Adaptive aspirations and contributions to a public good: Generic advertising as a response to decline

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Abstract

Generic advertising, the promotion of an entire product or service category, is a common form of inter-firm cooperation. Voluntary participation in such a campaign represents contribution to a public good. Based on the pattern of recent campaigns, we argue that this cooperation is dependent on adaptive aspirations and an increased willingness to consider alternative courses of action in light of declining sales within an industry. Three experiments are reported that tested these ideas. In each study, subjects assigned to four person groups chose how many resources to contribute to a generic advertising campaign the effectiveness of which depended on total funding levels. Each group member represented a different “store” in the same mall. The instructions framed the problem by presenting varying sales trends for the stores—Positive, Negative, or Neutral. The first two experiments were one-shot games with a dominant strategy of non-contribution and free riding. The results showed that subjects confronting the declining trend contributed significantly more than those in either of the other two conditions. A declining sales trend also positively influenced their expectations that others would contribute as well. The third experiment demonstrated that a decline-induced equilibrium persisted over trials of a finitely repeated game with a known stopping point. Contributions remained high even in the final round. Surprisingly, the specific identification of a competitor mall as the cause of the decline in sales actually resulted in lower levels of contribution. The implications for research and practice are discussed.

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Introduction

In the year 2000, American firms spent an estimated $243.68 billion on advertising. Theories of advertising stress its role in providing product information to the consumer (Nelson, 1974), increasing brand recognition, creating a favorable image, or differentiating a product from the competition (MacInnis, Moorman, & Jaworski, 1991). A unique form, generic advertising promotes not a single brand or firm but rather an entire category of products or services. Such campaigns actually blur brand distinctions within a category potentially undermining the competitive advantage of a contributing firm. Generic campaigns represent a form of inter-firm cooperation that has been little studied by organizational researchers. In a series of experiments we examine the forces driving expenditures on generic advertising. The results provide insights into the phenomenon itself as well as the general tendency for interorganizational cooperation.

Advertising as a public good

Traditionally, generic advertising has been limited to a narrow range of industries where competition is carefully controlled by government regulation. In these settings, contributions (called check-offs) to underwrite advertising are mandatory. Monitoring and enforcement are provided by an industry-wide agency such as the National Dairy Board. This practice has a very long history in the US (Forker & Ward, 1993). State-level promotion programs have been in place since the 1930s—examples include Idaho Vegetables (which began in 1937) and Washington apples (which began in 1939). Our interest is in the recent prominence of generic
advertising campaigns funded by voluntary contributions from industry members. The funds a firm devotes to such a campaign are resources that could have been used to develop new products, to increase production, to improve product quality, or for traditional advertising that promotes only the firm’s own brand. When and why do organizations choose to cooperate in this unique way?

A manager’s decision to contribute to such a campaign takes the form of a social dilemma. When viewed as a one time decision, contributing is strictly dominated by non-contributing. If the other firms in the industry actually do contribute then firm X would benefit without bearing any of the cost of advertising. Should the other firms abstain from contributing then firm X would avoid wasting resources on an under-funded effort.

The manner in which outcomes, options, and actions are perceived also has a significant impact on willingness to engage in collective action. A number of studies have investigated the relationship between the framing of outcomes as gains or losses and the willingness of players to choose cooperatively when confronting a social dilemma (e.g., Aquino, Steisel, & Kay, 1992; Andreoni, 1995; Brewer & Kramer, 1986; De Dreu & McCusker, 1997; McCusker & Carnevale, 1995). The experimental results have yielded somewhat inconsistent findings.

**Framing and adaptive aspirations**

The inconsistencies in the framing studies appear to be due in large measure to the multiple reference points decision makers attend to when evaluating the possible consequences of collective action (Kopelman, Weber, & Messick, 2002). Sonnemans, Schram, and Offerman (1998) suggest that reference points and framing may change systematically in a repeated game as experienced outcomes shift aspiration levels.

Promotional allocation decisions by firms are an ongoing concern that may give rise to just this form of adaptive learning. In their theory of organizational search, Levinthal and March (1981) modeled aspiration level as an exponentially weighted moving average of past performance, $A_t = (1 - \gamma_1)A_{t-1} + \gamma_2 P_{t-1}$ where $A_t$ is aspiration level, $P_t$ is actual performance, $t$ is the time period, and $0 < \gamma < 1$. Aspirations adjust to performance but with a degree of inertia defined by $\gamma$. In light of an increasing trend in performance, slack accumulates and what appear to be successful strategies are reinforced. A declining trend in performance gives rise to a discrepancy between target and attainment. The subjective perception of failure triggers search activity for “technological refinements” that can close the discrepancy between aspiration and realization (p. 189).

Lant (1992) found support for this attainment discrepancy formulation in firms’ predictions of the sales targets of other firms in a complex marketing simulation. A sales attainment discrepancy should make organizations more open to considering refinements in their promotional activities. Of course the attractiveness of investing in a generic advertising campaign would hinge not just on an attainment discrepancy but also on a firm’s beliefs regarding how other firms in the industry will respond. Ample evidence shows that individuals tend to use their own beliefs, values, and intentions as predictive of others’ positions. Projective judgment of this form is responsible for the widely studied false consensus effect (Bottom & Paese, 1997; Dawes, 1990; Hoch, 1986; Nickerson, 2001). Cachon and Camerer (1996) demonstrated as well that participants chose strategies in an experimental coordination game consistent with a “loss avoidance principle.” They evidently believed that other players would avoid choosing strategies that appear to guarantee a loss.

