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First is Best in Rapid Social Judgment and Consumer Decision

Dana R. Carney & Mahzarin R. Banaji

Harvard University

Corresponding Author:
Dana R. Carney
Columbia Business School
3022 Broadway, Uris Hall
New York, New York 10027

email: dcarney@columbia.edu

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Abstract

Because the world unfolds serially, events are intrinsically experienced sequentially rather than simultaneously. We report six experiments designed to test the effect of first position on preference and choice using items that ranged from consumer goods in lab and field experiments to animals, humans, or groups. Experiments 1 and 2 demonstrated preference for firsts in rapid consumer choice. Experiments 3 and 4 established the generality of the effect and used a response latency measure of preference to learn about its automatic component. Experiments 5 and 6 showed that first is preferred in decisions of social import such as the release of a criminal on parole. Together, these six experiments demonstrate a “first is best” effect and we offer possible interpretations based on evolutionary and learning mechanisms of this “bound” on rational behavior.

Keywords: preference, choice, decision making, social judgment, primacy, first position

First is Best in Rapid Social Judgment and Consumer Decision

You quickly examine equally outstanding resumés from Maxine, then Max. In a grocery store, you first notice Bosc pears, then Bartlett pears. Your stockbroker tells you about two new stock options, Bentametrix and then Mentametrix. It is inherent in the nature of experience, unfolding as it does in time, to encounter events sequentially. Choices and preferences, if they are to reflect what's rational and good, should be based on quality and value not on position in the experience sequence. There is no reason, at least not a rational one, for preference to be guided by the order in which items in a series are encountered. Max and Maxine are equally likely to be productive individuals, Bartlett pears are just as nutritious as Bosc, and if the two stock options differ in quality, it isn't based on the order in which we learned about them. In one sense, we are fully aware that our preferences and choices ought to be guided by the actual worth of an option rather than by its position. However, as the last half-century of research on judgment and decision making has shown, preferences are not guided by rational considerations alone (Gilovich, Griffin, & Kahneman, 2002; Kahneman, Slovic, & Tversky, 1982; Nisbett & Ross, 1980; Simon, 1959; Thaler, 1980), and in six experiments we test the role of "firsts" in such shaping of rapidly considered choices and preferences.

In humans and other animals, primacy has power – that is, undue emphasis is placed on the first instance encountered in a series. In rats, pigeons, monkeys, and humans, what is experienced first is remembered better and the effect is sufficiently robust to have acquired the status of a principle of memory (Atkinson & Shiffrin, 1968; Ebbinghaus, 1885; Insko, 1954; Miller & Campbell, 1959; Modigliani & Hedges, 1987;

Pineño & Miller, 2005; Waugh & Norman, 1965; Wright, Santiago, Sands, Kendrick, & Cook, 1985). Superior memory may drive another psychological outcome associated with firsts. Beginning with the groundbreaking work of Solomon Asch on impression formation, we know that the first quality that is used to describe a person plays a disproportionate role in guiding overall impression (Asch, 1946; Jones, Rock, Shaver, Goethals, & Ward, 1968; Krosnick, & Alwin, 1987; Luchins, 1957). A target described as fun, smart, aggressive, and cheap would be rated more favorably than the same social target described as cheap, aggressive, smart, and fun. The effect is sufficiently palpable so as to be experienced by the reader who is aware of the bias.

Other research suggests that the power of firsts has a distinct affective basis. For example, filial imprinting in baby chicks shows that the first object the newborn sees — whether it is another animal or inanimate object — is more likely to become the object of attachment (Bolhuis, & Bateson, 1990; Jaynes, 1957; Johnson, 1992). For adult humans, names of team-members first encountered were more preferred and spontaneously associated with the self in a rapid judgment task (Greenwald, Pickrell, & Farnham, 2002). Similarly, early research on persuasion, conducted in the tradition of classic learning theory, showed that first-positioned arguments have more persuasive appeal and are likely to change minds more (Jersild, 1928; Knower, 1936; Lund, 1925). That such effects have impact on rapid choices of significance was demonstrated by Miller and Krosnick (1998) who showed that political candidates listed first on a ballot were more likely to be elected especially in counties comprised of less knowledgeable voters who were likely encountering the names for the first time.

