Are Actions Better than Inactions?

Positivity, Outcome, and Intentionality Biases in Judgments of Action and Inaction

Aashna Sunderrajan & Dolores Albarracín

Department of Psychology

University of Illinois at Urbana-Champaign

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Abstract

Behavior varies along a continuum of activity, with effortful behaviors characterizing *actions* and restful states characterizing *inactions*. Despite the adaptive value of both action and inaction, we propose three biases that, in the absence of other information, increase the probability that people like, and want to pursue, action more than inaction: An *action positivity bias*, an *action outcome bias*, and an *action intentionality bias*. Across four experiments, participants not only evaluated actions more favorably than inactions (Experiment 1-3) but also chose to engage in actions more than inactions (Experiment 4). This action positivity bias was driven by the two interrelated biases of outcome positivity and intentionality (Experiments 1-3), such that actions (versus inactions) were spontaneously thought of as having more positive outcomes and as being more intentional. Moreover, these outcome differences played a stronger role in the action positivity bias than did the intentionality differences (Experiment 3). As balancing action and inaction is important for healthy human functioning, it is important to understand evaluative biases in this domain. All experiments were preregistered, and one involved a nationally representative sample.

Keywords: action, inaction, bias, evaluation, outcome, intentionality

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Human behavior varies along a continuum of activity, with effortful behaviors characterizing *actions* and restful states characterizing *inactions* (Albarracín, Sunderrajan, et al., 2018; Albarracín et al., 2019; McCulloch et al., 2012; Zell et al., 2013). Despite the adaptive value of both action and inaction (see Albarracín, 2020; Albarracín et al., 2019), there is tentative evidence that people like action more than inaction. For example, in April 2015, Reddit launched an April Fool's joke called "The Button" (Hern, 2015). It involved a button and 60 second timer that reset each time a person, anywhere in the world, pressed this button. Although seemingly straightforward, it took two months before the countdown was able to reach zero. Why did people pursue such an inconsequential action? Did pressing this button appear to have more positive outcomes than not pressing it? Did pressing this button feel more intentional than not pressing it? If both, did positive outcomes or intentionality matter more? Although the literature has offered some hints, there are surprisingly no clear answers to these important questions. In this paper, we examined this action positivity bias and its behavioral consequences. In addition, we proposed and examined two biases that, in the absence of information, should increase the probability that people will like, and want to pursue, action over inaction: An *action outcome bias* and an *action intentionality bias*.

Action Positivity, Action Outcome, and Action Intentionality Biases

According to the classic assumptions in decision making, people make behavioral decisions based on their evaluation of the outcomes of a behavior (Ajzen et al., 1980; Ajzen et al., 2019; Bar-Eli et al., 2007; Fishbein & Ajzen, 2011; Karsh et al., 2016; Osgood, 1962). For example, when people are given the option to choose between *A* and *B*, and are informed that

both will lead to a negative outcome, the probability between choosing one or the other should be equal. Contrary to this expectation, however, the outcomes of action and inaction are assessed differently, generating different emotional responses, even when their outcomes are the same (see *action effect*, Kahneman & Tversky, 1982; *omission bias*, Ritov & Baron, 1990; Spranca et al., 1991; *actor effect*, Landman, 1987; see also Rosen, 2003 for Mill's notions of utilitarianism on action, which describes how actions are right in proportion to how much happiness they promote).

One asymmetry between action and inaction is that people choose inaction over action when the action is costly (e.g., Baron & Ritov, 2004; Kahneman & Tversky, 1982; Ritov & Baron, 1990; Spranca et al., 1991), or there is uncertainty about the outcome of the action (e.g., Feldman et al., 2018; Tversky & Kahneman, 1991, 1992). Therefore, when given the option, people prefer harm by omission (e.g., withholding the truth) over harm by commission (e.g., lying; *omission bias*, Baron & Ritov, 2004; Ritov & Baron, 1990; Spranca et al., 1991), often because they regret an action with negative outcomes more than an inaction with negative outcomes (*action effect*; Kahneman & Tversky, 1982; for an analysis of how exceptions to the norm contribute to regret for action and inaction, see Feldman & Albarracín, 2017; Fillon et al., 2020). The other proposed asymmetry is that people choose action over inaction when they expect positive outcomes from the action (Kahneman & Tversky, 1982; Landman, 1987). Here, people anticipate greater pleasure, and perhaps pride, when they expect to achieve positive outcomes through an action than through an inaction (*actor effect*, Landman, 1987). Hence, they make a choice that leads to more pleasure and better outcomes.

