

From Fan to Fat? Vicarious Losing Increases Unhealthy Eating, but Self-Affirmation Is an Effective Remedy

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Abstract

Using archival and experimental data, we showed that vicarious defeats experienced by fans when their favorite football team loses lead them to consume less healthy food. On the Mondays following a Sunday National Football League (NFL) game, saturated-fat and food-calorie intake increase significantly in cities with losing teams, decrease in cities with winning teams, and remain at their usual levels in comparable cities without an NFL team or with an NFL team that did not play. These effects are greater in cities with the most committed fans, when the opponents are more evenly matched, and when the defeats are narrow. We found similar results when measuring the actual or intended food consumption of French soccer fans who had previously been asked to write about or watch highlights from victories or defeats of soccer teams. However, these unhealthy consequences of vicarious defeats disappear when supporters spontaneously self-affirm or are given the opportunity to do so.

Keywords

food, self-regulation, disinhibited eating, self-affirmation, sport psychology

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According to a statement commonly attributed to the satirical poet Juvenal, bread and circuses (*panem et circenses*) kept the masses content during the Roman Empire. Football and soccer have replaced circuses, but sports watching is more popular than ever: 111 million Americans watched the 2012 National Football League (NFL) Super Bowl and 2.2 billion people watched the 2010 Fédération Internationale de Football Association (FIFA) World Cup. In a twist on Juvenal's observation, we investigated the effects of *circenses* on *panem* by studying how the defeats or victories of local and national football teams influence the food consumption of their supporters.

Supporters tend to perceive their team's successes and failures as their own (Hirt, Zillmann, Erickson, & Kennedy, 1992), which has a measurable effect on their self-regulation abilities. Football and soccer defeats, especially when they are narrow or unexpected, increase alcohol-related criminality (Rees & Schnepel, 2009), traffic fatalities (Redelmeier & Stewart, 2003; Wood, McInnes, & Norton, 2011), and domestic violence (Card & Dahl, 2011). Cardiac accidents increase among both men and

women following vicarious football and soccer defeats but decrease after victories (Berthier & Boulay, 2003; Carroll, Ebrahim, Tilling, Macleod, & Smith, 2002; Kloner, McDonald, Leeka, & Poole, 2011; Witte, Bots, Hoes, & Grobbee, 2000). However, we do not know whether the vicarious defeats and victories that supporters experience influence their ability to regulate their food intake. Neither do we know what the supporters themselves—or people close to them—could do to suppress these effects.

First, given the evidence linking vicarious losing and self-regulation failures, we expected that people would eat less healthily after the defeat of a football team they supported. This hypothesis is consistent with findings from studies showing that ego threats increase preferences for indulgent, unhealthy food (Baumeister, Heatherton, & Tice, 1993; Lambird & Mann, 2006) as people shift to proximal goals such as disinhibited eating in order to escape

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self-awareness (Heatherton & Baumeister, 1991; Mandel & Smeesters, 2008). Second, we hypothesized that vicarious football victories would have an effect opposite to that of defeats and lead to healthier eating. This hypothesis is consistent with results from studies showing that vicarious sports victories improve the self-esteem and perceived self-worth of supporters (Cialdini et al., 1976; Hirt et al., 1992). Third, we expected that allowing supporters to self-affirm after experiencing a vicarious defeat would eliminate its impact on eating. This effect would be consistent with results from studies showing that self-affirmation reduces the impact of vicarious sports defeats on self-serving biases (Sherman, Kinias, Major, Kim, & Prenovost, 2007) and, more generally, improves people's self-regulation abilities (Schmeichel & Vohs, 2009). However, self-affirmation should have no effect on the supporters of winning teams, who are already (vicariously) self-affirmed.

Study 1

Method

We first addressed these issues in a quasiexperiment that examined the food intake of members of representative American households during the 2004 and 2005 NFL seasons.

NFL data. We chose NFL games because of their popularity (59% to 64% of Americans declared being football fans in 2004 and 2005; Gallup, 2012) and because tied games are very uncommon (there were none during the two NFL seasons we analyzed).

We conservatively assumed that people tend to support the team of their metropolitan area, as evidenced by the fact that NFL games attract more than half of local television viewers—even in the largest cities with multiple sports franchises (NFL-Communications, 2012). For each of the two metro areas with two teams, we assumed that people would support the more established team (i.e., the New York Giants over the New York Jets and the San Francisco 49ers over the Oakland Raiders). Results from additional analyses (presented in Table S1, Table S2, and Study 1: Additional Method Information and Study 1: Additional Analyses in the Supplemental Material available online) showed that the results held if we eliminated all the participants living in New York and San Francisco, and that the 2-month overlap of the NFL season with the National Basketball Association season was not a concern. We also measured the local level of attachment to an NFL team by combining two independent rankings (ESPN.com, 2008; Woolsey, 2008), expecting the strongest effects in cities with the most devoted supporters. We controlled for the “day-of-the-week” effect by

focusing on Sunday games, which account for 73% of NFL contests. We excluded games played around New Year's Eve, Christmas, and Thanksgiving because of the unusual eating patterns associated with these holidays. The resulting sample consisted of 475 games involving 30 teams. There were not enough data on food consumption in the panel of American consumers to compare regular and play-off games, division and nondivision games, or early- and late-season games.

