Negativity Bias in the Perception of External Agency

Carey Morewedge, Princeton University, USA

People seem apt to believe that machines have a “mind of their own” when they malfunction and that referees were responsible for their team’s loss. Yet, when machines work well or their team is winning, the state of affairs is seldom attributed to the intentions of an external agent. This discrepancy reflects a general asymmetry in the way people ascribe intentional agency. Four experiments, employing ultimatum games and gambles, demonstrate that negative outcomes more often prompt one to infer the presence and influence of external intentional agents than do neutral and positive outcomes.

[to cite]:

[url]:
http://www.acrwebsite.org/volumes/12950/volumes/v34/NA-34

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SESSION OVERVIEW

Much research on evaluation has focused attention on the role of preferences. For example, how preferences increase for the things we choose and receive (Festinger, 1957; Kahneman, Kretch, & Thaler, 1990). Whether our preferences reflect the immediate, prospective, or retrospective pleasure experiences or objects will bring (Kahneman, 1999). And whether we are too focused on what we prefer in the short term and do not account for decisions’ long term ramifications (Mischel & Shoda, 1995). Research, however, has also demonstrated that negative events have a profound impact upon our lives, and that much of life is spent attempting to avoid them (Baumeister et al. 2000; Denrell, 2005; Kahneman & Tversky, 1979; Rozin & Royzman, 1999). The research we present focuses on what we dislike, and how our distastes influence decisions. It demonstrates why the unpleasant aspects of our decisions and their outcomes also deserve serious consideration.

Hsee first presents research on negativity bias in the judgment of alternatives. Whether evaluating penguins, politicians, or peers, his findings suggest that people are more likely to agree on what they dislike than what they like. In other words, there is greater consensus across individuals on what is bad than on what is good. Second, Kramer, Maimaran and Simonson examine the relative ease of assessing options’ strengths and weaknesses. They find that the peculiar attractiveness of compromise (utilitarian) options may be due to their superior resistance to criticism relative to risky (or hedonic) options, rather than to differences in the benefits they confer. Third, Morewedge presents research suggesting that negative outcomes appear specially intended to perceivers. He finds that people are more likely to attribute negative outcomes to the intentions of other people rather than to non-intentional causes (i.e., computer programs and chance), whereas people are more likely to ascribe positive outcomes to non-intentional causes rather than to the intentions of other humans. Finally, Dan Ariely will critique these papers, discuss how they relate to other existing research, and point out potential implications.

ABSTRACTS

“Do People Agree More On Who is Pretty or On Who is Ugly?”
Christopher K. Hsee, The University of Chicago

This research explores two general questions: whether people agree more on what they like or on what they dislike, and whether people err more when predicting what others like or predicting what others dislike. We find that in general people agree more on what they dislike yet err more when predicting what others like. We explore the underlying reasons of these effects and identify situations where the reserve effects may emerge.

“De gustibus non est disputandum? The Impact of the Nature of the Chosen Option in Positive and Negative Contexts”
Thomas Kramer, City University of New York
Michal Maimaran, Stanford University
Itamar Simonson, Stanford University

Given that consumers often criticize others’ choices or seek to defend their own, it is surprising that academic research provides such little empirical evidence on the impact that the specific nature of the chosen option has on both choice criticism and choice defense. That is, we currently know very little about whether consumers’ sensitivity to the choice type (e.g., virtue vs. vice, or compromise vs. non-compromise) differs between criticizing others and responding to others’ criticism. Presumably, criticism of choice and response to criticism are two sides of the same coin: the option that is easier to criticize should be harder to defend. For example, if it is easier to criticize a choice of a cake over an apple, then choice of the cake should also be harder to defend.

However, we propose that the two actions are asymmetric with respect to the impact of the nature of the chosen option. In particular, we hypothesize that in the relatively negative context of criticizing choices, consumers tend to focus more generally on shared norms, whereas in the relatively positive context of defending choices, they focus more on the particular product attributes of the chosen option. Thus, the nature of the chosen option will have a larger impact when criticizing choices than when defending these choices.