These results notwithstanding, there has been no specific and systematic attempt to test the evaluative status of firsts. Are firsts, just by their position, automatically imbued with positive meaning? The two effects showing that under conditions of novelty and rapid decision making, that there might indeed be a principle at work that has gone unnoticed because these demonstrations exist in fields with different research traditions and priorities. In this paper we put the “first is best” idea to a series of tests to ask if indeed first encountered items are also chosen and preferred more.

First is best (FIB) was tested in six experiments beginning with choice of consumer products (lollypops, chewing gum, and bubblegum). Additional studies used a variety of stimuli (animals, single individuals, and groups) to establish the generality of the effect and showed with a reaction-time measure of preference that FIB is shaped by automatic cognitive processing. In addition, we tested the relative preference between two nefarious characters to rule out the possibility that first position merely polarizes initial baseline evaluation.

Experiment 1

Experiment 1 was designed to test whether the FIB effect could be harvested from rapid choice decisions about consumer items. This experiment was designed to mimic real-world rapid decision making by imposing a time constraint on the selection to render the participant unable to deliberate and reflect upon the decision.

Cheap and common primary reinforcers, chewing gum and lollypops, served as the stimuli that would vary in no way other than order of presentation. Actual choice for the item was the dependent variable.

Method

Participants and procedure. Twenty participants were recruited from Harvard University in Cambridge, MA. For remuneration they were offered the small consumer item they chose. Two packs of different flavored “Trident” gum, or two different “Blow-Pop” lollypops were placed sequentially on a desk in front of participants and participants made their selection fast, “within one second or so.” Consumer item placed first and side of desk (left vs. right) were counterbalanced. After rapid sequential placement of the two items, participants made their choice quickly by grabbing the desired item. As promised, participants retained the chosen item.

Results and Discussion

A one-way χ^2 goodness of fit tested the effect of primacy (first vs. second) on choice. Participants choosing under time-pressure chose the consumer item presented first (75%) more often than the item presented second (25%), $X^2(df = 1, N = 20) = 5.00$, $p < .03$. There were no differences observed across the flavors or brands of consumer items.

FIB occurs in rapid choice decision in the laboratory. Whether this effect could be harvested from a large, non-college sample in the field was the focus of Experiment 2.

Experiment 2

Experiment 2 was designed to test the role of time pressure (the rapid choice condition of Experiment 1) by comparing it to a no pressure, deliberate, condition. It also provided a test of FIB in a non-college sample making consumer choices in a public setting. Commuters in a busy train station were given the choice task used in Experiment 1. Again, a cheap and common primary reinforcer, a piece of sugary

chewing gum, served as the stimulus that would vary in no way other than position of presentation. Actual choice for the item served as the dependent variable.

Method

Participants and procedure. Two-hundred seven participants were recruited from a train station in Boston, MA. Adults sitting alone were approached by a research assistant and asked to participate in a study on consumer choice (<1% declined). For remuneration they were offered the small consumer item they chose. Two pieces of similar-looking bubblegum (1 piece of “Bubble Yum” and 1 piece of “Bubblicious”; equal in size and shape) were placed sequentially on a white clipboard. First placement of gum brand and side of clipboard (left vs. right) were counterbalanced. After rapid sequential placement of the two items, participants reached out and grabbed their choice. As promised, they retained the chosen gum.

In the rapid choice condition participants made their selection fast “within one second or so” whereas in the deliberate choice (i.e., no time-pressure) condition they chose “after you have really thought about it.”

