-product bundle with a free component: in the discount framework, when the difference between actual and reference prices becomes extreme, relative thinking emerges and referent thinking vanishes. If that is the case, the situation “extreme deviation in a two-complementary-product bundle with a free component” would be analogous to “absent deviation in a two-complementary-product bundle with a free component” where no reference points are considered and the expectation is that a free component of a bundle would make the high priced bundle more appealing than the low priced.

EXPERIMENT 1

We design the experiment by following and adapting Saini et al.’s experiment (2010), in an online-offline context. Accordingly, we ask individuals to choose between two alternatives: to book a hotel night plus breakfast directly on the Internet at home or to go to a physical travel agent’s that announces a promotion (discount or free breakfast).

The experiment is based on a 2 (price: high, low) x 3 (deviation from reference price: absent, present-moderate, present-extreme) x 2 (bargain: discount, zero-price) between-subjects design.

We set the expected price at €50, so, in line with Saini et al. (2010), and in order to have equidistant deviations, a moderately deviated high price of €70 and low price of €30 are established. The extreme high and low deviations are obtained by prices of €85 and €15, respectively. The bargain offered is worth €7, either in the shape of a discount or a free breakfast (zero-price component). The sample consists of 605 undergraduate students, who are randomly assigned to the 12 conditions of the design.

Note that the first six conditions mimic the Saini et al. (2010) experiments, which compare relative and referent thinking, while conditions 6 through 12 include the zero-price effect. The following scenarios are two examples of the conditions presented to the subjects, the first showing a higher than expected price with a moderate deviation from the reference price and with discount, and the second is exactly the same except for the free component:

Scenario 1. Moderately deviated high price with discount

Let's imagine you are going to spend a weekend away and you need to book a hotel night. You are looking on the Internet and notice that prices are higher than you expected. The price you expected for a night (room + breakfast) is €50 and the best price you have found is €70 (room + breakfast).

Nevertheless, you know of a travel agent's that offers a €7 discount on any hotel price you have found on the Internet; that is, if you go to the travel agent's and bring with you the price found on the Internet for the room+breakfast they give you a €7 discount. However, this travel agent's is located a 15-minute drive away.

Would you go to the travel agent's to make the booking?

- A) No, I will make the booking from home on the Internet
- B) Yes, I will go to the travel agent's and I will get the discount.

Scenario 2. Moderately deviated high price with free component

Let's imagine you are going to spend a weekend away and you need to book a hotel night. You are looking on the Internet and notice that prices are higher than you expected. The price you expected for a night (room + breakfast) is €50 and the best price you have found is €70 (room €63 + breakfast €7).

Nevertheless, you know of a travel agent's that gives a free breakfast in any hotel found on the Internet; that is, if you go to the travel agent's and bring the price found on the Internet for the room+breakfast, you only pay for the room (the travel agent's offers you the breakfast for free). However, this travel agent's is located a 15-minute drive away.

Would you go to the travel agent's to make the booking?

- A) No, I will make the booking from home on the Internet
- B) Yes, I will go to the travel agent's and I will get the free breakfast.

RESULTS

We run a binary logit analysis with effect coding for price (low =-1; high=1), deviation (absent=-1; present-moderate=0; present-extreme=1) and bargain (discount=-1; zero-price=1), and find that the interactions "price x bargain type" ($\beta=0.198$; $z=2.377$; $p=0.017$) and "deviation x bargain type" ($\beta=-0.326$; $z=-3.182$; $p=0.001$) are significant (see Graphs 1 and 2). Proportions tests are performed to further explore the nature of these results.

Graphs 1 and 2

The experiments with the discount condition confirm Saini et al.'s (2010) predictions. Specifically, when deviation is absent, the proportion of participants who opt to go to the travel agent's in the low-price condition is significantly higher than the proportion who choose to go in the high-price condition, 50% > 26.9% ($t(84)=7.77$, $p<0.001$). Therefore, relative thinking appears since the discount is more attractive when the price is €30 than when it is €70.

When moderate deviation is present, we find that 54.76% of subjects select to go to the travel agent's in the high-price condition, which is significantly higher than the proportion (43.14%) that opt to go in the low-price condition ($t(64)=-5.30$, $p<0.001$). This implies that referent thinking beats relative thinking in the deviation-present condition, in line with Saini et al. (2010), as the impact of a discount is stronger when the price is higher than expected than when the price is lower than expected, on account of the steeper value function for losses than for gains.

When extreme deviation is present, the percentage of subjects who choose to go to the travel agent's in the low-price condition is significantly higher than the proportion

who choose to go in the high-price condition, 65.38% > 46.81% ($t(99)=10.33$, $p<0.001$). Therefore, relative thinking re-appears and dominates referent thinking, despite the explicit existence of a deviation from a reference price.