We also studied the effects of two characteristics of the game itself: the expected point spread—available thanks to the large betting market for NFL games—and the actual point spread. We hypothesized that game outcomes should have a stronger effect when the point spread expected by bookmakers is narrow, because this means that the opponents are more evenly matched and that the game is more indeterminate and thus more engaging (Card & Dahl, 2011; Vosgerau, Wertenbroch, & Carmon, 2006). Second, we hypothesized healthier eating after a large (versus narrow) victory because large victories have stronger ego-boosting effects (Cialdini et al., 1976; Hirt et al., 1992). In contrast, we hypothesized unhealthier eating after a narrow (versus large) defeat because failures and losses are especially painful when success nearly occurred (Carroll et al., 2002; Kahneman & Miller, 1986).

Consumption data. Data on food consumption were collected by the NPD Group, a market research company, from a rolling panel of representative Americans (mean age = 38 years; 52% female, 48% male) living in major U.S. metropolitan areas. Panel members were asked to keep a diary of their daily food consumption for two 14-day periods separated by 1 year. The consumption data that we obtained were converted to macronutrient levels by NPD. Similar data have been used in prior research on food consumption (Khare & Inman, 2006, 2009).

Observations were assigned to one of four categories depending on whether they came from individuals living in (a) a city without an NFL team, (b) a city with an NFL team that did not play on the focal Sunday, (c) a city with a team that played and lost, or (d) a city with a team that played and won. The first two groups served as controls and were observed only during the NFL seasons, which precluded any seasonality effects (Ma et al., 2005).

We examined two measures of unhealthy eating: saturated-fat consumption and total food-based caloric consumption, both of which are major contributors to cardiovascular diseases and obesity (Hu et al., 1997). Unlike other macronutrients, which are present in all kinds of foods, saturated fats are present mostly in highly processed, calorie-rich, nutrient-poor “junk” food (e.g., pizza, cakes and cookies, dairy-based desserts). As detailed in Table S3 in the Supplemental Material, we

obtained similar results when studying calories from food and calories from food and beverages. We nevertheless chose to focus on food calories for two reasons: (a) Our data do not distinguish between calories from alcoholic versus nonalcoholic beverages, and (b) the relation between watching sports and consuming alcohol has already been extensively studied (e.g., Card & Dahl, 2011; Redelmeier & Stewart, 2003; Rees & Schnepel, 2009; Wood et al., 2011). To normalize the data at the individual level, we divided each day's saturated-fat and food-calorie consumption by average daily saturated-fat and food-calorie consumption measured over the rest of the data-collection period.

We tested both anticipated and lagged effects of NFL games by studying consumption on Sunday game days, on the following Mondays (the key days for our analysis), and on the following Tuesdays. We chose to study entire-day consumption because previous research has indicated daily "bracketing" of consumption (Khare & Inman, 2009). Depending on the game schedule and the spectators' time zone, Sunday games start between 1 p.m. and 9 p.m. This means that most spectators have finished eating their Sunday dinner by the time the outcome of the

game is determined. For this reason, we did not expect any effect on Sunday food consumption. Yet because some of the Sunday-evening consumption can occur after the game's outcome has been determined, we also analyzed the effects of game outcomes on the total of Sunday-evening and all-day-Monday consumption. Given that food consumption on one day typically has little effect on what or how much people eat on the following day (Khare & Inman, 2006), we expected to find no compensation effect on Tuesdays.

Results

Effects of game outcome and fan attachment on Sunday-Monday-Tuesday consumption. We examined the saturated-fat and food-calorie consumption of panel members who, because of when their data was collected, were able to provide consumption information for a consecutive Sunday, Monday, and Tuesday. This examination involved 726 individuals and 3,151 consumption days. As shown in Table 1 and Figure 1, there were no significant differences across the four groups on Sundays (indicating no anticipation effects) or

Table 1. Study 1: Results of Random-Effects Regression Analyses Predicting Changes in Saturated-Fat Consumption

Predictor	Model 1 (Sundays)	Model 2 (Mondays)	Model 3 (Tuesdays)	Model 4 (Sunday evenings plus Mondays)	Model 5 (Mondays, all respondents)
Defeat	0.01 (0.07)	0.29*** (0.06)	0.01 (0.05)	0.30*** (0.08)	0.13*** (0.04)
Gender	0.00 (0.03)	0.02 (0.03)	0.05* (0.03)	0.03 (0.04)	-0.02 (0.04)
Gender × Defeat	-0.06 (0.13)	-0.10 (0.12)	-0.09 (0.11)	-0.18 (0.15)	-0.07 (0.07)
No game	-0.01 (0.05)	-0.04 (0.04)	-0.02 (0.04)	-0.09 (0.05)	—
No team	0.01 (0.04)	0.01 (0.04)	0.01 (0.03)	0.00 (0.04)	—
High fan base	-0.07 (0.05)	0.02 (0.05)	0.06 (0.04)	0.08 (0.06)	—
High Fan Base × Defeat	-0.06 (0.13)	0.30* (0.12)	-0.15 (0.11)	0.34* (0.15)	—
High Fan Base × No Game	-0.01 (0.09)	-0.08 (.09)	0.00 (0.08)	-0.16 (0.11)	—
Expected spread	—	—	—	—	0.00 (0.01)
Expected Spread × Defeat	—	—	—	—	-0.04*** (0.01)
Large outcome	—	—	—	—	-0.10** (0.04)
Large Outcome × Defeat	—	—	—	—	0.01 (0.07)
Expect defeat	—	—	—	—	-0.05 (0.04)
Expect Defeat × Defeat	—	—	—	—	-0.07 (0.08)