Although this past research has identified some specific asymmetries, it has not examined evaluations and choices concerning action and inaction in the absence of evaluative information

about the outcomes of these behaviors. First, emotions rather than evaluations have typically been measured. Second, the studies of regret have involved harm (e.g., Baron & Ritov, 2004; Kahneman & Tversky, 1982; Ritov & Baron, 1990; Spranca et al., 1991) or risk (e.g., Feldman et al., 2018; Tversky & Kahneman, 1991, 1992), whereas the studies of anticipated pleasure have involved positive outcomes (Landman, 1987). Therefore, the evaluations of action and inaction in the absence of evaluative information about their outcomes, and the degree to which people anticipate more or less positive outcomes for action and inaction, have not been ascertained.

Therefore, this paper concerns how relatively neutral actions and inactions are evaluated. Imagine that participants are presented with the classic Kahneman and Tversky (1982) investment scenario describing two stock traders working for a financial firm: One who switches investments (the action condition) and one who refrains from switching investments (the inaction condition). Participants are then told that both stockbrokers earn as much money as they initially invested, breaking even. In this scenario, will participants' evaluation of the stockbrokers' behavior still vary as a function of whether the behavior is an action or an inaction? Is there an action positivity bias in the absence of outcome information?

Some research suggests that action is indeed more positive than inaction, but this research has either not been conclusive, or it has not examined specific behaviors. For example, work by McCulloch and colleagues (2012) shows that verbs and nouns related to action are perceived as more positive than verbs and nouns related to inaction. Yet, many of the words used in this research had evaluative implications, such as *dance*, *create*, and *connect* (words with positive evaluations), or *hit*, *bored*, and *judge* (words with negative evaluations). Other research has shown more positive general attitudes toward action and inaction, especially in Western cultures (Ireland et al., 2015; McCulloch et al., 2012; Zell et al., 2013). These notions of action and

inaction, however, were abstract (e.g., *action is important in people's lives* and *inaction offers many benefits*) and connected to the Protestant work ethic (see McCulloch et al., 2012). Therefore, they did not represent evaluations of mundane actions.

There is also research that shows that, when given the option to do nothing but spend time thinking, people choose both actions like reading a book and receiving electric shocks (Wilson et al., 2014). Although superficially this evidence might suggest that people prefer action over inaction, a closer look does not support this idea. First, reading a book and receiving an electric shock are not necessarily active, nor is thinking necessarily passive. In fact, the study by McCulloch and colleagues (2012) showed that words like *decide* and *plan,* which are forms of thinking, were perceived as actions. Therefore, the work by Wilson and colleagues (2014) likely does not compare action with inaction, but rather, different levels of stimulation or the greater feelings of boredom or dread associated with the challenges of thinking versus receiving an electric shock (see Pfattheicher et al., 2020 for the association between boredom and sadistic behaviors). Hence, establishing if action is more positive than inaction when no outcomes are presented remains critical to our understanding of decision making in this context.

In this paper, we hypothesized that, in the absence of any information about a behavior, people would evaluate action as more positive than inaction due to two related biases: An action outcome bias and an action intentionality bias. When people are asked to evaluate a behavior, they base their decision on what outcome it produces (Baron & Hershey, 1988; see Kahneman & Tversky, 1979 for the importance of outcome information in framing effects), and, importantly, place greater weight on positive outcomes when making these evaluations (Baron & Hershey, 1988; Hastie & Dawes, 2009). Moreover, when people are asked to explain why they would engage in a behavior, they spontaneously come up with positive outcomes for actions and

negative outcomes for inaction (Albarracín, 2020). These evaluative outcomes become salient even if no outcome information is provided and may provide the foundation for the action positivity bias (Albarracín, 2020; Sunderrajan & Albarracín, 2020). This paper examines a possible action outcome bias in relation to an action positivity bias.

Another important issue about judgments of action and inaction is that action may be perceived as more intentional than inaction. For example, when participants are presented with sentences that make use of either mental verbs (e.g., *like*, *notice*) or behavioral verbs (e.g., *help*, *cheat*), greater causal weight is given to the agent of the argument when using a behavioral verb (e.g., *Ted* in *Ted helps Paul*), relative to those sentences using mental verbs (Brown & Fish, 1983). Cursorily, these findings show that greater causal weight is given to the agent of the argument when using verbs that are more active.[1] This perception may be because people pay more attention to dynamic objects, such as objects that move, and to goals involving action (Albarracín et al., 2019). Furthermore, paying attention to any behavior often leads to attributing more intentionality to it (Malle & Knobe, 1997), an attribution that happens automatically (*intentionality bias*, Rosset, 2008). For example, descriptions of behaviors like "She set the table," or "She scratched herself" can have dual meanings. "Scratching oneself" may be due to an intentional behavior when somebody is bitten by a mosquito, or accidental when somebody hits a sharp corner. However, people who read descriptions of these behaviors are more likely to think that the behaviors are intentional, even if they could have occurred accidentally (Rosset, 2008). Although Rosset's work provides hints of an association between behavior and intentionality, the research does not explicate the relation between action/inaction biases and

[1] This work, however, fails to show how differences in behavior (action, inaction) affect evaluation, and instead, places more emphasis on how differences in verb usage can affect the grammatical weight given to agents in arguments.

intentionality. Rosset (2008) only used examples of actions, which in all cases appeared intentional in the absence of information about whether they were intentional or accidental. This paper examines whether actions are automatically seen as more intentional and if this action intentionality bias is associated with an action positivity bias.