Specifically, in order to respond to criticism of their choices, consumers can generate reasons justifying their choice based on the sovereignty of their idiosyncratic preferences (e.g., Shafir, Simonson, and Tversky 1993; Simonson 1989). Since tastes or preferences are highly subjective, choice options irrespective of their nature can be defended by reliance on the options’ attributes matching these particular values. In contrast, the particular nature of others’ choices is likely to play a relatively greater role in negative contexts of criticism. Since subjective tastes are difficult to argue (“de gustibus non est disputandum”), criticizing consumers for their choices may involve shared norms regarding which choices are the appropriate ones to make. For example, when choosing between a vice (e.g., a chocolate brownie) and a virtue (e.g., a fruit salad), it is common knowledge that one should choose the salad in order to maintain better health. Similarly, when choosing between a compromise and a non-compromise option, most individuals assume that choosing the compromise option is safer and minimizes losses, making it the ‘right’ option to choose.

Thus, consumers are likely to base their criticism on known norms and shared rules, so that the nature of the option being criticized is likely to play a bigger role. Specifically, it is more difficult to criticize the choice of conventional options, those that are easier-to-justify (e.g., the compromise option; Simonson, 1989), or ‘sure-thing’ options (Simonson, Kramer, and Young, 2004). Conversely, unconventional options (such as non-compromise or risky gambles) are more easily criticized. Therefore, we hypothesize and test in a series of studies that, whereas the choice of an option makes a large difference when forming criticism, the ability to respond to criticism is rather insensitive to the nature of the option one chooses.

In Study 1, participants were randomly assigned to one of two conditions: in the ‘criticism’ condition they read about other students’ choices between (1) vices and virtues (e.g., a brownie and an apple), (2) hedonic and utilitarian options (e.g., a candy bar and a calling card), (3) compromise and non-compromise options, and (4) ‘sure-thing’ (e.g., $25 for sure) and risky gambles (e.g., a 20% chance to receive $250). Subjects were then asked to rate how easy it would be for them to criticize another student for his choice of
each option. In the ‘respond’ condition, participants rated how easy it would be for them to respond to criticism had they themselves chosen each option.

Across the various problems, we find an interaction between the task (criticize vs. respond) and the type of option. Specifically, participants reported that it would be significantly easier to criticize the choice of the non-compromise, the hedonic option, the vice and the gamble than the choice of the compromise, utilitarian option, virtue and the sure-thing, respectively. In contrast, the differences in ease of responding to choosing one option or the other (e.g., the vice or the virtue) were much smaller and not significant.

In Study 2, we (1) generalized the findings to additional choice contexts as well as replicated the previous results, (2) examined whether the effect also appears in a within-subject design, and (3) ruled out the possibility that the results of Study 1 are due to differences in difficulty of evaluating the ease of criticizing versus the ease of responding. In addition to the two between-subjects conditions, we included two within-subjects conditions in which participants rated both the ease of criticizing others’ choice and the ease of responding to others’ criticism (order counterbalanced; no order effects were found). All participants evaluated choices of (1) compromise versus non-compromise options (2) sure-thing versus risky gambles, and (3) dominating versus dominated options. Finally, participants rated the ease of completing the criticizing versus responding to criticism task.

As hypothesized, we found bigger differences in ease of criticizing each option (compromise vs. non-compromise, dominating vs. dominated and sure-thing vs. risky option) than in ease of responding to criticism for choosing each option. Specifically, criticizing the choice of ‘non-conventional’ options was judged to be significantly easier than criticizing the choice of ‘conventional’ options. Finally, the two tasks were equally difficult (in both the within and between designs) suggesting that the difference in difficulty of tasks cannot account for our results.