Note: The table shows unstandardized coefficients; standard errors are shown in parentheses. Models 1 through 4 were estimated with participants who provided data on consecutive Sundays, Mondays, and Tuesdays during the National Football League (NFL) season. Model 5 was estimated with all the participants who provided data on Mondays. The dependent variable was daily saturated-fat consumption (normalized by the average saturated-fat consumption of the individual). We used Helmert coding. The defeat predictor was coded as 1/2 for people living in a city whose NFL team lost, -1/2 if the team won, and 0 otherwise; the no-game predictor was coded as 2/3 for people living in a city with an NFL team that did not play, -1/3 if the team played, and 0 otherwise; and the no-team predictor was coded as 3/4 for people living in a city without an NFL team and -1/4 otherwise. In addition, the gender predictor was coded as -1/2 for men and 1/2 for women; the high-fan-base predictor was coded as 1/2 for people living in Green Bay, Wisconsin; Philadelphia, Pennsylvania; Denver, Colorado; Pittsburgh, Pennsylvania; Washington, D.C.; Chicago, Illinois; Nashville, Tennessee; and New York, New York, and as -1/2 otherwise. The expected-spread predictor was the mean-centered absolute value of the expected spread provided by bookmakers (a high value indicates that there was a clear favorite); the large-outcome predictor was coded as 1/2 if the final score difference exceeded 10 points and -1/2 otherwise. The expect-defeat predictor, which measured the accuracy of the bookmakers' predictions, was coded as 1/2 if bookmakers predicted a defeat and -1/2 if they predicted a victory. All the regressions included a random effect for subjects because some participants provided data on more than one day.

* $p < .05$. ** $p < .01$. *** $p < .001$.

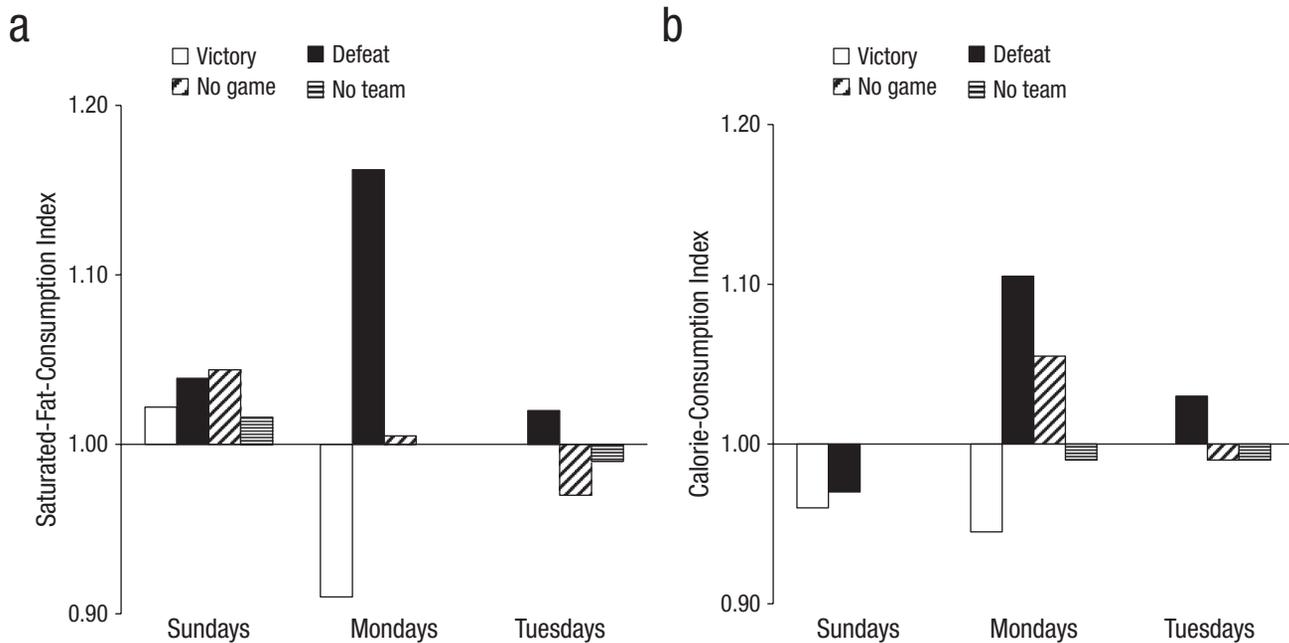


Fig. 1. Results from Study 1: (a) saturated-fat consumption and (b) food-calorie consumption as a function of day and condition. People living in a city whose National Football League (NFL) team won on Sunday, lost on Sunday, and did not play on Sunday were assigned to the victory condition, the defeat condition, and the no-game condition, respectively. People living in a city without an NFL team were assigned to the no-team condition.

on Tuesdays (indicating no compensation effects). However, there were large differences on Mondays. Compared with baseline consumption levels, saturated-fat consumption increased by 16% after a defeat and decreased by 9% after a victory, leading to large differences between the two groups ($z = 4.56, p < .001$, Cohen's $d = 0.59$). Contrast tests showed that saturated-fat consumption was statistically different between the defeat group and the mean of the two control groups ($z = 3.38, p < .001, d = 0.36$) and between the victory group and the mean of the two control groups ($z = -2.05, p = .04, d = 0.22$). Saturated-fat consumption remained at its regular level for people living in cities without a team and in cities whose home team did not play that Sunday. The lack of effects in the two control groups shows that the observed effects of defeats and victories cannot be explained by unmeasured factors specific to cities with an NFL team or to the specific weeks when the home team played. Finally, fan attachment moderated the results ($z = 2.33, p < .02$). There was a larger effect of game outcome in the 8 cities with the most devoted NFL fans ($z = 4.17, p < .001, d = 0.95$), where saturated-fat consumption increased by 28% following defeats (compared with 9% in the 22 other cities) and decreased by 16% following victories (compared with 4% in the other cities).