Results and Discussion

A 2 x 2 χ^2 tested the effect of primacy (first vs. second) on choice for each choice condition separately. Participants in the rapid choice condition chose the chewing gum presented first (62%) significantly more often than the gum presented second (38%), $X^2(df = 1, N = 113) = 6.53$, $p < .02$; $d = .49$. Participants in the deliberate choice condition were equally likely to choose the chewing gum presented first (51%) or second (49%), $X^2(df = 1, N = 94) = .05$, $p > .83$; effect size $d = .04$.[1] The FIB effect

persisted despite real heterogeneity in participants. This experiment also verified that FIB is observed in rapid but not deliberate choice decision.

Although the rapid and deliberate choice conditions in Experiments 1 and 2 mimic automatic and controlled measures of preference, a true test of the automaticity of the FIB effect was needed. To test whether automatic or controlled cognitive processing accounted for the FIB effect, reaction-time and explicit measures ubiquitously used in cognitive psychology were used to examine the cognitive process underlying the FIB effect.

Experiment 3

Method

Participants and procedure. A photograph of a horse was photo-edited to produce two different images (randomly assigned the names “Rod” and “Red”). Four different views of each horse were created. Red and Rod were shown sequentially for 4 seconds per view (a total of 16 seconds each). Forty-two participants viewed the two horses in sequence and then completed automatic and deliberate measures of preference. Automatic preference was measured with the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998). The IAT assessed the degree to which Red versus Rod was spontaneously associated with positive and negative attributes, with order of first pairings (Red+Better; Rod+Worse) counterbalanced. The difference in average response latency to the paired blocks was divided by the pooled *SD* yielding an index of implicit preference (D-score; Greenwald, Nosek, & Banaji, 2003).

Deliberative, self-reported preference was measured with: (a) a 7-point scale labeled “I strongly prefer Red to Rod,” to “I strongly prefer Rod to Red”; (b) two “feeling

thermometers" of Red and Rod preference from 0 (*cold*) – 100 (*warm*); the difference between the two thermometers was *z*-scored and averaged with the *z*-scored 7-point rating item. Both explicit and implicit measures contained a midpoint of zero indicating no preference.

Results and Discussion

Participants preferred the horse viewed first rather than second on the measure of implicit preference, $F(1, 38) = 5.42$, $p < .03$; Cohen's $d = .75$ (Figure 1). There was no such effect of primacy on self-reported preference, $F(1, 32) = .01$, $p = .94$; $d = .04$. The results suggest that the first is best effect (FIB) is detected on an automatic, less conscious measure of preference but absent when conscious correction is possible.

Experiment 4

In Experiment 4 we re-tested the effect, this time counterbalancing the order of implicit and explicit preference measures to be sure that absence of the FIB effect on the explicit measures were not sue to their fixed second position. Additionally, we tested FIB on preference for humans in contexts that are both more commonplace and consequential for the decision-maker.

Method

Participants and procedure. One hundred thirty-two participants were presented with pairs of teams (the "Hadleys" and the "Rodsons"), male salespersons ("Jim" and "Jon"), and female salespersons ("Lisa" and "Lori"), using four picture exemplars of each (a within-participants design across the three tasks). Team-member names were balanced for word-length and letter usage and faces were balanced within pair for attractiveness and emotional expression. The names Jim/Jon and Lisa/Lori were

randomly assigned to photographs. Participants were presented sequentially with two items within each pair. Order of pairs and preference measures (automatic and deliberate) were counterbalanced. Ordering of the implicit preference measure's pairings (e.g., Lisa+Better and Lori+Worse versus Lisa+Worse and Lori+Better) was also counterbalanced.

Results and Discussion

Repeated measures ANOVA across pairs revealed a main effect of primacy on automatic preference. Items viewed first elicited greater preference than items viewed second, $F(1, 128) = 15.15$, $p < .001$; $d = .70$ (Figure 2). Again, no such effect appeared on the measure of deliberate preference, $F(1, 130) = .08$, $p = .78$; $d = .06$.