The Relation between the Action Positivity, Action Outcome, and Action Intentionality Biases

An important goal of our research involved understanding the *relation* between the proposed action positivity bias, action outcome bias, and action intentionality bias. On the one hand, these biases could all occur in parallel. The Protestant social ethic that permeates Western cultures prescribes work and condemns laziness (Miller et al., 2002). Therefore, the greater effort and intent involved in actions could result in people finding actions more desirable and more conducive to positive outcomes than inactions. The *IKEA effect* (Norton et al., 2012) refers to situations in which merely investing effort leads to more positive evaluations of an object. For example, when participants built a storage box (versus simply inspecting one that had already been built), they were not only willing to pay more for it but also liked it more (Norton et al., 2012; see also Aronson & Mills, 1959; Brehm et al., 1983). In other words, changes to the positivity, outcome, and intentionality of actions and inactions may all coexist without either outcomes or intentionality judgments being the primary driver of differences in evaluations of action and inaction.

On the other hand, either the action outcome bias or the action intentionality bias could be primary. Observing that we intentionally pursue behaviors we like (Ajzen et al., 2019), the action outcome bias could produce the action positivity bias. We might conclude that if an action has positive outcomes, it is positive and also intentional. Correspondingly, if an inaction has

negative outcomes, we might conclude that it is negative and also unintentional. In contrast, observing that we intentionally perform behaviors to seek positive outcomes, we might conclude that if an action is intentional, it will have positive outcomes and thus be positive overall (for the creation of "if-then" implicational molecules based on observing regular patterns, see Wyer, 2019; Wyer & Albarracín, 2005). Similarly, we might conclude that if an inaction is unintentional, it will have negative outcomes and thus be negative overall. The research we report in this paper was conducted to explore these mutual influences and determine the extent to which outcomes or intentionality judgments influence evaluations of action and inaction.

The Present Research

This research was designed to create a strong experimental paradigm to examine the concepts of action, outcome, and intentionality. Although some past research suggests associations of action with outcome positivity and intentionality judgments, these biases have not been directly demonstrated nor have the underlying processes been investigated. Therefore, the present research examined these biases and their interrelations by carefully manipulating action and inaction, outcomes, and intentionality in the context of mundane behaviors like flipping a switch and pressing a button. Experiment 1 was designed to empirically assess whether manipulating outcome positivity affected evaluations of action and inaction. We manipulated action and inaction, as well as the valence of the outcomes (positive, negative, and unspecified), and measured evaluations and intentionality. Experiment 2 implemented some of the procedures of Experiment 1, but also assessed if manipulating intentionality affected evaluations of action and inaction. We manipulated action and inaction, as well as intentionality (high, low, and unspecified), and measured evaluations and intentionality. Experiment 3 combined the procedures of Experiment 1 and 2 to assess the relative role of outcomes and intentionality in

producing evaluations of action and inaction. We manipulated action and inaction, the valence of the outcomes (positive, negative, and unspecified), and intentionality (high, low, and unspecified), and compared their effects on evaluations of action and inaction. Experiment 4 tested the implications of the action positivity bias on behavior, by examining whether people showed a preference for action versus inaction in behavioral choices. All experiments were preregistered and appropriately powered.

Experiment 1

Experiment 1 was designed to empirically assess the presence of an action positivity bias, an action outcome bias, and an action intentionality bias, and to begin to understand the relation between the three. We hypothesized that in the absence of information about the outcome of a behavior (a) actions would be judged as more positive (action positivity bias) and more intentional (action intentionality bias) than inactions and (b) actions would be expected to have more positive outcomes and inactions to have more negative outcomes (action outcome bias). In contrast, in the presence of outcome information, (c) evaluations of actions and inactions would be based on whether the resultant outcome was positive or negative. That is, evaluations of actions paired with a negative outcome would be judged more negative than evaluations of inactions paired with a negative outcome, whereas evaluations of actions paired with a positive outcome would be judged more positive than evaluations of inactions paired with a positive outcome. We predicted that this pattern might hold for intentionality as well. All measures, manipulations, and exclusions are reported below.