The key results were replicated when total food-calorie consumption (rather than saturated-fat consumption) was examined (see Table 2). Caloric intake on Mondays

increased by 10% after a defeat and decreased by 5% after a victory, leading to a statistically significant difference not only between these two game-outcome groups ($z = 3.95, p < .001, d = 0.57$) but also between the defeat group and the mean of the control groups ($z = 2.44, p = .02, d = 0.31$) and between the victory group and the mean of the control groups ($z = -2.65, p = .01, d = 0.24$). However, the moderating effect of fan attachment was not statistically significant ($p > .30$).

Effects of game outcome and game characteristics on Monday consumption.

Given the absence of effects on Sundays and Tuesdays, we analyzed the effects of game characteristics using the full sample of respondents who provided consumption data on a Monday after a Sunday game (but not necessarily on the preceding Sunday or the following Tuesday). Because our focus was on the characteristics of the game, we did not make comparisons with control groups; hence, this analysis involved 306 individuals and 586 consumption days.

We replicated in this larger sample the key findings of higher saturated-fat and food-calorie consumption after defeats than after victories (saturated-fat consumption: $z = 3.31, p < .001, d = 0.30$; food-calorie consumption: $z = 3.08, p = .002, d = 0.32$). As expected, the effects of game outcomes on saturated-fat and food-calorie consumption were stronger (respectively, $z = -3.26, p < .001$ and $z = -2.00, p = .04$) for games between evenly matched teams (with a small expected point spread) than for lopsided

Table 2. Study 1: Results of Random-Effects Regression Analyses Predicting Changes in Food-Calorie Consumption

Predictor	Model 1 (Sundays)	Model 2 (Mondays)	Model 3 (Tuesdays)	Model 4 (Sunday evenings plus Mondays)	Model 5 (Mondays, all respondents)
Defeat	0.00 (0.05)	0.16*** (0.04)	0.01 (0.04)	0.18*** (0.05)	0.08*** (0.03)
Gender	0.00 (0.02)	-0.01 (0.02)	0.02 (0.02)	-0.01 (0.03)	-0.02 (0.03)
Gender × Defeat	-0.03 (0.09)	-0.03 (0.08)	-0.04 (0.07)	-0.03 (0.10)	-0.01 (0.05)
No game	0.04 (0.03)	0.04 (0.03)	-0.02 (0.03)	0.03 (0.04)	—
No team	0.01 (0.03)	0.04 (0.02)	0.01 (0.02)	0.04 (0.03)	—
High fan base	-0.09* (0.03)	0.02 (0.03)	0.00 (0.03)	0.04 (0.04)	—
High Fan Base × Defeat	-0.13 (0.09)	0.08 (0.08)	-0.21** (0.07)	0.07 (0.10)	—
High Fan Base × No Game	-0.09 (0.07)	-0.01 (0.06)	0.01 (0.05)	-0.11 (0.07)	—
Expected Spread	—	—	—	—	0.00 (0.00)
Expected Spread × Defeat	—	—	—	—	-0.02* (0.01)
Large outcome	—	—	—	—	-0.06** (0.02)
Large Outcome × Defeat	—	—	—	—	0.06 (0.05)
Expect defeat	—	—	—	—	-0.06* (0.03)
Expect Defeat × Defeat	—	—	—	—	-0.06 (0.05)

Note: The table shows unstandardized coefficients; standard errors are shown in parentheses. The dependent variable was daily food-calorie consumption (normalized by the average food-calorie consumption of the individual). See the note to Table 1 for descriptions of the models and coding.

* $p < .05$. ** $p < .01$. *** $p < .001$.

games (with a large expected point spread; see Fig. 2). The expected spread's absolute value had no main effects ($ps > .40$).

Actual point spreads had the expected negative main effect on saturated-fat and total caloric consumption (respectively, $z = -2.80$, $p < .01$ and $z = -2.58$, $p < .01$) and did not interact with game outcome ($ps > .18$). As shown in Figure 3, large victories led to a greater reduction in saturated-fat and food-calorie consumption than did narrow victories. Conversely, narrow defeats led to a greater increase in the consumption of saturated fat and total calories than did large defeats, as we had expected.

Control variables. As shown in Tables 1 and 2, none of the game-outcome effects were statistically different between men and women ($ps > .20$). All the effects found when examining Monday consumption only were replicated when we aggregated Sunday-evening consumption with all-day-Monday consumption (see Model 4 in Tables 1 and 2). Finally, the effects of the control variable capturing bookmakers' outcome predictions (defeat or victory) were generally insignificant, except for an unexpected negative main effect on food-calorie consumption.