Data from Experiments 1 – 4 taken together suggest that firsts are preferred in a variety of rapid choices, across experimental and field contexts, and across different methodological approaches to measuring rapid choice. Such a result suggests that whatever the cause of preference for firsts, when asked to deliberate about the choice, such an irrational preference for firsts vanishes. However, none of these experiments were consequential to the decision maker or another individual. Would the first is best effect hold up when the decision is about something important, even life changing to another person? Further, all of the preference items in Experiments 1 – 4 were mildly positive: sugary gum and candy, pleasant looking animals, moderately attractive individuals and groups of people. Is it possible that firsts merely polarize the baseline evaluation of the stimulus?

Experiment 5

Experiments 1 – 4 demonstrated the FIB effect on rapid choice while leaving open a plausible alternative explanation. What appears to be FIB may actually be a polarization of the initial preference state. That is, whatever the baseline evaluation of the item, its first position may simply exaggerate that evaluation. All stimuli used in Experiments 1 – 4 were affectively neutral, even mildly positive. It may well be that what appears to be a FIB effect is really just that first position accentuates the baseline evaluation. An obvious test of this alternative explanation is to start out with stimuli that are evaluatively negative and test whether the item in first position (a) becomes more negative as a function of its primacy, supporting the accentuation hypothesis or (b) becomes less negative, supporting an FIB account. It was also important to test the FIB effect in a higher-stakes context.

Method

Participants and procedure. Two criminals' photographs, from the publicly available Florida Department of Corrections website (www.dc.state.fl.us) were used, depicting 27 year-old White males wearing identical correctional facility outfits. Criminals were pre-tested to be equally attractive and showing neutral facial expressions.

Thirty-one participants learned that evidence suggests that people can make accurate "snap" judgments of others after limited exposure to them and were asked to evaluate two criminals and to determine the better and worse candidate for parole. Participants viewed two criminals, randomly assigned the names Jon and Jim, and completed automatic and deliberate measures of preference. Automatic preference measured participants' response-time in associating Jim and Jon with the positive and negative attributes "Better" and "Worse." As in previous experiments, order of pairing

(e.g., Jim+Better and Jon+Worse) was counterbalanced. Two deliberate preference measures were administered: one asked for a "gut reaction" about "which candidate do you judge to be the better candidate for parole?"; the other for a warm-cold judgment of the criminals.

Results and Discussion

In Experiment 5, the criminal encountered first was considered to be the better candidate for parole. The FIB effect on automatic preference was significant, $F(1, 29) = 4.31$, $p < .05$; $d = .77$ (Figure 3). Overall, no effect of primacy on the overall measure of deliberate preference was observed, $F(1, 27) = 1.52$, $p = .19$; $d = .47$. Interestingly, on one of the two deliberate measures, the "gut" reaction to parole worthiness, first was also better: $F(1, 29) = 4.46$, $p < .05$; $d = .75$. On the thermometer measure no such effect was observed.

The main purpose of Experiment 5 was to provide and test an alternative hypothesis that primacy simply renders a more extreme assessment of the initial evaluation regardless of whether it is good or bad. Experiment 5 showed that such an alternative was not a viable hypothesis. Although both individuals were criminals of equivalent stature, the one that was presented first was preferred as judged by a higher rating of "fit for parole".

Experiment 6

In addition to the choice of trivial items like chewing gum, Experiment 5 showed that FIB is observed on a choice that is socially significant. Before any strong conclusions are reached about such a possibility, it is important to replicate Experiment 5 with an additional, even stricter test of the hypothesis. Thus, Experiment 6 replicated

Experiment 5 with a number of modifications: (1) black criminals were used instead of white criminals to test the generalizability of the effect and to further polarize the negativity of the baseline evaluation (given many individuals show some degree of anti-black bias), (2) order of the automatic and deliberate measures were counterbalanced, (3) five different deliberate measures were used to explore whether the single deliberate FIB effect observed in Experiment 5 would re-emerge, (4) all measures asked specifically about fitness for parole—not general preference. For example, the automatic measure included the category labels "better for parole" and "worse for parole" instead of "better" and "worse" used in Experiment 5.