Method

Preregistration

The design, hypotheses, and analysis plan were all preregistered at the Open Science Framework (https://osf.io/tb6r2/?view_only=52728760eb9d4582a23189f1283c4f94).

Power Analysis

This experiment employed a 2 (behavior: flipping a switch, not flipping a switch) x 3 (outcome: positive, negative, unspecified) between-subjects design. As our hypotheses were presented in univariate terms (predicting main effects and interactions for each outcome separately), this power analysis was based on the univariate results of a pilot study that employed the same design.[2] A $d_f = 0.18$ (a small effect, according to Cohen's 1992 effect size convention) was chosen because it was the size of the smallest effect across all univariate analyses observed in the pilot study. An $\alpha = 0.01$ was chosen to minimize the likelihood of false positives. Thus, to determine the sample size needed to detect an effect of this size in Experiment 1, a power analysis was conducted for our factorial design, with $\alpha = 0.01$, power = 0.80, number of groups = 6, and a $d_f = 0.18$. This analysis revealed that the required sample size was $N = 458$.

Participants

Four hundred and sixty-five participants, recruited from Amazon Mechanical Turk, participated in exchange for 75 cents. To be eligible for participation, individuals had to be 18 years of age or older and current residents of the United States. To control for data quality, we included a qualification that prevented the same participants from completing the experiment more than once. A sensitivity analysis with $\alpha = 0.01$, power = 0.80, number of groups = 6, and our actual sample size revealed that we could detect a minimum effect of $d_f = 0.17$. The sample

[2] Based on a multivariate test, with $\alpha = 0.01$, power = 0.80, number of predictors = 2, number of groups = 6, number of outcomes = 3, and a $f^2(V) = 0.03$, our required sample size was $N = 319$.

consisted of 202 females (263 males), and ranged in age from 19 to 74 (M = 32.27, SD = 10.65). Informed consent was obtained from all participants before proceeding with the experiment.

Procedure

Participants were randomly assigned to one of six conditions in a 2 (behavior: flipping a switch, not flipping a switch) x 3 (outcome: positive, negative, unspecified) between-subjects design. All participants were told, "*Imagine yourself flipping [*or *not flipping] a switch.*" Participants in the positive- and negative-outcome conditions were given additional information. Participants in the positive-outcome condition read:

> *Imagine yourself **flipping a switch** as you leave a room. When you flip the switch, you **turn off the lights** in the (now empty) room. You end up **conserving some energy**.*

In contrast, participants in the negative-outcome condition read:

> *Imagine yourself **flipping a switch** as you leave a room. When you flip the switch, you **turn on the lights** in the (now empty) room. You end up **wasting some energy**.*

Participants in the unspecified-outcome condition were presented with the behavior alone, with no additional information on the outcome. This three-level manipulation thus served to modify the outcome information associated with each behavior.

After reading the assigned behavior, participants provided various ratings. Participants were asked to rate the level of action involved in the behavior on two scales from 1 (*complete inaction/completely passive*) to 7 (*complete action/completely active*), which served as a manipulation check. Participants were asked to evaluate the behavior on two scales from 1 (*completely negative/completely not desirable*) to 7 (*completely positive/completely desirable*). Participants were also asked to rate the intentionality of the behavior on two scales from 1 (*complete absence of a goal/no intention to achieve something*) to 7 (*full presence of a*

goal/strong intention to achieve something). Each set of items correlated highly and were averaged to form three indices (action: $r(462) = .85$, evaluation: $r(462) = .88$, intentionality: $r(462) = .86$). Participants were then asked to complete individual difference measures. These measures included the Action-Inaction Value Scale, Temporal Action Initiation Scale (Freitas et al., 2002), Impulsive Decision Making Scale (Hinson et al., 2003), Unethical Decision Making Scale (Detert et al., 2008), and the State Self-Control Capacity Scale (Twenge et al., 2004). As data on these scales were collected for exploratory work to be used in future projects, they are not included in any of the analysis below. Upon the completion of these measures, participants were debriefed and thanked for their participation.

Results

Manipulation Checks

We first performed checks to determine if each of our manipulations had the intended effect. Results supported the conclusion that all manipulations worked as expected.

The effect of the behavior manipulation. An independent samples *t*-test was conducted to gauge differences in rated action or inaction across the two behavioral conditions. As intended, the behavior describing an action was perceived as more active ($M = 5.69$, $SD = 1.37$) than the behavior describing an inaction ($M = 3.35$, $SD = 2.09$), $t(462) = 14.26$, $p < .001$, $d = 1.32$.