Discussion

Study 1 showed that vicarious losing significantly increased unhealthy eating and that vicarious winning significantly decreased unhealthy eating, and that these effects were neither anticipated on the previous day nor compensated for on the following day. The strongest effects were

observed for narrow defeats and large victories, when NFL opponents were evenly matched, and in cities with a strong fan base (for saturated-fat consumption only). The effects were generally larger for saturated-fat than food-calorie consumption, suggesting that sports outcomes affect food preferences more than quantities of food consumed. The absence of moderation by gender is consistent with results from studies on the impact of game outcomes on cardiac accidents (Carroll et al., 2002; Kloner et al., 2011). Women are no less affected than men by vicarious sports defeats (Hirt et al., 1992), and their generally lower level of attachment to football may be counterbalanced by their greater propensity to engage in emotional eating (Else-Quest, Higgins, Allison, & Morton, 2012).

Study 1 was a quasiexperiment that focused on only one sport and relied on self-reported consumption data lacking some nutritional information (e.g., calories from added sugar). We addressed these limitations in two randomized controlled experiments with unobtrusive measures of actual consumption (Study 2) and of consumption intentions (Study 3). These two studies also allowed us to examine the remedial effect of affirming one's core values beyond group affiliation.

Study 2

Method

We recruited French adults who were interested in sports and who had neither been fasting on the day of the study nor eaten just before taking part in it. We asked them to

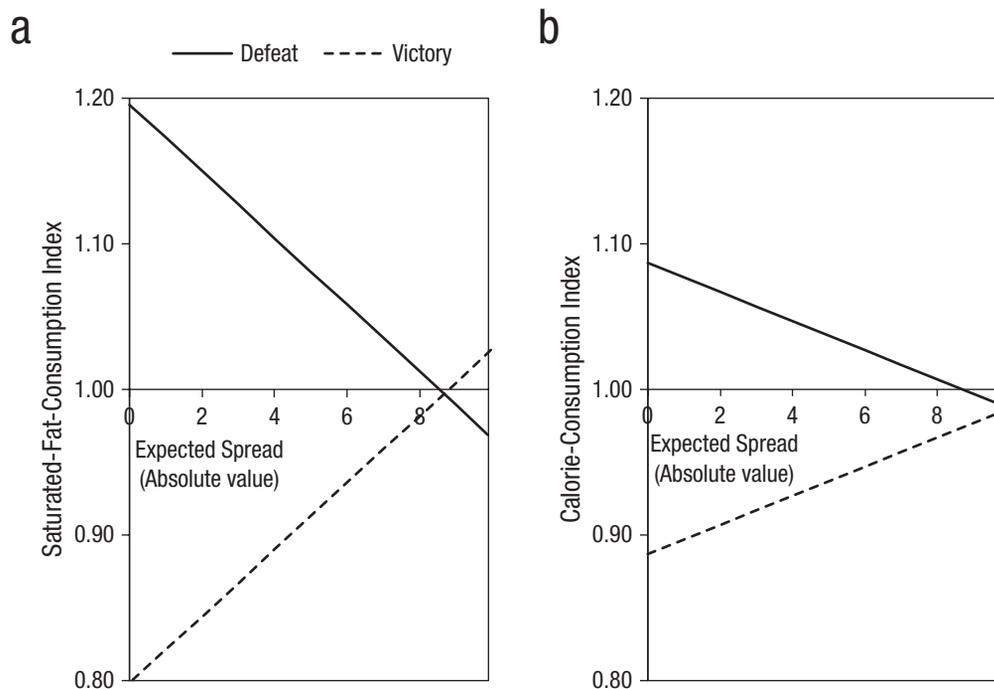


Fig. 2. Results from Study 1: (a) saturated-fat consumption and (b) food-calorie consumption as a function of expected point spread and condition.

write about either a victory or a defeat of their favorite team or athlete. Of the 78 participants who successfully completed this task, 47 chose to write about soccer, 12 chose to write about another team sport, and 19 chose to write about an individual athlete (the choice of sport did not influence the consumption results). In a second, purportedly unrelated task, the same participants were given 10 min to find words hidden in a letter matrix. While completing this second task, they could eat from four bowls containing potato chips, chocolate candies, white grapes, and cherry tomatoes. The participants then completed the Positive and Negative Affect Schedule (PANAS) as a measure of mood (Watson, Clark, & Tellegen, 1988).

To allow direct comparisons with Study 1, we converted actual food intake to calories and macronutrient levels. We then quantified unhealthy eating by identifying whether calories came from saturated fat and added sugar (two unhealthy macronutrients) or from natural carbohydrates, proteins, or other fats. Similar results were obtained when we simply compared the consumption of “healthy” grapes and tomatoes with “unhealthy” chips and candies (see Study 2: Additional Consumption-Intake Analysis in the Supplemental Material).

Results

Manipulation checks confirmed that participants were attached to their team or athlete. The average score on an item asking participants to indicate how they felt, using a scale from 1 (*totally distraught*) to 9 (*wild with joy*), was 2.8 ($SD = 1.38$) after describing a defeat and was 8.0 ($SD = 1.41$) after describing a victory. None of the mood measures—derived from the valence of the words identified in the hidden-word task and the PANAS questionnaire—had a statistically significant effect ($ps > .20$).