Method

Participants and procedure. Two criminals' photographs, from the publicly available Florida Department of Corrections website (www.dc.state.fl.us), were used, depicting 29 year-old Black males wearing identical correctional facility outfits. Criminals were pre-tested to be equally attractive and showing neutral facial expressions.

Twenty-four participants (7 Black, 12 White, and 5 "other") were provided the same instructions as in Experiment 5. In Experiment 6, however, the automatic and deliberate measures were counterbalanced. Additionally, the automatic measure of parole preference paired Jim and Jon with "Better for Parole" and "Worse for Parole." As in previous experiments, order of pairing (e.g., Jim+Better for Parole and Jon+Worse for Parole) was counterbalanced. There were 5 different deliberate questions asked: (1) "gut" judgment that Jim should be released on parole (yes/no), (2) "gut" judgment that Jon should be released on parole (yes/no), (3) "gut" judgment of whom should be released on parole? (Jim/Jon), (4) 7-point rating of "gut reaction" to whom should be

released on parole (strongly prefer Jim to Jon for parole release – strongly prefer Jon to Jim for parole release), and (5) how warmly do you feel (on a scale from 1-100) toward the idea of Jim being released on parole; how warmly do you feel (on a scale from 1-100) toward the idea of Jon being released on parole (difference between responses served as the relative warmth toward Jim versus Jon).

Results and Discussion

In Experiment 6, the criminal encountered first was considered to be the better candidate for parole. The FIB effect on automatic parole-preference was significant, $F(1, 18) = 4.69$, $p < .05$; $d = .59$ showing that Jim was deemed a better candidate for parole when presented first (IAT D-score = .14) and Jon was a better candidate when presented first (IAT D-score = -.16). There were no FIB effects observed on any of the five deliberate parole worthiness questions; thus the single deliberate effect observed in Experiment 5 was likely obtained by chance. Because our sample included a number of non-white participants, we tested the effect of race and found no significant main effect or interaction (*p*s > .20).

Because an FIB effect emerged on one of the deliberate measures used in Experiment 5, five different deliberate measures were used in this study to determine whether the single deliberate effect could be replicated in this parole paradigm. No FIB effects were observed for any of the 5 deliberate measures: (1) “gut” judgment that Jim should be released on parole ($p > .69$), (2) “gut” judgment that Jon should be released on parole ($p > .43$), (3) “gut” judgment of whom should be released on parole ($p > .69$), (4) 7-point rating of “gut reaction” to whom should be released on parole ($p > .67$), and

(5) warmth toward parole release for Jim versus Jon ($p > .51$). Under rapid choice conditions, the FIB effect was confirmed again.

General Discussion

In six experiments, with tests using varied stimuli from nine different social and consumer-item categories (horses, female salespeople, male salespeople, teams, packages of gum, lollypops, pieces of gum, white criminals, and black criminals), we obtained a consistent result that the first of two items elicited greater preference simply by virtue of its position. The serial unfolding of information is a fundamental feature of experience (Simon, 1979) and therefore in the operation of perception, attention, memory, cognition and emotion. Indeed, firsts elicit greater attachment (Bolhuis, & Bateson, 1990; Jaynes, 1957; Johnson, 1992), render arguments more persuasive (Jersild, 1928; Knower, 1936; Lund, 1925), are better remembered (Atkinson & Shiffrin, 1968; Ebbinghaus, 1885; Insko, 1954; Miller & Campbell, 1959; Modigliani & Hedges, 1987; Pineño & Miller, 2005; Waugh & Norman, 1965; Wright, et al., 1985), cause stronger impression formation (Asch, 1946; Jones, et al., 1968; Krosnick, & Alwin, 1987; Luchins, 1957), and are more strongly linked to the self (Greenwald et al., 2002).