To sum up, when deviation is absent, relative thinking takes place; when moderate deviation exists, referent thinking takes over; and when this moderate deviation becomes extreme, relative thinking re-appears and beats referent thinking, in line with Saini et al. (2010).

As for the introduction of the zero-price effect -through the free breakfast component- into the experiment, we find: In the deviation-absent condition 65.96% of subjects choose to go to the travel agent's when the price is high (€70) and 51.92% when the price is low (€30). This difference in proportions is significant ($t(99)=-8.51$, $p<0.001$). Most importantly, this result implies a complete reversal of relative thinking when the free breakfast (rather than the discount) is offered. As no deviation exists, referent thinking is not expected to have any effect. Consequently, the zero-price effect exemplified by the free breakfast arises. Remember that the zero-price effect leads to a free product becoming more attractive than another more preferred alternative (which is foregone by individuals).

Specifically, we find that the zero-price effect impacts on the high-price condition, as 65.96% go to the travel agent's in the free-breakfast promotion while only 26.92% go in the discount promotion ($t(99)=-18.32$, $p<0.001$). While the latter does not tell the individual anything about how much of each component in the bundle the discount covers, the former guarantees that the individual is getting a complete element of the bundle free: the breakfast. In fact, in the low-price condition, no significant differences are found between the free-breakfast (51.92%) and discount conditions (50.00%), ($t(84)=-0.77$, $p<0.439$). This means that the less preferred alternative in the "free offer" is as good as the most preferred alternative in the "discount offer"; that is, the free effect raises the value of the bundle containing free components.

But why does the zero price effect become especially attractive under higher price compared to a lower price? In the high-price condition with a discount, only 26.92% decide to go to the travel agent's; clearly, the preferred alternative is to book online at home (73.08%). However, when the discount is changed to a free product whose value is exactly the same (€7), they are willing to forsake their "favorite alternative" (booking online) and make an extra effort (a 15-minute drive), because the

alternative with the free component seems to have suddenly “acquired” an extra value. In the high-price condition with free-breakfast, 65.96% go to the travel agent’s, and only 34.04% (a figure much lower than the 73.08% found in the discount high-price condition) book online. The key point is the relationship between price and quality. In a high-priced bundle, the individual assumes that all its components are of high quality, so a free component of a bundle can make the high-priced bundle more appealing than the low-priced one. Therefore, in the deviation-absent free-breakfast condition, in the context of bundles with complementary products, the zero-price effect dominates, and reverses the effect of relative thinking.

A priori, these results seem to contradict Nunes and Park (2003) as they find that relative thinking vanishes when a free gift is offered instead of a cash discount, a finding they attribute to the incommensurate nature of the free gift (non-monetary) relative to the commensurate nature of monetary savings; but it reappears when the monetary value of the free gift is revealed. Note, however, that, contrary to theirs, our experiment builds on bundles with complementary components, which is a fundamental feature to this analysis, as the elements in the bundle are to be consumed together during the stay, implying that they are “intertwined”.

In the moderate deviation condition with the free breakfast, we find that 55.36% go to the travel agent’s in the high-price condition and 46.81% in the low-price condition ($t(103)=-4.43$, $p<0.001$). This pattern is not significantly different from the one with the discount promotion: 55.36% is not different from 54.76% ($t(98)=-0.318$, $p<0.751$) and 46.81% is not different from 43.14% ($t(98)=-1.634$, $p<0.102$). Consequently, in the moderate deviation-present condition, referent thinking beats not only relative thinking but also the zero-price effect. The steeper value function for losses than for gains implies that a promotion is always stronger when the price is higher than expected than when the price is lower than expected, irrespectively of whether the promotion is a discount or a free product.

Finally, in the extreme deviation condition with the free breakfast, 49.28% opt to go to the travel agent’s in the high-price condition and 43.10% in the low-price condition ($t(127)=-3.59$, $p<0.001$). More importantly, when the promotion is a discount, we confirm the re-emergence of relative thinking in the extreme condition, however, when the promotion is a free breakfast, relative thinking is reversed. Analogously to the patterns in the “absent deviation” condition, in which relative thinking is present in the

discount offer, it reverses when the discount is changed to the free offer, as a free component in a bundle makes the bundle with high price more appealing than the one with low price.

Note that in the high-price condition, the proportion of subjects that choose to go to the travel agent's is not different in both cases (46.81% and 49.28%, $t(116)=-1.32$, $p<0.186$). However, in the low-price condition, the percentage of subjects opting to go to the travel agent's is significantly inferior in the free-breakfast promotion than in the discount promotion (43.10% versus 65.38%, $t(110)=-13.53$, $p<0.001$). Contrary to the situation "deviation-absent with free product", where the proportion of people in the high-price condition choosing to go increases from 26.92% to 65.96%, in the situation "extreme deviation with free product", we find that the reversal of relative thinking is due to a reduction in the proportion of people in the low-price condition opting to go to the travel agent's (from 65.36% in the "extreme deviation with discount" to 43.10% in the "extreme deviation with free product"). A possible explanation for this result revolves around the idea that a €7 discount in a €15 bundle (i.e. a cheap hotel) might convey the impression (with lower uncertainty than in more expensive hotels) that the *discount* covers "breakfast plus something else" and not "just the breakfast" as in the *free offer*.