We conducted an analysis of variance (ANOVA) of total calorie intake on the between-subjects outcome condition (victory or defeat), the within-subjects source of calories (saturated fat, added sugar, natural carbohydrates, other fats, or proteins), and gender. Total calorie intake was not significantly different after defeats and after victories ($p > .20$). However, both the main effect of calorie source and its interaction with game outcome were statistically significant—respectively, $F(4, 71) = 49.0$, $p < .001$, $\eta_p^2 = .73$; and $F(4, 71) = 3.7$, $p < .01$, $\eta_p^2 = .17$. As shown in Figure 4, participants consumed more calories from saturated fat or added sugar in the defeat

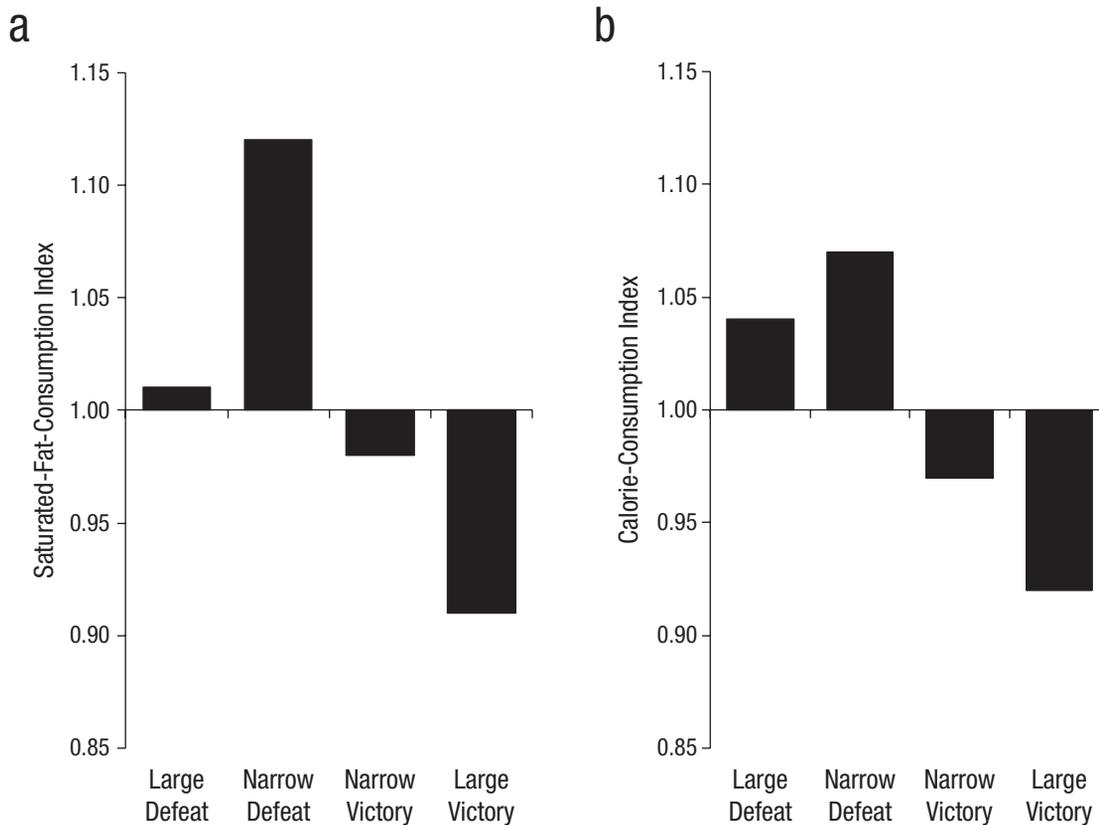


Fig. 3. Results from Study 1: (a) saturated-fat consumption and (b) food-calorie consumption after a local sports team's victory or defeat as a function of the difference in the teams' final score. Games in which the teams' final scores differed by fewer than 10 points were categorized as narrow defeats or narrow victories, as opposed to large defeats and large victories.

condition (respectively, $M = 107$ and $M = 101$) than in the victory condition (respectively, $M = 74$ and $M = 64$)—saturated fat: $F(1, 76) = 4.04$, $p = .05$, $\eta_p^2 = .05$; added sugar: $F(1, 76) = 5.16$, $p < .03$, $\eta_p^2 = .07$. Effects on the consumption of other nutrients were in the expected direction but did not reach statistical significance ($p > .07$). Both the main effect of gender on total calorie intake, $F(1, 74) = 13.2$, $p = .001$, $\eta_p^2 = .15$, and the interaction of gender and source of calories, $F(4, 71) = 3.5$, $p = .01$, $\eta_p^2 = .16$, were significant, indicating that women consumed fewer calories and that the calories they consumed were from healthier macronutrients. However, neither the interaction of game outcome and gender nor the three-way interaction of game outcome, calorie source, and gender were significant ($ps > .30$).

In a post hoc analysis, we asked three independent coders to rate the extent to which participants had spontaneously expressed their core values in their written descriptions of the games (see Study 2: Coding Instruction for Spontaneous Self-Affirmation in the Supplemental

Material). In the victory condition, spontaneous self-affirmation did not influence total calories consumed ($p > .2$) and did not interact with source of calories ($p > .3$); in the defeat condition, spontaneous self-affirmation did not significantly influence total calories consumed ($p = .15$) but did interact significantly with source of calories, $F(4, 35) = 3.35$, $p < .02$, $\eta_p^2 = .28$, such that vicarious losers who spontaneously self-affirmed consumed fewer calories from added sugar, $F(1, 38) = 3.95$, $p = .05$, $\eta_p^2 = .09$. Effects on the consumption of other nutrients were in the expected direction but did not reach statistical significance ($ps > .07$).