The data presented here suggest that firsts are also more likely to be chosen and preferred under rapid choice circumstances. That automatic measures of preference consistently detected such an effect is in line with many recent demonstrations of the sensitivity of such measures to information not within introspective access. That a “time pressure” choice task also detected the result suggests that the effect is not restricted to a response latency measure of automatic preference. There is growing evidence that implicit preferences play a role in decision-making, even those decisions that are of a

consequential nature. Specifically, research shows that automatic, less conscious, preferences predict whom will be hired (Rooth, 2008), and which politician will receive one's explicitly undecided vote (Arcuri, Castelli, & Amadori, 2008). Automatic measures also predict a variety of brand preferences and consumer behavior (Maison, Greenwald, & Bruin, 2004), especially and uniquely those decisions that involve social group-based discrimination contexts (Dovidio, Kawakami, & Gaertner, 2002; Fazio, & Olson, 2003). Further, Green, Carney, Pallin, Ngo, Raymond, Iezzoni, and Banaji (2007) showed that physicians' automatic social group preferences guide treatment decisions even though conscious statements indicate no desire to treat patients differently.

No single account can be offered at present for why exactly first is best, but speculation about various possibilities can be offered. Research on filial imprinting in non-human animals suggests that attachment to the first may have evolved as an adaptive mechanism to help organisms rapidly discriminate between those entities that are safe versus dangerous (Bolhuis & Bateson, 1990; Jaynes, 1957). Research on humans' innate preparedness to prefer their own (mother, family, social group), which is also the one encountered first, may account for the potential adaptive utility of FIB. Further, it may be the case that when the first in a category doesn't cause harm, it may come to signal a generally safe and positive category. FIB may have derived from the lowering of anxiety attributed to first experiences not leading to harm and as such signaling an important message about the safety of the remainder of the items encountered in that category. .

More simply, it may be that FIB derived from observations of phenomena like "pecking order"[2]; the animal that is "best" gets to eat first, the person of highest privilege

in a family or group is served first (kings, fathers, guests). Perhaps a preference for the first conferred an advantage in reciprocal preference by the first, leading FIB to have been a quality favored in natural selection. Additionally, “satisficing” as a decision-making rule places disproportionate importance on earlier items. The strategy is to stop the decision-making search with the first item that crosses a goodness threshold rather than “maximizing,” or systematically exploring the entire set prior to making a decision and perhaps the first item has advantage in posing the satisficing question most clearly (Simon, 1959). By forcing rapid decision, perhaps most people become satisficers because their ability to maximize has been taken away. Finally, research on comparative judgments shows the direction of a comparison between two items privileges the target of evaluation as the “gold standard” against which referent items are compared (Wanke, 1996; Wanke, Schwarz, & Noelle-Neumann, 1995). Although order effects have not been shown to account for direction of comparison findings (Wanke, 1996), the basic thrust of this and related work on similarity judgments (Tversky, 1977; Tversky & Gati, 1978) suggests that firsts may be the archetypal and thus chosen option to whatever question was posed.

Each such speculation offers the possibility that a general rule learned to associate first with best for good reason may come to be generalized and applied even when such a strategy is unwarranted. Future research will involve further tests of the generality of FIB in different samples and species because these are crucial to understanding the nature of the effect. If some of the above speculations are correct, FIB should emerge in infants and young children, as well as in other primates and animals.

Likewise, tests are needed to unlink the FIB effect from other primacy producing results. For example, further unlinking FIB from primacy in memory can be conducted by having later items in a series repeated more often (to enhance recency) and test whether even under such conditions a preference for first is retained.[3] Additionally, discovering how to turn off the automatic FIB bias, which leads rapid decisions astray, will also be of interest, even though the effect has proven to be resistant so far.

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Footnote

[1]Cochran's test = 4.19, $p < .05$, showed time-pressure condition moderated the relation between primacy and choice such that FIB only emerges under time-pressure.

[2]We thank Joshua Greene for this suggestion.

[3]We thank Jonathan Schooler for this suggestion.