To summarize the results:

i) In the deviation-absent condition, relative thinking is the norm, unless the zero-price effect appears, in which case, relative thinking is reversed.

ii) In the moderate deviation condition, referent thinking is superior to any other effects, relative thinking and the zero-price effect.

iii) In the extreme deviation condition, relative thinking is the norm as long as the zero-price effect does not appear. If the zero-price effect is present, it will reverse relative thinking.

DISCUSSION

When consumers are presented with bargains, different psychological influences might appear. Relative and referent thinking are two effects that are widely acknowledged to have an impact on people's decisions. In a recent publication, Saini et al. (2010) integrate both effects to determine which one dominates in different

situations. This paper goes a step further by introducing another element shown to sway people's choices: the zero-price effect (Shampanier et al., 2007).

For this purpose, we conduct an experiment with twelve conditions: six resemble those of Saini et al. (2010), where the promotion is a discount, and in the other six conditions the discount is substituted by a free product. When the conditions include a discount, the outcome confirms those of Saini et al. (2010): with no deviation from reference price, relative thinking appears; with moderate deviation, referent thinking dominates; and with extreme deviation, relative thinking re-appears.

However, when the conditions include a free product, rather than a discount, we find that: with no deviation, the dominant relative thinking in the discount condition is reversed by the zero-price effect; with moderate deviation, referent thinking dominates (as in the discount condition); and with extreme deviation, the dominant relative thinking in the discount condition is reversed again.

These results have important managerial implications. A general conclusion is that managers should acknowledge that a discount and a free product, both worth the same, show distinct behavioral patterns in consumers' decisions on bargains. These different patterns are contingent upon the existence and degree of deviation between the actual and reference price. Accordingly, specific implications are as follows:

i) if no deviation exists, a discount should be offered in low-priced products and a free product in the high-priced. Which one is more effective? The "expensive alternative with a free product" reaches a significantly higher demand than the "cheap alternative with a discount" ($65.96\% > 50.0\%$; $t(84)=6.97$; $p < 0.001$). Therefore, in the case of actual prices similar to expected prices, it is better to offer a free product in the expensive alternative, rather than a discount on the cheap product.

ii) if moderate deviation is present, either a discount or a free product can be offered indistinctively in the expensive alternative; demand in both cases -discount and free product- are comparable ($54.76\% = 55.36\%$; $t(98)=-0.318$, $p < 0.751$)

iii) if extreme deviation occurs, a discount is appropriate in the cheap product and a free component in the expensive product. Note, however, that in this case - contrary to a situation with no deviation-, the "expensive alternative with a free product" presents a significantly lower demand than the "cheap alternative with a discount" ($49.28\% < 65.38\%$; $t(121)=-11.50$; $p < 0.001$). Thus, in the case of actual prices

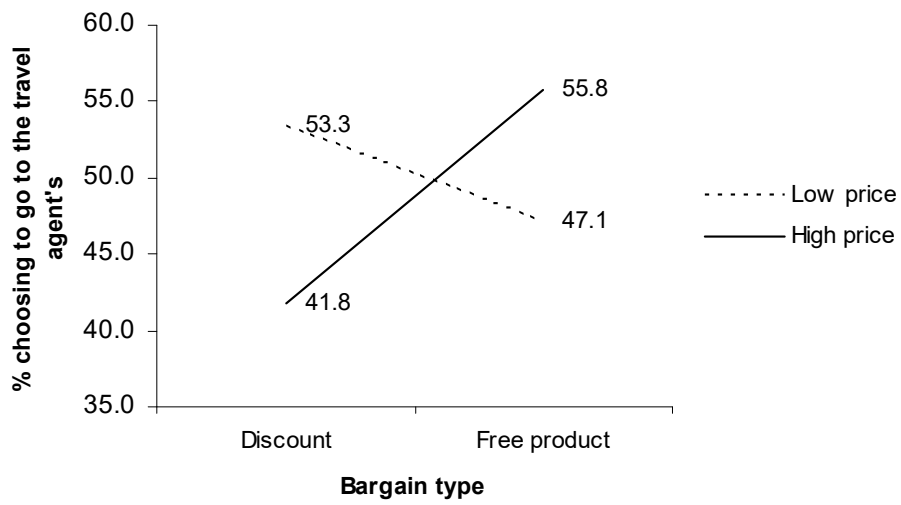
that are much higher than expected, it is better to offer a discount in the cheap product, rather than a free product in the expensive alternative.

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Graph 1. Interaction “bargain type and price”



Graph 2. Interaction “bargain type and deviation”