In light of a declining sales trend within an industry, firms should therefore be more likely to consider allocating funds to a novel generic campaign and also to predict that others facing a similar trend will do so as well. In a repeated game, this loss avoidance principle could actually become the basis for selection of a cooperative equilibrium. An added basis for stability of the mutual cooperation equilibrium is the pervasive human predisposition to respond with reciprocity to both cooperation and defection by others (Rabin, 1993; Sugden, 1984).

The adaptive pattern is actually strikingly consistent with the most prominent generic campaigns funded by voluntary contributions. Underwriting of life insurance policies decreased by about 25% from 1985 to 1995. The decline corresponded to the formation of the Life and Health Insurance Foundation for Education (LIFE) which subsequently launched a dramatic campaign to inform people about the merits of the product using slogans such as “Would you mind dying for a moment?” and “Is there life after death?” (Gilpin, 1996). A similar decline in rug and carpet sales corresponded to the launch of a $25 million campaign by the Rug and Carpet Institute (HFN—The Weekly Newspaper for the Home Furnishing Network, February 3, 1997). The steel industry, hurt by substitutes such as aluminum and plastic, recently formed the Steel Alliance to sponsor a five-year, $100 million advertising campaign to raise consumer awareness and industry image using slogans such as “The New Steel. Feel the Strength.” (Iron Age New Steel, June 1997).

Of course, it is unclear what the precise incentives or beliefs were in these illustrations, but the pattern is consistent with the hypothesis that collaboration in advertising arises when industry wide sales decline. In this paper, we propose and experimentally test this hypothesis. Specifically, we test whether firms in industries facing declining sales trends are more likely to cooperate on a generic campaign than in industries facing stable or increasing sales trends.
An overview of the experiments

We present the results from three experimental studies. In each experiment, four-person groups were assigned to one of three treatments. They were: Positive Sales Trend—industry sales increasing over recent periods, Neutral Sales Trend—stable industry sales and Negative Sales Trend—industry sales decreasing over recent periods. Other than this trend difference, the problems confronting participants were identical across conditions. Group members played the role of managers of stores in a shopping mall. They were asked to decide how much to contribute to a generic advertising campaign to increase total traffic to the mall. The dominant strategy in the one-shot game was zero; however, if all group members contributed the maximum possible to the campaign, everyone would be better off. Monetary payments to experiment participants were in direct proportion to the profits their store achieved.

The first experiment tested the basic proposition that recent sales trends influence both the willingness to contribute to a generic campaign and expectations of other participants’ willingness to do so. Croson (1999) found that the act of questioning individuals about their expectations can lead participants to think and act in ways that they would not have otherwise. She investigated the impact of questioning in two laboratory experiments. In one case, participants simply decided on their contributions to a public good and in the other, they first provided their best guess of their opponent’s contribution before making their own contribution. Lower contributions were observed when individuals were prompted for their expectations of the contributions of others.

However, Croson held outcome framing constant in a manner perhaps most closely approximated by the Neutral or even Positive conditions in our design. The perspective-taking made salient by the elicitation process most likely reinforced the projection of subjects’ own doubts about the wisdom of contribution. If so deliberation would only reinforce the salience of the dominant strategy of non-contribution. In the negative condition it seems likely that the effort at perspective-taking made salient by the elicitation process may actually enhance and reinforce the projection of one’s own tendency to contribute. If one ruminates and comes to the conclusion that others are likely to contribute, this should make the strategy of contribution even more attractive.

The subsequent experiments replicated and extended the basic results. A replication of Experiment 1, Experiment 2 examined the effect of providing decision makers with an alternative strategy to the generic campaign. Do participants prefer contributing to the public good even when another mechanism for organizational change is available?

Industrial competition hardly resembles a one shot game, so Experiment 3 examined the stability of contribution rates over time in a repeated game. Experiment three also examined an additional factor, the presence of a discernable out-group. Many prominent generic campaigns have involved competitor firms in a long-standing industry newly confronted by outside competition, such as butter producers faced by the threat of margarine producers. The salience of an “out-group” can generate a sense of social identity which has been shown to enhance cooperation among in-group members (Brewer & Kramer, 1986). Though it was not the primary focus of Experiment 3, we added one treatment that made salient the presence of a competitor mall in the declining sales condition. This allowed us to test the hypothesis that the presence of an identifiable out-group (stores in the other mall) would enhance cooperation among stores in the in-group mall.

Experiment 1

Experimental design

The experimental design was a $3 \times 2$ factorial with recent sales trends crossed by expectations solicitation. Participants were shown a sales trend that was: (1) Positive, industry sales had been increasing over the past five years, (2) Neutral, industry sales had been stable over the same period, or (3) Negative, industry sales had declined over the past five years. Half of the participants gave predictions about the contributions of other group members (the Elicitation condition); half provided no such predictions (No Elicitation condition).