The effect of the outcome manipulation. An analysis of variance was conducted to detect differences in evaluations across the three outcome conditions. Participants evaluated a behavior paired with positive outcome information ($M = 6.11$, $SD = 1.21$) most positively, followed by unspecified outcome information ($M = 4.87$, $SD = 1.24$), and then by negative outcome information ($M = 3.16$, $SD = 1.91$); $F(2, 461) = 151.64$, $p < .001$, $d = 1.40$.

Experimental Effects

A multivariate analysis of variance was conducted to determine whether there were differences in evaluations and intentionality as a function of the two-level (action, inaction) behavior condition and the three-level (positive, negative, unspecified) outcome condition.[3] As shown by the *F*-ratios, there was a significant interaction between behavior and outcome information for both evaluations and intentions, $F(6, 914) = 5.93$, $p < .001$, $d = 0.99$. We describe these findings below in relation to the questions guiding this research. Table 1 presents the *M*s, *SD*s, *t*-tests for pairwise contrasts, and *F*-ratios corresponding to these analyses.

[3] In Experiments 1-3, our analyses were preregistered as a multivariate analysis of variance because that is how we obtained the analyses of variance results even though the focus of our experiments was not on the multivariate test. For completion, however, we report the multivariate interaction for each experiment.

Table 1

Ms, SDs, *and* F-*ratios for Experiment 1.*

Conditions and Statistics	Statistics		
	Evaluation		
	Flipping a Switch *M*(*SD*)	Not Flipping a Switch *M*(*SD*)	*t* for action vs inaction contrast
Descriptives			
Positive-outcome	6.40(0.81)	5.82(1.46)	3.07[0.50]**
Unspecified-outcome (control)	5.40(1.12)	4.34(1.13)	5.92[0.94]***
Negative-outcome	3.13(2.06)	3.19(1.77)	-0.17[0.03]
Contrasts for outcome conditions			
t for positive-outcome vs unspecified-outcome contrast	6.39[1.02]***	7.06[1.14]***	
t for unspecified-outcome vs negative-outcome contrast	8.54[1.38]***	4.86[0.78]***	
t for positive-outcome vs negative-outcome contrast	12.96[2.10]***	10.03[1.62]***	
Direct effects for outcome conditions			
F(2, 458) simple main effects for outcome	101.13[1.45]***	63.57[1.41]***	
Main effects and interactions			
F(1, 458) main effect: behavior	15.64[0.28]***		
F(2, 458) main effect: outcome	159.54[1.62]***		
F(2, 458) interaction: behavior x outcome	5.78[0.24]**		
	Intentionality		
	Flipping a Switch *M*(*SD*)	Not Flipping a Switch *M*(*SD*)	*t* for action vs inaction contrast
Descriptives			

Positive-outcome	5.64(1.45)	5.02(1.77)	2.36[0.38]*
Unspecified-outcome (control)	5.81(1.22)	3.59(1.94)	8.59[1.37]***
Negative-outcome	3.31(2.14)	3.10(1.83)	0.68[0.11]
Contrasts for outcome conditions			
t for positive-outcome vs unspecified-outcome contrast	-0.81[0.13]	4.77[0.77]***	
t for unspecified-outcome vs negative-outcome contrast	8.93[1.44]***	1.66[0.26]	
t for positive-outcome vs negative-outcome contrast	7.85[1.27]***	6.63[1.07]***	
Direct effects for outcome conditions			
F(2, 458) simple main effects for outcome	48.26[0.60]***	24.98[0.96]***	
Main effects and interactions			
F(1, 458) main effect: behavior	39.11[0.51]***		
F(2, 458) main effect: outcome	59.53[0.95]***		
F(2, 458) interaction: behavior x outcome	14.25[0.43]***		

Note. The *t*-statistic is reported for each of the differences based on planned contrasts. The simple effects report the *F* value for the simple effect of outcome under action and under inaction. The *F*-statistic is reported for each of the main effects and interaction. Values in brackets represent Cohen's *d* effect sizes. Asterisks represent the significance of the contrasts.
*** $p < .001$ ** $p < .01$ * $p < .05$

Whether an action positivity and an action intentionality bias are present is best answered by considering judgments of behavior when no additional information is provided. Thus, we first focused on the conditions with no information about the outcomes of a behavior. As shown in Table 1, when no outcome information was provided, participants evaluated actions as more positive than inactions and judged actions as more intentional than inactions. Therefore, in the absence of outcome information, the answer to our first question is yes, indicating both an action positivity bias and an action intentionality bias.