Discussion

In Study 2, a randomized controlled experiment, the recalling of vicarious sports defeats or victories did not influence total food intake during one snacking occasion but significantly influenced food preferences. As in Study 1, consumption of saturated fat (and also of added

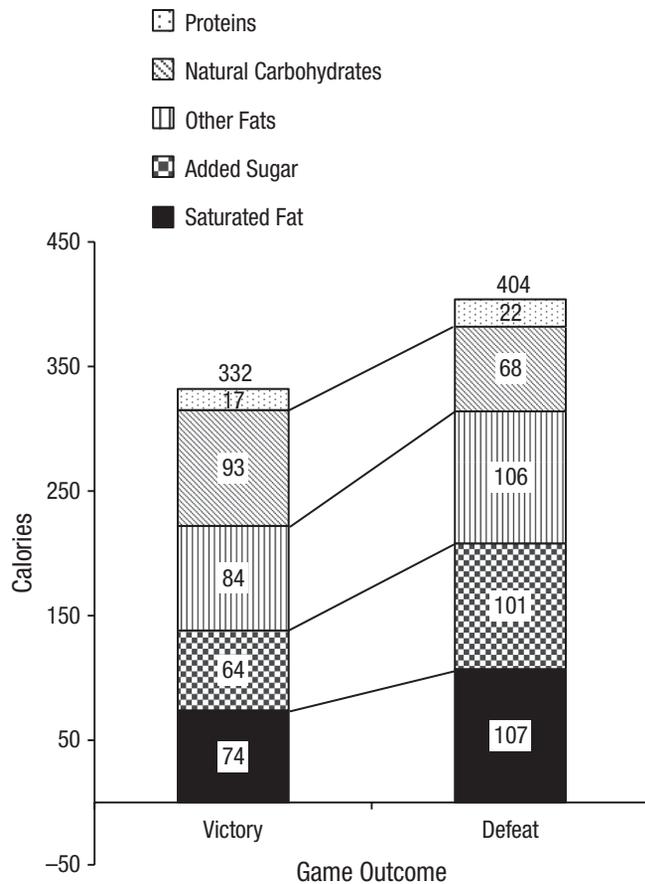


Fig. 4. Results from Study 2: caloric consumption after describing a favorite team or athlete's victory or defeat as a function of game outcome and source of calories.

sugar) was higher after a vicarious defeat than after a vicarious victory. The results of Study 2 further suggested that spontaneously affirming one's core values may counteract the effects of a vicarious defeat on unhealthy consumption. We further tested these hypotheses in Study 3 by manipulating (rather than measuring) self-affirmation and by adding a control condition (in which participants watched a game without being a supporter of either team). We also tested the extent to which the results of Studies 1 and 2 could be attributed to "mindless" eating by measuring intended rather than actual consumption.

Study 3

Method

We asked an online panel of 157 French people recruited by a polling company (mean age = 33 years; 35% female, 65% male) to watch 7-min videos of the highlights of one of three soccer games. One was the French national team's victory against archrival Italy in the Union of European Football Associations Euro 2000 final. The

second was the defeat by Italy of the French national team in the 2006 World Cup final. In the control condition, participants watched a game between two Belgian soccer teams.

Using a standard self-affirmation procedure (Sherman & Cohen, 2006), we asked half of the participants to rank a list of values in order of personal importance and to write a few sentences about why their top-ranked value was important to them. The remaining participants (in the control, no-self-affirmation condition) were asked to list the main features of a chair. We then showed participants photos of the four foods used in Study 2 (cherry tomatoes, white grapes, chocolate candies, and potato chips) and asked them to indicate how inclined they were to consume each food, using a scale from 1, *not at all*, to 5, *the full bowl*.

Results

Manipulation checks showed that the participants of Study 3 were supporters of the French national soccer team but not of any soccer team in general. The average score on an item asking participants to report whether they "loved the French national team," using a scale from 1 (*totally disagree*) to 7 (*totally agree*), was 5.00 ($SD = 1.69$), and scores were similar across the victory and defeat conditions ($p > .20$). The average score on a similar measure asking whether they were "interested in Belgian soccer" was only 2.4 ($SD = 1.5$).

We computed an index of unhealthy consumption intentions by adding scores for intentions to consume chips and candy and subtracting scores for intentions to consume grapes and tomatoes. An ANOVA of unhealthy intentions with game outcome (defeat, control, and victory), self-affirmation, and gender revealed significant main effects of game outcome, $F(2, 147) = 3.81, p = .02, \eta_p^2 = .05$, and self-affirmation, $F(1, 147) = 4.07, p < .05, \eta_p^2 = .03$, as well as a significant interaction between outcome and self-affirmation, $F(2, 147) = 3.99, p = .02, \eta_p^2 = .05$. The main effect of gender and its interactions with game outcome and self-affirmation were not significant ($ps > .30$).