Notation. Let $i = 1, \ldots, 4$, $j = 1, \ldots, 5$ and $t = \text{Positive, Neutral, and Negative}$ index individual $i$ in group $j$ in treatment $t$. Let $\theta_{jt}$ denote the contribution by this individual. Let the contribution for group $j$ be denoted by $\theta_j = \sum \theta_{jt}$, the group average for treatment $t$ is denoted by $\Theta_t = \sum \theta_{jt}/5$. We also report group efficiency, a common measure that has been extensively used in the literature (Isaac, McCue, & Plott, 1985; Marwell & Ames, 1981). Group efficiency = $(\theta_{jt}/800,000) \times 100$.

Participants could contribute between $0$ and $200,000. We label non-contributors as free riders. The free rider percentage in group $j$, treatment $t$ is denoted by $\Phi_j = (f_j/4) \times 100$ where $f_j$ stands for the number of participants in group $j$ treatment $t$ who contributed zero. We denote the overall average across groups in treatment $t$ by $\Gamma_t$.

EXSUM$_{ijt}$ is individual $i$'s prediction of the sum of contributions by the three other members in his or her group $j$ and treatment $t$. Let EXMAX$_{ijt}$ and EXMIN$_{ijt}$ denote the expectations of the maximum and minimum
contribution by a group member by the same individual. Let \( \text{EXSUM}_t, \text{EXMAX}_t, \) and \( \text{EXMIN}_t \) denote the averages of the individual expectations by treatment.

**Hypotheses**

We argue that performance history shapes aspirations and the willingness to consider change. In the Negative sales trend case, current sales will lag the adaptive aspiration level for sales. This should generate a willingness to pursue the novel approach of generic advertising in order to reach the target. Through projective judgment it should also increase their belief that others will contribute in response to the decline. In the Positive trend case, the trend for success suggests no need to create change in order to meet a performance target. This should diminish the attractiveness of contribution to the campaign. The results of the Neutral trend case should fall between the extremes.

Therefore, we expect that average contributions will be lowest in the Positive sales trend treatment and highest in the Negative sales trend treatment. We further hypothesize that pure free riding will be most frequent in the Positive sales trend treatment and least frequent in the Negative trend case. In each case, we expect the Neutral sales trend treatment to yield results that are in between those in the Positive and Negative trend cases. These hypotheses are summarized below:

**H1.** \( \theta_{\text{Positive}} < \theta_{\text{Neutral}} < \theta_{\text{Negative}}. \)

**H2.** \( \Gamma_{\text{Positive}} > \Gamma_{\text{Neutral}} > \Gamma_{\text{Negative}}. \)

The elicitation condition will provide a test of the hypothesis that projective judgment leads negatively framed participants to predict that their fellow group members will contribute more as well. Of course the relationship between prediction of others and one’s own contribution should be independent of frame. We predict a positive correlation between own contribution and prediction of others.

Croson found that eliciting expectations of others from participants led to a decrease in their contributions. Since she did not manipulate framing her subjects most likely corresponded to the neutral or positive conditions. Subjects’ own doubts about the risks of contributing made them doubt the likelihood that others would contribute. This reinforced the tendency to abstain from the campaign. We predict that this relationship will characterize the positive and neutral treatments but not the negative. In the latter treatment, the expectations elicitation will enhance the likelihood of projection and reinforce the tendency to contribute. Croson found that individuals’ own contributions were most closely tied to the average of everyone else’s contributions (similar to our \( \text{EXSUM} \) measure). Therefore, we have cast our hypotheses in terms of \( \text{EXSUM}. \)

**H3.** \( \text{EXSUM}_{\text{Negative}} > \text{EXSUM}_{\text{Neutral}} > \text{EXSUM}_{\text{Positive}}. \)

The tendency to project one’s own views on to others should enhance the perceived risks of contribution in the Positive and Neutral conditions. It should diminish them in the Negative conditions. Some degree of individual difference is anticipated within conditions. Across all treatments we anticipate the following relationship.

**H4.** \( \text{EXSUM}_{ijt} \) is significantly and positively correlated with \( \theta_{ijt}. \)

In other words, we expect an individual’s expectation of how others in the group will contribute to be significantly correlated to his or her individual contribution. Note that this relation should hold across all treatments.

**Methods**

**Subjects.** One hundred and twenty MBA students participated in the experiment as an opportunity to earn cash payoffs. Five four-person groups were assigned to each of the six cells.\(^1\) Participants in each group were assigned the role of one of the store managers at St. Walton’s Plaza, a shopping mall with four large stores. A participant was assigned to be a manager of Family Favorite, Carson’s, Better Mart, or The Works. These stores were symmetric—each attracting 25% of the overall customer traffic.

**Procedure.** The instructions indicated that a trade association was launching a generic advertising campaign to increase customer traffic to the plaza. Examples of the proposed print campaign were provided along with information about customer traffic to the plaza, traffic to the participant’s store, and profit figures for each of the last five years. Table 1 contains the figures shown to participants in the Negative condition.