The manipulation of outcome information in Experiment 1 was introduced to determine whether the action positivity bias stems from people spontaneously associating positive or negative outcomes with a behavior. Thus, the larger difference in evaluations of actions and inactions should be present when no outcomes are described, which, as shown in Table 1, was the case. Moreover, the difference in the evaluations of actions and inactions was smaller when the outcomes were described as positive and nonsignificant when the outcomes were described as negative. In sum, it appeared that participants spontaneously imputed positive outcomes to actions and negative outcomes to inactions and that providing specific information about outcomes thus reduced the action positivity bias.

Moreover, Experiment 1 also examined if the action outcome bias influences the action intentionality bias. As shown in Table 1, the data supported this notion. Relative to participants in conditions without outcome information, participants perceived actions as less intentional when they were described as having a negative outcome and inactions as more intentional when they were described as having a positive outcome. Moreover, the difference in the intentionality of actions and inactions was smaller when the outcomes were described as positive and nonsignificant when the outcomes were described as negative.

Discussion

The purpose of Experiment 1 was to empirically evaluate the presence of an action positivity bias, an action outcome bias, and an action intentionality bias, and to begin to understand the relation between the three. We found that participants evaluated actions as more positive, and associated actions with more outcome positivity and intentionality, than inactions. This finding is remarkable because participants could have rationalized that they had good reasons to not flip a switch. However, they still evaluated not flipping a switch as more negative than flipping it. As the behavior used in this study was mundane, such a bias supports the notion of an inherent preference for action and an inherent association between action and outcome positivity and intentionality. Interestingly, the action positivity bias was smaller when both actions and inactions had positive outcomes and disappeared when both actions and inactions had negative outcomes. Moreover, the outcome positivity manipulation also affected perceived intentionality, suggesting that the action positivity bias can drive the action intentionality bias.

Experiment 2

Experiment 2 was designed to assess the degree to which differences in the perceived intentionality of action and inaction lead to corresponding evaluative differences between the two. We hypothesized that (a) when presented with behaviors not described as being intentional or unintentional, actions would be judged as more positive and more intentional than inactions. In contrast, (b) when presented with behaviors described as either intentional or unintentional, intentionality information would lead to differences in evaluation. Specifically, inactions associated with high intentionality would be perceived as more positive than inactions without intentionality information. Moreover, actions associated with low intentionality would be

perceived as more negative than actions without intentionality information. All measures, manipulations, and exclusions are reported below.

Method

Preregistration

The design, hypotheses, and analysis plan were all preregistered at the Open Science Framework (https://osf.io/srb7s/?view_only=fdeed2f3cd0c4166ad16603c460cf2ec).

Power Analysis

This experiment employed a 2 (behavior: pressing a button, not pressing a button) x 3 (intentionality: high, low, unspecified) between-subjects design. As our hypotheses were presented in univariate terms (predicting main effects and interactions for each outcome separately), this power analysis was based on the univariate results of a pilot study that employed the same design.[4] A $d_f = 0.19$ (a small effect, according to Cohen's 1992 effect size convention) was chosen because it was the size of the smallest effect across all univariate analyses observed in the pilot study. An $\alpha = 0.01$ was chosen to minimize the likelihood of false positives. Thus, to determine the sample size needed to detect an effect of this size in Experiment 2, a power analysis was conducted for a factorial design, with $\alpha = 0.01$, power = 0.80, number of groups = 6, and a $d_f = 0.19$. This analysis revealed that the required sample size was $N = 377$.

Participants

Three hundred and seventy-eight undergraduates, recruited from a Midwestern university subject pool, participated in exchange for partial course credit. Nine participants had missing values, resulting in a final sample size of $N = 369$. A sensitivity analysis with $\alpha = 0.01$, power =

[4] Based on a multivariate test, with $\alpha = 0.01$, power = 0.80, number of predictors = 2, number of groups = 6, number of outcomes = 3, and a $f^2(V) = 0.028$, our required sample size was $N = 342$.

0.80, number of groups = 6, and our actual sample size revealed that we could detect a minimum effect of d_w = 0.20. The sample included 244 females (125 males), and ranged in age from 18 to 27 years (M = 19.65, SD = 0.07). Informed consent was obtained from all participants before proceeding with the experiment.

Procedure

Participants were randomly assigned to one of six conditions in a 2 (behavior: pressing a button, not pressing a button) x 3 (intentionality: high, low, unspecified) between-subjects design. All participants were told, "*Imagine yourself pressing [*or *not pressing] a button.*" Participants in the high- and low-intentionality conditions were given additional information. Participants in the high-intentionality condition read:

> *Imagine yourself* ***pressing a button*** *because pressing it is consistent with a particular purpose you have. Imagine yourself pressing a button* ***in order to achieve a goal or purpose****. Imagine yourself pressing a button* ***intently, with a goal in mind****.*

In contrast, participants in the low-intentionality condition read:

> *Imagine yourself* ***pressing a button****, even though pressing it is not consistent with any particular purpose you have. Imagine yourself pressing a button* ***without a goal or purpose****. Imagine yourself pressing a button* ***incidentally, without a goal in mind****.*

Participants in the unspecified-intentionality condition were presented with the behavior alone, with no additional information on intentionality. This three-level manipulation was designed to modify the levels of intentionality associated with each behavior.