Figure 1. The main effect of primacy on implicit preference for horses (“Red” vs. “Rod”). A score of zero indicates no preference. The bar on the left represents preference when “Red” was presented first. Positive values indicate an implicit preference for “Red” over “Rod.” The bar on the right represents preference when “Rod” was presented first. Negative values indicate a preference for “Rod” over “Red.” Error bars indicate standard error of the mean.

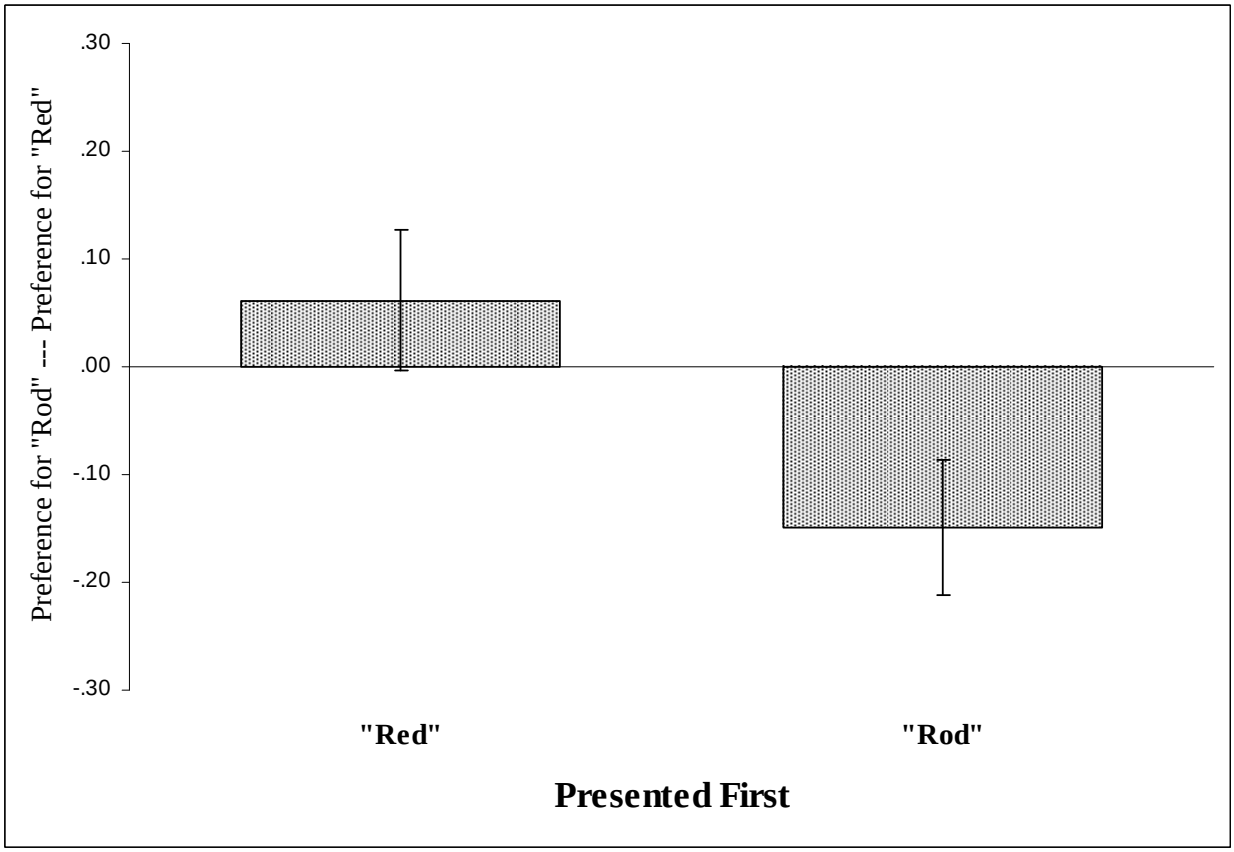

Figure 2. The main effect of primacy on implicit preference for the average across teams (Hadleys vs. Rodsons), males (Jim vs. Jon), and females (Lisa vs. Lori). The implicit preference measure is a relative measure such that a score of zero indicates no preference. The bar on the left represents preference when Hadleys, Jim, or Lisa were presented first. Positive values indicate the average implicit preference for Hadleys, Jim, and Lisa. The bar on the right represents preference when Rodsons, Jon, or Lori were presented first. Negative values indicate the average implicit preference for Rodsons, Jon, and Lori. Error bars indicate standard error of the mean.