Mall profit in the previous year (i.e., $800,000) was identical in the Positive, Neutral, and Negative sales trend conditions. The growth rate of sales in the Positive treatment was matched by the rate of decline in the

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\(^1\) All experiments presented here were conducted at a large state university on the west coast of the U.S. The data collection for the no elicitation and elicitation conditions were about six months apart so assignment to these two conditions was not random though assignment to the historical sales trend condition, to group, and to store was random. Individuals were approached via identical e-mail solicitations. No individual participated in both conditions. The demographics of the two samples were similar—50% of participants in the no elicitation condition were female in comparison to 38.2% in the elicitation condition (\( Z = 0.756, p = .4472 \)) and 85% of participants in the no-elicitation condition were under 30 years of age in comparison to 65.5% in the elicitation condition (\( Z = 1.5011, p = .1356 \)). The average experimental session lasted 30 min and the average payoff was $10.
Negative treatment. Each participant privately and simultaneously made a decision about whether to have his/her store contribute $0, $50,000, $100,000, $150,000, or $200,000 to the generic campaign. Table 2 shows the payoffs by contribution. Payoff to an individual store was determined by the product of mall traffic, store share and store margin. Mall traffic was a monotonically increasing concave function of the total expenditure on mall advertising.

Participants assigned to the Elicitation condition provided the following information prior to making their own decisions: the sum of contributions expected from the three other group members, the maximum contribution expected from any of the other group members, and the minimum contribution expected from any of the other group members. Participants were informed that they would receive $0.25 for each correct prediction, providing an incentive for them to communicate their expectations accurately.

For any given session, all efforts were made to ensure that individuals were not able to communicate their intent to others in any way. Participants were dispersed at a maximal distance from each other in a large room. They were asked to refrain from speaking to anyone but the experimenter and not to make eye contact with others in the room. Each participant only knew the name of the store that he or she managed. They did not know the identities of the other store managers.

Each participant was provided with two sheets: the instruction sheet and the decision sheet. The instruction sheet described the decision scenario and the payoff for all combinations of individual and total contributions, using Table 2. The instructions clearly stated that participants would be paid one dollar in cash for every $100,000 in profit. The decision sheet was used to record contributions and payoffs.

Participants made their decisions then entered them on the decision sheet. They were asked to turn over the sheet when they completed their decision. The experimenter then collected the decision sheets and posted total and individual contributions on the blackboard. Each individual then determined his or her personal payoff.

A practice period was conducted to ensure that the rules were well understood by all. At the end of the practice, participants responded to a brief questionnaire to determine whether they had understood the instructions and to collect demographic information. Based on the profits they earned on the experimental trial, participants were paid privately in cash.

Results

Table 3 summarizes the results on group provision of the generic campaign. As predicted by H1, the lowest average group contribution, $210,000 (efficiency = 26%), was observed under the Positive sales trend and the

<table>
<thead>
<tr>
<th>Year</th>
<th>Customer traffic to the Plaza Mall</th>
<th>Number of customers who visited The Works</th>
<th>Average margin per customer</th>
<th>Annual profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1,500,000</td>
<td>375,000</td>
<td>$4</td>
<td>$1,500,000</td>
</tr>
<tr>
<td>2</td>
<td>1,200,000</td>
<td>300,000</td>
<td>$4</td>
<td>$1,200,000</td>
</tr>
<tr>
<td>3</td>
<td>1,000,000</td>
<td>250,000</td>
<td>$4</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>4</td>
<td>800,000</td>
<td>200,000</td>
<td>$4</td>
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<tr>
<td>5</td>
<td>800,000</td>
<td>200,000</td>
<td>$4</td>
<td>$800,000</td>
</tr>
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</table>

Table 2

<table>
<thead>
<tr>
<th>Total contributed by other firms</th>
<th>Your net yearly profit when you contribute</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0</td>
<td>$800,000</td>
</tr>
<tr>
<td>$50,000</td>
<td>$799,920</td>
</tr>
<tr>
<td>$100,000</td>
<td>$849,920</td>
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<tr>
<td>$150,000</td>
<td>$893,153</td>
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<tr>
<td>$200,000</td>
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<tr>
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<td>$973,830</td>
</tr>
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<tr>
<td>$350,000</td>
<td>$1,050,384</td>
</tr>
<tr>
<td>$400,000</td>
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</tr>
<tr>
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<tr>
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<tr>
<td>$600,000</td>
<td>$1,252,134</td>
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</table>
highest, $465,000 (efficiency = 58%) under the Negative sales trend. The order was similar in both the Elicitation and No Elicitation conditions.

Individual contributions constituted independent observations, made by each subject without discussion, deliberation, or observation of the contributions of others. The distribution of these contributions is shown in Fig. 1. A 2×3 ANOVA of contributions revealed a main effect for sales trend, $F(2, 23) = 10.13, p = .0007$. Analysis of the contrasts revealed that all pair-wise differences were significant, $p < .05$ and in the order predicted by H1. Neither the main effect for elicitation ($F(1, 23) = 0.71$) nor the interaction effect between elicitation and sales trend ($F(2, 23) = 0.11$) were significant.