After reading the assigned behavior, participants provided various ratings of action, evaluation, and intentionality (see Experiment 1). Each set of items correlated highly and were averaged to form three indices (action: $r(367) = .64$, evaluation: $r(367) = .71$, intentionality:

r(367) = .81). Participants were then asked to complete individual difference measures (see Experiment 1). As data on these scales were collected for exploratory work to be used in future projects, they are not included in any of the analysis below. Upon the completion of these measures, participants were debriefed and thanked for their participation.

Results

Manipulation Checks

We first performed checks to determine if each of our manipulations had the intended effect. Results supported the conclusion that all manipulations worked as expected.

The effect of the behavior manipulation. An independent samples *t*-test was conducted to gauge differences in rated action or inaction across the two behavioral conditions. As predicted, the behavior describing an action was perceived as more active ($M = 4.90$, $SD = 1.64$) than the behavior describing an inaction ($M = 3.44$, $SD = 1.58$), $t(367) = 8.72$, $p < .001$, $d = 0.91$.

The effect of the intentionality manipulation. An analysis of variance was conducted to detect differences in intentionality across the three intentionality conditions. Intentionality was rated as highest when a behavior was associated with high intentionality ($M = 5.29$, $SD = 1.44$), followed by unspecified intentionality ($M = 4.28$, $SD = 1.80$), and then by low intentionality ($M = 2.50$, $SD = 1.61$); $F(2, 366) = 93.41$, $p < .001$, $d = 1.17$.

Experimental Effects

A multivariate analysis of variance was conducted to determine whether there were differences in intentionality and evaluation as a function of the two-level (action, inaction) behavior condition, and the three-level (high, low, unspecified) intentionality condition. As shown by the *F*-ratios, there was a significant interaction between behavior and intentionality information for both evaluations and intentions, $F(6, 724) = 6.28$, $p < .001$, $d = 1.00$. We

describe these findings below in relation to the questions guiding this research. Table 2 presents the *M*s, *SD*s, *t*-tests for pairwise contrasts, and *F*-rations corresponding to this analysis.

Table 2

Ms, SDs, *and* F-*ratios for Experiment 2.*

Conditions and Statistics	Statistics		
	Evaluation		
	Pressing a Button *M*(*SD*)	Not Pressing a Button *M*(*SD*)	*t* for action vs inaction contrast
Descriptives			
High-intentionality	5.55(1.10)	4.46(1.47)	4.71[0.84]***
Unspecified-intentionality (control)	4.71(1.01)	3.82(0.94)	5.04[0.91]***
Low-intentionality	3.54(1.32)	3.57(1.21)	-0.12[0.02]
Contrasts for intentionality conditions			
t for high-intentionality vs unspecified-intentionality contrast	4.43[0.79]***	2.84[0.52]**	
t for unspecified-intentionality vs low-intentionality contrast	5.60[1.00]***	1.28[0.23]	
t for high-intentionality vs low-intentionality contrast	9.29[1.66]***	3.64[0.66]***	
Direct effects for intentionality conditions			
F(2, 363) simple main effects for intentionality	45.31[1.20]***	9.07[0.64]***	
Main effects and interactions			
F(1, 363) main effect: behavior	27.58[0.48]***		
F(2, 363) main effect: intentionality	45.85[0.95]***		
F(2, 363) interaction: behavior x intentionality	7.70[0.36]**		
	Intentionality		
	Pressing a Button *M*(*SD*)	Not Pressing a Button *M*(*SD*)	*t* for action vs inaction contrast
Descriptives			

High-intentionality	5.67(1.15)	4.90(1.60)	3.13[0.56]**
Unspecified-intentionality (control)	4.90(1.83)	3.62(1.53)	4.20[0.76]***
Low-intentionality	2.32(1.57)	2.69(1.65)	-1.27[0.23]
Contrasts for intentionality conditions			
t for high-intentionality vs unspecified-intentionality contrast	2.83[0.50]**	4.48[0.82]***	
t for unspecified-intentionality vs low-intentionality contrast	8.53[1.52]***	3.18[0.59]**	
t for high-intentionality vs low-intentionality contrast	13.71[2.44]***	7.47[1.36]***	
Direct effects for intentionality conditions			
F(2, 363) simple main effects for intentionality	79.31[1.32]***	30.34[1.11]***	
Main effects and interactions			
F(1, 363) main effect: behavior	12.00[0.29]**		
F(2, 363) main effect: intentionality	99.30[1.42]***		
F(2, 363) interaction: behavior x intentionality	8.93[0.35]***		