A third study (currently underway) seeks to provide direct support for our proposition that negative contexts of criticizing choices versus relatively positive contexts of defending choices affect the degree to which consumers focus more generally on shared norms versus on the particular product attributes of the chosen option. In particular, a ‘choice criticism’ group is presented with several problem types (e.g., hedonic vs. utilitarian options; compromise vs. non-compromise) and indicates in an open-ended format the reasons they could give for criticizing choice each of the options. Similarly, a separate ‘choice defense’ group is presented with the same problem types and indicates in an open-ended format the reasons they could give for defending choice of each of the options. Additionally, a third group of subjects will be recruited to evaluate the persuasiveness and effectiveness of the reasons for criticizing choices of the options (from group 1) and for defending choices of the options (from group 2).

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SESSION OVERVIEW

In the past 40 years, statistical methods have become increasingly sophisticated. New methods allow behavioral researchers to more efficiently reveal increasingly complex patterns of causal relationships. In this session, advancements in three prominent statistical analysis techniques are presented: Mediation analysis, mean-centering of variables, and measurement analysis. The first paper presents a method for uncovering mediation that is more efficient (in terms of statistical power and accuracy) than traditional mediation analyses. The second paper demonstrates the advantages and disadvantages of mean-centering and its consequences for the interpretation of ANOVA and moderated regression. And the third paper introduces a new measurement analysis for panel data that allows discerning trait and state components. Overall, the session covers a broad range of methodological concerns that are equally important to the experimental researcher as to the researcher working with field data and surveys.

An important aspect of the session is its appeal to a diverse group of researchers. This is one reason we believe that the session will attract a wide variety of conference attendees. In his role as the discussant Joel Huber will conclude the session by briefly commenting on the papers presented, and will highlight methodology questions that are worthy of future investigation. He will then draw the audience to discuss issues raised by the session.

EXTENDED ABSTRACTS

“A Meditation on Mediation”
Dawn Iacobucci, Wharton

Mediation is frequently of interest to social science researchers. A theoretical premise posits an intervening variable, M, some indicative measure of the process through which an independent variable, X, is thought to impact a dependent variable, Y. The researcher seeks to assess the extent to which the effect of the independent variable on the dependent variable is direct or indirect via the mediating factor.

For example, X might be a trait, M, a general attitude, and Y, a specific response judgment. Whatever the theoretical content, tests of mediation seem particularly appealing to behavioral researchers attempting to track processes. For example, in the Journal of Consumer Research and the Journal of Consumer Psychology mediation tests are reported in approximately one quarter of the published articles.

Without question, the most popular means of testing for mediation is the procedure offered by Baron and Kenny (JPSP, 1986). Using their approach, the researcher fits three regression models to assess the links between X&M, X&Y, and the combination of X and M predicting Y.

We begin this paper by challenging the unquestioned and overly frequently use of mediation assessments (acrwebsite.org/topic.asp?artid=337). Yet, for the researcher determined to test for mediations, we demonstrate that structural equations models (SEM) are the superior tool for the mediation testing. The regression technique never surpasses SEM. This result is true even in the simplest of data scenarios, and clearly the SEM analytical framework allows us to consider a variety of data scenarios with greater sophistication.

First is the scenario in which a researcher has multiple indicators of the X, M, and/or Y constructs—a scenario prefigured by Baron and Kenny, but not addressed fully in their article. They acknowledge that, like any regression, their basic approach makes no particular allowances for measurement error, which is simply subsumed into the overall error term, contributing to the lack of fit.

To compare the analytical approaches, we created a series of Monte Carlo simulation studies to investigate and compare the regression vs. SEM methodologies in terms of superiority in identifying mediation structures. We varied the strength of the mediated vs. direct effects in the population, and the sample size in the data.

Even in the simplest of data scenarios—the classic case of only three constructs and only one measure per construct—the choice between regression and SEMs matters, and structural equations modeling is the superior technology. The SEM results work to the researcher’s benefit, in being more likely to detect existing patterns of mediation, being truer to the known population structural characteristics, and in being statistically more defensible, given the elegance of the simultaneous estimation. Fitting components of models simultaneously (i.e., via SEM) is always statistically superior to doing so in a piece-meal fashion, e.g., to statistically control for and partial out other relationships.