Fig. 1 also shows that more participants engaged in pure free riding in the positive sales trend condition than in either the Neutral or Negative trend conditions ($p < .01$). Since elicitation and non-elicitation condition contributions did not differ, the Figure shows choices pooled over this treatment variable. The ordering of free-riding across conditions was consistent with H2 though the difference between Neutral and Negative was not significant. Also as predicted, those facing the Negative sales trend predicted that others would be more likely to contribute than did those facing the Neutral or Positive trends.

Judgments of those in the elicitation conditions were examined in a one-way ANOVA with sales history as the treatment variable. Table 4 summarizes the basic statistics for each judgment. Sales history had a significant effect on EXSUM, $F(2, 57) = 4.02, p < .05$. Consistent with H3, contrasts show that the pair-wise difference between Negative and Positive sales trend treatments is significant ($p < .01$) as is the difference between Negative and Neutral, ($p < .05$). The pair-wise difference between Positive and Neutral is not significant.

Though the hypotheses were formulated using EXSUM, we also examined EXMAX and EXMIN for completeness. For EXMAX, the pattern is similar to EXSUM. EXMAX was significantly affected by sales history, $F(2, 57) = 3.28, p < .05$. Contrasts show the same pattern of significant differences between Negative and Positive and between Negative and Neutral, $p < .05$. The difference between Positive and Neutral again failed to reach significance. The EXMIN analysis yielded a quite different pattern, as sales history had no significant effect on judgment. The correlation between EXSUM and $\theta$, pooled across sales trend, is 0.48 ($p < .0001$), which is consistent with H4. Own contributions were less strongly correlated with expectations of the minimum contribution.
Prediction accuracy of all individuals was examined by calculating the correlations between the individual’s expectation and the actual realization of that variable. The correlation between EXMAX and others’ contributions was not significant in any trial. For EXSUM, the correlation between actual and expected sums was positive and significant only in the Negative treatment. The correlations were undefined for EXMAX since the actual maximal contribution was $200,000 in each case. However, individual predictions were correct in 80% of all cases. As assessed by these correlations, predictive accuracy was significantly lower in the positive and neutral conditions ($p < .05$).

**Discussion**

The results support the hypothesis that the option of funding a generic advertising campaign is much more attractive in the face of declining industry sales. This is consistent with the conception of change driven by aspiration levels that vary with historical performance trends. Participants in all three conditions confronted an identical decision problem. Only the context provided by the trend in past sales differed. When the context indicated that the mall had been experiencing a declining sales trend, participants were willing to contribute more and chose to free-ride less.

Consistent with the idea of projective judgment, this tendency was reinforced by the disparity in expectations about others’ behavior. Faced with a negative trend, participants not only found contributing more attractive, they also tended to believe that their counterparts would as well. Note that their social predictions about other’s contributions were considerably more accurate in this condition as well. This mutual pattern makes contribution a reasonable and efficient course of action.

Unlike Croson (1999) we found no evidence that eliciting expectations of others’ behaviors altered participants’ own willingness to contribute. We hypothesized that elicitation would call participants attention to the need to base their own responses on some consideration of the other players’ likely actions. Given the tendency for people to project when asked to make such judgments, we anticipated that the different tendencies caused by sales history would be exacerbated by elicitation and projection.

The level of contributions for neutral and negative historical trends did not differ significantly though the means were in the predicted direction. Participants may have at least moderately positive aspirations even when the recent sales trend is flat. Empirical evidence suggests a tendency to readily revise aspirations upward; downward revision tends to be more sluggish (Bottom, 1990; Lant, 1992; Zander, 1971). Levinthal and March’s (1981) adaptive aspirations model would predict that a small discrepancy between aspiration and recent return would generate some predisposition toward an alternative that promised some chance of change. Given that participants had only one means of changing the status quo this may have led neutral treatment participants to contribute more than they would if other alternatives were available. We investigate this possibility in Experiment 2.

**Experiment 2**

Voluntary contributions to a generic advertising campaign represent one possible approach to reversing a potential decline in sales. However, firms may also consider other approaches, such as diversifying a product line or investing more resources in brand-specific advertising. In Experiment 1 no alternative investment opportunities were available to the participants. Firms faced only a decision about how much to contribute to
the generic campaign. This may have created a situation where contributions to generic advertising were made artificially salient.

Participants in the Negative sales trend treatment, in an effort to change an unsatisfactory status quo may have simply taken the only course of action available—the generic advertising campaign. Participants in the Positive sales trend treatment may have felt no need to do anything to change an apparently satisfactory situation. Experiment 2 gave participants a choice between two alternative paths to changing the status quo. They were provided with an advertising budget and faced an allocation decision between generic advertising (the public good) and brand advertising (the private good). Both forms of investment can improve profits but do so in different ways. Store advertising can increase store share while mall advertising increases mall traffic. Contributions to the generic campaign are more costly in Experiment 2. Any contribution to the generic campaign reduces the funds available for brand advertising. If a store under-spends its peers on brand advertising, it will suffer a loss in market share. In other respects the design and procedure of this experiment was identical to that of study one.