As shown in Figure 5, participants who were not self-affirmed preferred mostly unhealthy foods in the defeat condition ($M = 1.11$), had significantly more balanced preferences between healthy and unhealthy foods in the control condition ($M = -0.30$), $F(1, 151) = 4.31, p = .04, \eta_p^2 = .03$, and turned to healthy foods in the victory condition ($M = -1.21$), $F(1, 151) = 13.0, p < .001, \eta_p^2 = .08$; the difference between the victory and the control conditions was not statistically significant, $F(1, 151) = 1.81, p = .18$. In contrast, all the participants in the self-affirmation condition preferred healthy foods regardless of which game they watched (all $ps > .50$). Thus, self-affirmation

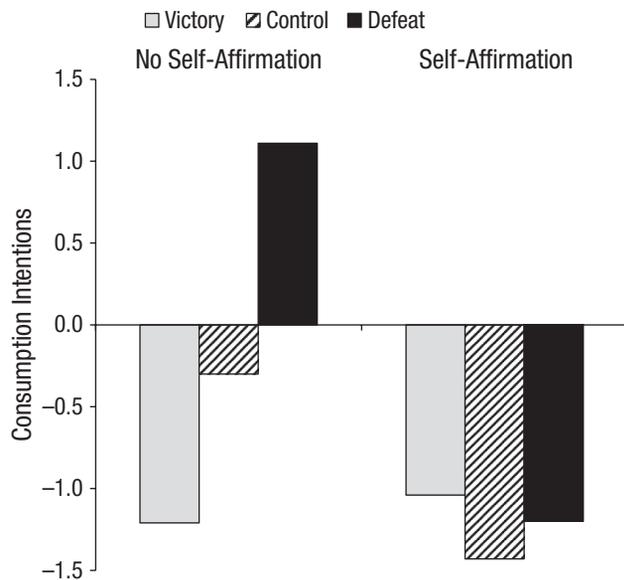


Fig. 5. Results from Study 3: consumption intentions after watching a game as a function of self-affirmation condition and game outcome. Higher values indicate intentions to consume less healthy foods.

completely eliminated the effects of watching the defeat on consumption intentions ($M = 1.11$ vs. $M = -1.20$), $F(1, 151) = 12.0$, $p < .001$, $\eta_p^2 = .07$. However, it had no significant effect among participants who had watched the Belgian game or the victorious French game and who therefore preferred healthier foods even without self-affirmation ($ps > .20$).

General Discussion

Results from three studies showed that people eat less healthily after watching their favorite football or soccer team lose a game. Study 1 showed that saturated-fat consumption and food-calorie intake increased on Monday in cities whose NFL teams had lost their Sunday game but decreased in cities with victorious teams. We found no evidence of anticipation or compensation effects and observed no effects when participants' home team did not play or in cities without an NFL team. The impact of game outcomes on food intake was greater in cities with strong fan bases, when a defeat was narrow or a victory was large, and when the opposing teams were of equal strength. Study 2 showed that randomly asking people about the defeat of a personally significant sports team or athlete led to the consumption of less healthy food, except when people spontaneously distanced themselves from the losing team or athlete by affirming their values. Study 3 showed that watching replays of a major national-soccer-team defeat led to unhealthier consumption intentions than did watching a victory or a competitive but

identity-irrelevant game. This suggests that the effects of game outcome were not caused by mindless, unintentional eating. A simple self-affirmation intervention eliminated the unhealthy consequences of the vicarious defeat.

Our results cannot be explained by testosterone levels, which increase after victories and decrease after defeats (Bernhardt, Dabbs, Fielden, & Lutter, 1998). Given that testosterone increases self-control failures (Daitzman & Zuckerman, 1980), is positively correlated with the appetite hormone ghrelin (Greenman, Rouach, Limor, Gilad, & Stern, 2009), and is negatively correlated with the satiety hormone leptin (Luukkaa et al., 1998), higher testosterone levels after a victory should encourage less healthy eating—not healthier eating, as we found. However, other hormones, such as cortisol, may play a role (van der Meij et al., 2012).

We speculated at the outset that the identification of supporters with their teams and the threats to the self induced by vicarious defeats may explain why fans of defeated teams increase their consumption of unhealthy food. Yet it is also possible that these consequences stem from affective reactions to vicarious sports victories and defeats. Some studies have suggested that arousal increases the intake of foods high in fat and sugar because of their expected comforting properties (Dube, LeBel, & Lu, 2005). Other studies (e.g., Garg, Wansink, & Inman, 2007) have suggested that positive affect leads to healthy eating and negative affect to unhealthy eating, although these findings are robust only for restrained eaters (Macht, 1999, 2008). Still, vicarious sports defeats and victories generate a wide range of emotional reactions—including shame, disgust, sadness, anger, frustration, hope, happiness, surprise, and pride—that often have conflicting effects on unhealthy eating (Wann, Melnick, Russell, & Pease, 2001). More research is therefore needed to identify the precise mediating roles of emotions, identification, and self-threats, as well as the specific role played by such goals as escaping from self-awareness (Heatheron & Baumeister, 1991) and mood repair (Andrade, 2005).

Author Contributions

Both authors contributed equally to this work. Both authors developed the study concept and design and collected the data. Y. Cornil analyzed the data under the supervision of P. Chandon. Y. Cornil drafted the manuscript, and P. Chandon provided critical revisions. Both authors approved the final version of the manuscript for submission.

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Declaration of Conflicting Interests

The authors declared that they had no conflicts of interest with respect to their authorship or the publication of this article.

Supplemental Material

Additional supporting information may be found at <http://pss.sagepub.com/content/by/supplemental-data>

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