In Study 2, we demonstrate that when multi-item scales are aggregated and their means imputed into regressions, the use of a structural equations model is again superior to the regressions. There is no circumstance in which a structural equation is outperformed by the regressions.

Taking means over multiple items (e.g., {X₁, X₂, X₃} → X̅) to simplify analyses is commonplace, but doing so does not use the data to their full advantage as would allowing the representation of the items in a measurement model. In Study 3, we compare multiple items for X, M, and Y as used in SEM vs. their aggregate means. We classified the results into the categories of “no,” “partial,” and “full” mediation and conclude that the results for the mean analysis are not as clear as the results from the full SEM treatment of the multi-item data. When there is “no” or “partial” mediation, means are more likely to overstate the extent of mediation.

Complementary to the concern of measurement issues is the substantive concern over the interrelationship among the focal constructs. We examine the logic and statistics underlying the scenario in which the X, M, and Y constructs are embedded in a richer nomological network that contains additional antecedent and/or consequential constructs. This broader nomological network is encouraged by philosophers of science and methodologists to offer the richest view of the phenomena and their explanations.

The addition of at least one more construct, Q, is necessary even if the researcher cares more about X, M, and Y than Q.

The principal statistical purpose of the additional construct is to yield sufficient degrees of freedom to accurately test the mediation links. The mediation model, which posits three links among three constructs, is “just identified,” meaning the directionality of the effects, from X to M vs. M to X is empirically indeterminate (i.e., the fit statistics are perfect, e.g., CFI=1.00; rmse=0.00, and indistinguishable).

Theory should help differentiate the meaningfulness of these alternative models, yet competing models are rarely mentioned,
much less frequently tested. Further, rivals can be conceptually equally plausible. For example, if \( X = \text{affect}, M = \text{cognition}, \) and \( Y = \text{behavior}, \) there exist supporters of theories which pose \( XaM \) or \( M\tilde{a}X, M\tilde{a}Y \) or \( Y\tilde{a}M, \) etc. (Breckler, *PsychBull.*, 1990).

The regression techniques are no different from the structural equations models in offering no solution to the issue of using all the available degrees of freedom in the decomposition of the variance (the parameter estimates are equivalent). The use of multi-item scales offers no solution to this problem either—additional degrees of freedom are illusory, contributing to the measurement model accuracy, but not to the critical structural model. Ideally, the \( X, M, Y \) mediation would be tested in the presence of at least one additional construct, \( Q, \) whose role is to serve as an antecedent to \( X, \) or a consequence of \( X, M, \) or \( Y.\)

In the final part of this paper, we extend the SEM models to consider moderated mediation. SAS code is provided for all scenarios.

**“Mean-Centering and the Interpretation of ANOVA and Moderated Regression”**

*Joachim Vosgerau, Carnegie Mellon  
Hubert Gatignon, INSEAD*

ANOVA is the most prominent statistical analysis in experimental behavioral research. When an interaction of a continuous variable and a categorical variable is hypothesized, it is common practice to dichotomize the continuous scores and analyze the data with an ANOVA. For example, if a researcher wants to test the interaction of familiarity with a product class and gender on the size of the consideration set, the researcher might dichotomize familiarity scores into unfamiliar (score=0) and familiar (score>0), and analyze the data with ANOVA. This practice prevails although dichotomizing continuous variables bears negative consequences such as diminishing statistical power (Irwin and McClelland 2003 *JMR*). The reluctance to analyze data with moderated regression seems to result from the difficulties in interpreting moderated regression results.

Indeed, moderated regression and ANOVA can yield seemingly different effects when applied to the same data. We demonstrate that these differences occur because in ANOVA main effects are estimated at their means, and interaction effects are restricted to be symmetric cross-over effects relative to the means. In contrast, in moderated regression constant effects are estimated at zero, and no specific pattern of interaction is imposed.