Method

Sixty graduate student (27 female and 33 male) participants were randomly assigned to one of three treatments: Positive, Neutral, and Negative sales trends, and to a four-person group within that treatment. Individuals were provided with an advertising budget to divide between two types of advertising—store promotion and mall promotion. Individual payoffs were the product of mall traffic, store share, and store margin. The clear distinction drawn here between the effects of store and mall advertising is somewhat simplistic. It fails to address the frequent tendency for traffic to spillover from one store to other stores in a mall. In the interest of realism, this could have been captured as varying probabilities of spillover (low spillover probability for store advertising; high probability of spillover for mall advertising) but this would have greatly complicated the instructions and the decision making task.

Participants were told that, “over the last five years, the promotional and advertising strategies for all stores have been managed from their respective corporate headquarters. This year, corporate management for your store has budgeted $200,000 for advertising and has allowed you to use it as you see fit. However, you will be judged based on the profit of your store. Each of the other stores has also gone through a similar change and each has a budget of $200,000.”

Payoffs were the product of mall traffic, store share and store margin. Mall traffic was once again a monotonically increasing concave function of the total expenditure on mall advertising. Store share was an us/(us + them) formulation: it was positively related to one's own store advertising and negatively related to others' store advertising. Note that industry sales and store sales are not perfectly correlated. A store may experience higher sales even when industry sales are declining based on store advertising decisions. The dominant strategy for each firm is to invest the entire budget in store advertising.

Results

As predicted, the lowest average contribution by group, $130,000 (efficiency = 16.25%), was observed in the Positive sales trend treatment and the highest $240,000 (efficiency = 30%), in the Negative condition. The percentage of absolute free riders (subjects who contributed nothing) was greater in both the Positive (65%) and Neutral (35%) trend treatments than in the Negative (25%) condition. Overall, these differences were significant, $F(2, 57) = 3.38, p < .05$. Analysis of the contrasts showed that the pairwise difference between Positive and Negative cases was significant, $F(1, 57) = 6.75, p < .01$. Neither the contrast between Positive and Neutral, nor the contrast between Negative and Neutral were significant, though the means were once again in the predicted direction.

Discussion

The context provided by recent sales trends had a significant impact on funding for the generic advertising campaign. Participants confronted with the declining trend were still much more likely to contribute even when a private advertising option was made salient. However, the availability of the private campaign did have an impact on decisions. Funding levels for the generic campaign were lower across treatments in Experiment 2 than in Experiment 1. However the lowest levels of contribution were still made by subjects in the context of a Positive sales trend. The mean rate of contribution in the context of flat sales trends again fell between the Positive and Negative trend contributions.

Experiment 3

Competition and cooperation between firms in a given industry is inherently a repeated game. Managers choose whether and how to advertise their product in the knowledge that their decisions will have implications for their competitor’s decisions in future periods. Experiments on public goods provision indicates a highly systematic pattern of declining contribution levels over rounds in repeated games (Ledyard, 1995). How will
contributions to a generic campaign evolve over multiple periods? Will the impact of the declining sales trend in stimulating initial contributions eventually wash out over repeated play or will the differences persist? In Experiment 3, we examine these questions in a multi-period setting.

The salience of an out-group. Sherif’s (1967) study of intergroup competition demonstrated that the presence of a discernible outgroup (Them) could stimulate the formation of a superordinate group identity (We) and generate cooperative action. Researchers have since (Brewer & Kramer, 1986) shown experimentally that an outgroup manipulation can stimulate more cooperative choices in a dilemma game. This suggests that the presence of a discernible outgroup (in the form of a competitor mall) could stimulate formation of a superordinate identity (“our mall”) raising contribution levels to a generic campaign.

In addition to the primary focus on the study of multiple period contributions, Experiment 3 also tested the effect of outgroup salience through the introduction in one condition of a competing mall. The salience of the competitor provided subjects with not only a declining sales trend but also an out-group threat to explain the decline in mall sales. If the member stores in the competing mall constitute the out-group, then subjects may be more likely to see the other subjects as fellow members of the mall in-group.

Experimental design

In addition to the Positive, Neutral, and Negative sales trends used in Experiments 1 and 2, we added two new treatments, Control and Super-Negative, to the between-subjects design. In the Control treatment, participants received no information about trends in customer traffic in the mall or store profits. The contributions observed in this treatment provide a baseline from which to measure the impact of providing history. The Super-Negative treatment was intended to provide a ready outgroup to promote the formation of a superordinate (“our mall”) identity. The same sales decline trend in the Negative sales trend treatment was here attributed to advertising by a competing mall. In the simple Negative treatment was here attributed to the identity. The same sales decline trend in the outgroup to promote the formation of a superordinate identity (“our mall”) raising contribution levels to a generic campaign.

In Experiment 3, the stage game was identical to the one-shot game of Experiment 1. The payoffs were the same as those shown in Table 1. Each group played the game in a sequence of 10 decision periods. The number of periods to be played was common knowledge from the outset.

Hypotheses

The hypotheses in this case and their justification are similar to those provided in Experiment 1. However, some modifications are required because participants’ earnings here are based on their cumulative performance over 10 periods and some decline in contributions is expected over time. We have also to account for the additional treatments. When no information is provided, participants have no reason to believe that mall traffic has been rising or falling. Hence, it is likely that behavior in the Control treatment should be similar to the Neutral case.