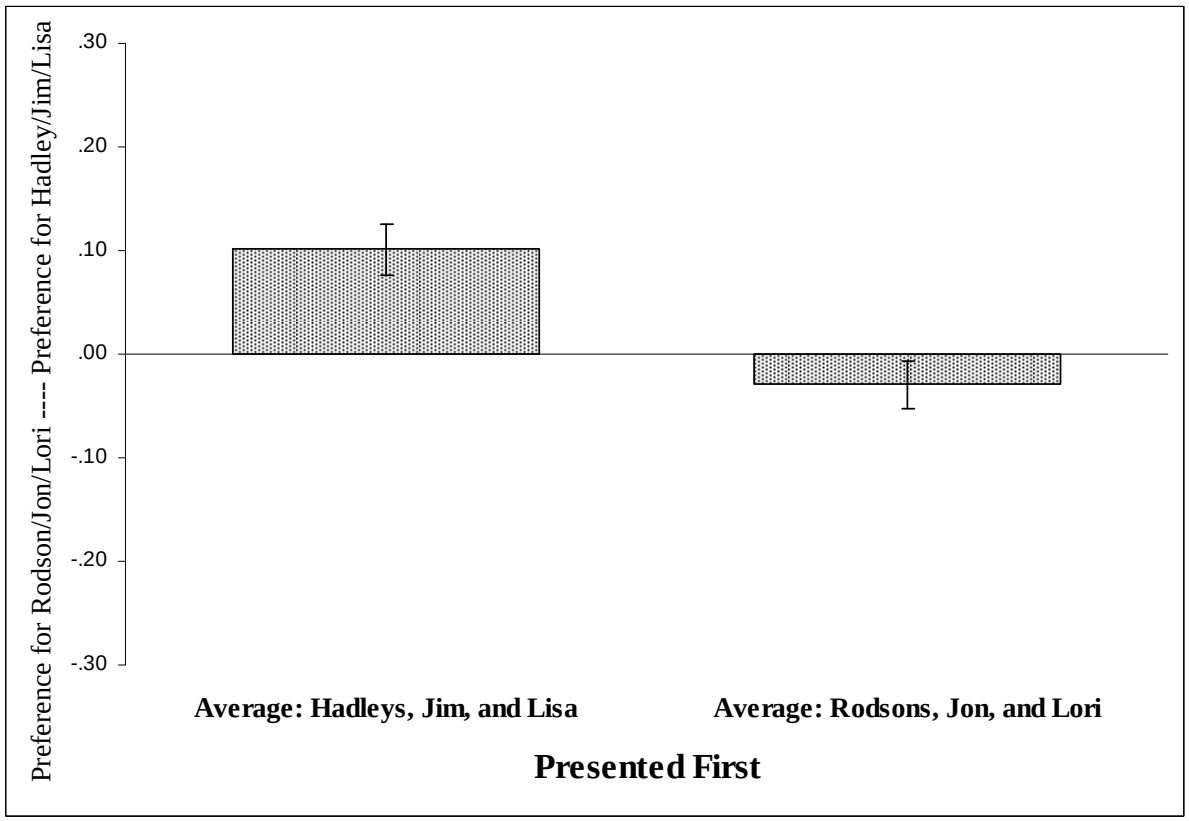

Figure 3. The main effect of primacy on implicit preference for criminals (Jim vs. Jon). A score of zero indicates no preference. The bar on the left represents preference when Jim was presented first. Positive values indicate an implicit preference for Jim over Jon. The bar on the right represents preference when Jon was presented first. Negative values indicate a preference for Jon over Jim. Error bars indicate standard error of the mean.