In order to make moderated regression and ANOVA effects comparable, some researchers have argued to mean-center variables in moderated regression. We show that mean-centering yields effects that are statistically equivalent to effects from raw variables, but it restricts interaction effects to be symmetric relative to the means of the variables. As a consequence, constant effects in moderated regressions are no longer constant but depend on the specific range of the variables. For example, assume the researcher hypothesizes an interaction of familiarity and gender, such that female consumers who are familiar with the product class include more products in their consideration set than female consumers who are less familiar with the product class. For male consumers no differences with respect to product familiarity are expected. The researcher analyzes the raw data with a moderated regression and finds a significant interaction. In this raw-data analysis, the effect for gender is constant, whether a sample with familiarity scores from 0 to 3 is used or a sample with familiarity scores from 3 to 6. But if the researcher mean-centered familiarity scores, the effect for gender would depend on the specific sample. That is, the researcher would find a different gender effect with the sample of 0 to 3 familiarity scores than with the sample with 3 to 6 scores.

The same problem is shown to hold for main effects in ANOVA. If the researcher dichotomized familiarity scores and analyzed the data with ANOVA, the main effect for gender would depend on the range of the familiarity scores. This undesirable property of range-dependence of main effects in ANOVA is a result of ANOVA constraining interaction effects to be symmetric cross-over effects relative to the mean.

Another interpretational problem with ANOVA concerns the way main effects are estimated. Main effects in ANOVA, as constant effects in mean-centered moderated regression, are computed as the effect when the other variable is at its mean. So, the main effect for familiarity (unfamiliar vs. familiar) is estimated at the mean of gender (female vs. male). But what is the mean of female and male? It clearly makes no sense to talk about the mean of gender. And thus it makes no sense to interpret the main effect of product familiarity that is estimated at the mean of gender. Concluding, in the presence of interaction effects, ANOVA main effects have to be interpreted with caution. Main effects depend on the specific range in which the independent variables are manipulated or measured.

Mean-centering in moderated regression, although it is shown to lead to the undesirable property of range dependence of the constant effects, can nonetheless be beneficial. Mean-centering does not reduce multicollinearity (as some researchers and statistical textbooks claim), but it can help to overcome the arbitrary origin of interval scale variables such as Likert scales. Interval scales have no defined zero point, adding an arbitrary constant to an interval scale does not change its meaning. But adding an arbitrary constant to a continuous variable in a moderated regression changes the effect of the other variable in the moderated regression. So, in moderated regression with an interval scale focal variable, the constant effect of the moderator variable is non-interpretable because of the arbitrary origin of the focal variable. The arbitrary origin of interval scale variables can be eliminated by mean-centering. Mean-centered scores only include deviations from the variable mean, and thus arbitrary constants that are added to the raw variable drop out. However, because mean-centering also changes moderation to a symmetric cross-over interaction effect, caution has to be taken about which variables to mean-center in a moderated regression. We show that when the moderator variable is interval scale, mean-centering this variable allows for interpreting the focal variable’s effect as its effect when the moderator is at its mean (the interpretation of the moderator variable’s constant effect is not affected by the mean-centering transformation). But when the focal variable is interval scale, mean-centering does not help (as it would change the constant effect of the moderator variable to an effect that varies with the focal variable). In this case, the constant effect of the moderator variable should not be interpreted (the focal variable’s effect would not be affected by the mean-centering transformation).

**“An Extended Paradigm for Measurement Analysis of Marketing Constructs Applicable to Panel Data”**

*Hans Baumgartner, Penn State University  
Jan-Benedict E.M. Steenkamp, University of Northern Carolina*

Although the measurement of marketing and consumer behavior constructs has greatly improved in recent years, we believe that several topics have received insufficient attention in the literature. First, in many areas of research it is necessary to draw a clear distinction between the trait and state aspects of a construct. Although the distinction between states (transitory characteristics of individuals that change with circumstances and over time) and traits (relatively stable dispositions) has led to valuable insights in many areas of behavioral research (e.g., enduring vs. situational