Our prediction regarding the contributions expected in the Super-Negative treatment is based on the concept of social identification. When groups act as competing entities in games such as the Prisoner’s Dilemma, more non-cooperative choices generally result (Insko, Pinkley, Hoyle, & Dalton, 1987; McCallum et al., 1985). As noted by Insko et al. (1992), this is a robust effect that has been observed in groups of varying size, when a group’s payoffs are distributed equally or unequally among its members and in games with symmetric and asymmetric payoff matrices.

In the Super-Negative case, participants may identify themselves not as individual firms competing with others in the same mall but as part of one group (Us) directly engaged in rivalry with another group (Them). We therefore predict that contributions in the Super-Negative case, cooperating with fellow mall members to better compete with the other mall out-group, should exceed those in all other treatments. Thus we extend H1 as follows:

\[ H_5. \Theta(\text{Super-Negative}) > \Theta(\text{Negative}) > \Theta(\text{Neutral}) = \Theta(\text{Control}) > \Theta(\text{Positive}). \]

Previous studies in the public good literature have found that while contributions may be high initially, they tend to decline toward zero as the last decision period approaches (Ledyard, 1995). With no shadow of the future, the last stage of the game comes to resemble the one trial game where no contribution is a dominant strategy. Hence, we expect that overall lower contributions will be observed in the second half, compared to the first half. Define \( \Theta_{ik} \) as the average contribution in treatment \( t \) and in decision period \( k \), and let \( \Theta_1 \) and \( \Theta_2 \) represent the average contributions in the first half and second half across treatments. The hypothesis would then be:

\[ H_6. \Theta_1 > \Theta_2. \]

Methods

One hundred graduate and undergraduate students of business participated in the experiment. Forty three of the participants were female. Each was randomly assigned to one of the five sales trend conditions and to a
Results

The average contribution and efficiency figures are presented by treatment in Table 5. Fig. 2 plots the efficiency for the 10 decision periods. Average contributions in the Positive case declined sharply over time but those in the Negative case remained high until the final period. Also, the patterns in the Neutral and Control cases were quite similar. Contributions in the Negative case were strictly greater than the Super-Negative across all periods. To test the hypotheses, we treated the experiment as a randomized complete block design (Neter, Kutner, Nachtsheim, & Wasserman, 1996, p. 1106), with five treatments and 10 blocks. Each decision period was considered a block. This analysis allows us to estimate the impact of each treatment as well as the temporal effects. Contrasts were computed in order to perform the specific hypothesis tests. We also considered the case where the first five decision periods were treated as one block and the last five periods were considered the second block. Note that the analysis here was at a group level rather than at the individual level as in the one-period studies.

There were significant treatment and block effects, \( F(4, 200) = 9.50, \ p < .0001 \) and \( F(9, 200) = 3.43, \ p < .001 \), respectively. However, there was no interaction effect of treatment with blocks, \( F(36, 200) = 0.48 \). Similar results were found in the two-block case except the block*treatment effect was significant \( F(9, 240) = 7.94, \ p = .0001 \). Significantly lower contributions were actually obtained in the Super-Negative condition in comparison to the Negative case, \( F(1, 249) = 8.69, \ p < .01 \). Contributions in both the Super-Negative treatment and the Negative treatment were significantly greater than in the Positive condition, \( F(1, 249) = 6.14, \ p < .05 \) and \( F(1, 249) = 29.44, \ p < .0001 \), respectively. Both treatments also led to significantly greater contributions than did the Neutral condition, \( F(1, 249) = 6.14, \ p < .01 \) and \( F(1, 249) = 21.32, \ p < .0001 \). Contributions in the Control condition were significantly lower than in the Negative condition, \( F(1, 249) = 22.29, \ p < .0001 \). The difference was only marginally significant when compared to the Super-Negative condition, \( F(1, 249) = 3.15, \ p < .10 \).

The pure free-riding patterns were similar to the overall contribution analysis. Free-riding in the Negative condition varied between 0 and 15% for the first nine periods. The proportion of free-riders was highest in the Positive condition (27%) and lowest in the negative condition (10%). The free-rider proportions in the Neutral (14%), Super-Negative (16%) and Control conditions (17.5%) fell between these two extremes.

H6 predicts that for all experimental treatments, lower contributions would be observed in the second half. In order to test this, we conducted an analysis using the two block randomized complete block design. The

![Fig. 2. Trends in group efficiency of contributions over decision periods in Experiment 3.](image)

<table>
<thead>
<tr>
<th>Decision period</th>
<th>Positive</th>
<th>Neutral</th>
<th>Control</th>
<th>Negative</th>
<th>Super-Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount</td>
<td>Efficiency</td>
<td>Amount</td>
<td>Efficiency</td>
<td>Amount</td>
<td>Efficiency</td>
</tr>
<tr>
<td>1–5</td>
<td>$456,000</td>
<td>57.00%</td>
<td>$425,000</td>
<td>56.50%</td>
<td>$398,000</td>
</tr>
<tr>
<td>(216,660)</td>
<td>(27.08)</td>
<td>(136,534.5)</td>
<td>(17.07)</td>
<td>(155,107.5)</td>
<td>(19.39)</td>
</tr>
<tr>
<td>6–10</td>
<td>$264,000</td>
<td>33.00%</td>
<td>$330,000</td>
<td>41.25%</td>
<td>$376,000</td>
</tr>
<tr>
<td>(169,263)</td>
<td>(21.16%)</td>
<td>(150,693)</td>
<td>(18.84)</td>
<td>(193,714)</td>
<td>(24.21)</td>
</tr>
<tr>
<td>Pooled mean</td>
<td>$360,000</td>
<td>45.00%</td>
<td>$391,040</td>
<td>48.88%</td>
<td>$387,040</td>
</tr>
</tbody>
</table>

Note: Standard deviations are shown in parentheses.
first five periods were considered one block and the last five periods were considered the second block. We computed a contrast comparing the level of efficiency for the first five and last five periods across all treatments. We found this to be significantly different ($F(1, 249) = 17.17, p < .0001$). Overall, the efficiency in the first five periods was significantly higher than the last five periods.

To assess the impact of treatments on the time pattern of contributions, we fitted time trends to the group data on efficiency (Fig. 2) and individual data on free riding. In the Negative sales trend case there was no significant trend either for the efficiency or the free rider data. In the Positive case there was a significant negative trend for the efficiency data ($F(1, 8) = 187.47, p < .0001$, trend coefficient = −4.98) and a significant positive trend for the free rider data ($F(1, 8) = 26.24, p < .0009$, trend coefficient = 4.88). Participants in the Negative condition contributed more than those in the Positive condition and the differences in contributions increased over rounds.

**General discussion**

Generic advertising is a form of industry-wide promotional activity that requires industry members to contribute to a public good. The willingness of industry members to do so appears to be related to the decline of the industry. This pattern of inter-organizational cooperation is consistent with the Levinthal and March (1981) model of organizational change triggered by adaptive aspirations and a performance attainment discrepancy. When coupled with projective judgments about others’ behavior, a cooperative equilibrium can readily emerge in a repeated play context.

The three experiments reported here tested the adaptive aspirations logic in varying contexts. Efficiency in the provision of the public good was higher and free riding lower when participants made decisions in a state they believed was reached as a result of declining industry sales. This history-dependence characterized both one-period (Experiments 1 and 2) and multi-period (Experiment 3) games. It was observed when expectations were elicited as well as when they were not (Experiment 1). The behavior was observed in games where individuals had to decide only how much to contribute to generic advertising as well as in the case when they divided a budget between brand and generic advertising.

An investigation of the efficacy of cooperative marketing efforts is beyond the scope of this study. It is certainly possible to find examples that appear to illustrate successful campaigns. Following a steep decline in sales and questions about the healthiness of its product, the Butter Council launched an aggressive campaign to promote butter consumption in the UK. While pinpointing a cause is difficult, the downward trend was reversed and also brought with it a seven percent drop in sales of substitutes such as margarine (Richards, 1995).

The success of the UK Butter campaign suggests that it is a viable strategy to combat a declining sales trend in at least some instances. Unless the campaign can be adequately funded by constituent firms it will have no chance of long-term success. Our findings suggest that it may be extremely difficult to organize such campaigns on a voluntary basis “when times are good.” When the need for the campaign can be framed and justified in terms of declines in performance, adequate funding may be forthcoming. Even when industry sales are declining, some free-riding should be expected, and budgets and targets should be set keeping this in mind. Funding dried up and the UK butter campaign actually fell apart once the sales trend for butter turned upward again (Richards, 1995). Further research should examine whether that pattern is an inevitable byproduct of advertising success.

Previous research substantiates the role of a superordinate identity in spurring cooperation amongst erstwhile competitors. Casting firms in the plastics industry or the margarine industry or the tile industry as a generic “they” may succeed in creating the unity among competitors needed to fund a generic advertising campaign. Indeed this is one possible route to funding even before sales have begun to decline. The results of Experiment 3 may cast some doubt on the viability of this approach however. Funding levels in the Super-Negative treatment (which referred to the presence of a competitor mall) actually fell below those in the Negative treatment.

This surprising result will require further investigation. It is possible that in the absence of opportunities for communication and commitment, that the out-group manipulation failed to build a sense of social identity. Stronger manipulations may be needed. It is also possible that the sense of common fate (Brewer, 1979) associated with the mall-wide negative sales trend may have already established a level of social identity in the negative trend condition. The presence of an out-group may have been superfluous under this condition. Perhaps it even created doubts in the participants mind about the long-run viability of the mall. It is worth investigating whether the presence of an out-group might raise rates of contribution in either the positive or neutral conditions where a sense of common fate may be missing.

A few limitations of the studies are worth noting. The incentive structure had some unique qualities. While it is true that the money an individual participant could make ranged from $8 to $12, the increment in individual payoffs [conditional on any ONE given level of contribution by others] was much smaller [$0.27 to $0.62].
This may have permitted other motivational factors to have an impact on decisions.

Each of the studies considered only a symmetric case; all firms were of equal size and had the same sales trends as the industry. This may not be the most common pattern. Future research should examine adaptive aspirations in asymmetric industries. One important type would be that characterized by a single dominant firm. Also worth investigating would be industries constituted by firms of similar size but varying rates of decline or growth.

References