Note. The *t*-statistic is reported for each of the differences based on planned contrasts. The simple effects report the *F* value for the simple effect of intentionality under action and under inaction. The *F*-statistic is reported for each of the main effects and interaction. Values in brackets represent Cohen's *d* effect sizes. Asterisks represent the significance of the contrasts.
*** $p < .001$ ** $p < .01$

As in Experiment 1, we first tested for the action positivity bias and action intentionality bias by examining evaluation and intentionality when no additional information was provided. As shown in Table 2, when no information about intentionality was provided, participants evaluated actions as more positive than inactions and judged actions as more intentional than inactions. Therefore, in the absence of information about intentionality, the answer to our first question is yes, supporting both an action positivity bias and an action intentionality bias.

Experiment 2 also examined if the action intentionality bias affects the action positivity bias. As shown in Table 2, our results supported this hypothesis. Participants evaluated actions as more negative when they were described as having low intentionality than when intentionality was not described. Participants also evaluated inactions as more positive when they were described as having high intentionality than when intentionality was not described. For this reason, the difference in the evaluations of actions and inactions was smaller when intentionality was described as high than when it was not described. Moreover, the difference in the evaluations of actions and inactions was smaller when intentionality was described as low than when it was not described.

Discussion

The purpose of Experiment 2 was to assess if perceived intentionality differences contribute to evaluative differences between actions and inactions. The results replicated the action positivity and action intentionality biases found in Experiment 1. Moreover, we found that actions were perceived as more positive than inactions because actions are perceived as more intentional than inactions. Therefore, when actions are associated with lower intentionality and inactions are associated with higher intentionality, the action positivity bias disappears.

Experiment 3

Experiments 1 and 2 assessed the relative roles of outcome and intentionality information on the action positivity bias. However, neither experiment obtained evidence about the relative weight of outcome and intentionality information because neither manipulated both factors within the same experiment. Thus, Experiment 1 showed that spontaneous thoughts about outcomes led actions to appear more positive than inactions, but it is possible that intentionality was equally or more important. Likewise, Experiment 2 showed that spontaneous thoughts about intentionality led actions to appear more positive than inactions, but it is possible that outcomes were equally or more important. Hence, Experiment 3 filled this gap. In this experiment, we retested the hypotheses of the prior experiments, but also sought to determine the weight of outcome and intentionality information in influencing evaluations of behavior. In particular, we sought to determine if (a-b) the effect of the outcome manipulation on evaluations was greater than the direct effect of the intentionality manipulation on evaluations. We also examined whether (c) intention and outcome information interact (possibly in an additive manner) to affect evaluations of action and inaction. All measures, manipulations, and exclusions are reported below.

Method

Preregistration

The design, hypotheses, and analysis plan were all preregistered at the Open Science Framework (https://osf.io/gpvue/?view_only=235f2e8ef35d42018de4ce7a4554ed72).

Power Analysis

This experiment employed a 2 (behavior: flipping a switch, not flipping a switch) x 3 (outcome: positive, negative, unspecified) x 3 (intentionality: high, low, unspecified) between-subjects design. As our hypotheses were presented in univariate terms (predicting main effects

and interactions for each outcome separately), this power analysis was based on the univariate results of a pilot study that employed the same design.[5] A $d_f = 0.15$ (a small effect, according to Cohen's 1992 effect size convention) was chosen because it was the size of the smallest effect across all univariate analyses observed in the pilot study. An $\alpha = 0.01$ was chosen to minimize the likelihood of false positives. Thus, to determine the sample size needed to detect an effect of this size in Experiment 3, a power analysis was conducted for a factorial design, with $\alpha = 0.01$, power = 0.80, number of groups = 18, and a $d_f = 0.15$. This analysis revealed that the required sample size was $N = 752$. However, as this experiment was part of a larger project, and data were collected through a third-party platform, it was not possible to control for the exact number of participants recruited, and we ended up with more participants than necessary.

Participants

Nine hundred and ninety participants, recruited from a nationally representative sample on Dynata, participated in exchange for $1.22. To be eligible for participation, individuals had to be 18 years of age or older and current residents of the United States. A sensitivity analysis with $\alpha = 0.01$, power = 0.80, number of groups = 18, and our actual sample size revealed that we could detect a minimum effect of $d_f = 0.13$. The sample consisted of 452 females, 381 males, and 157 people who preferred not to answer. The sample ranged in age from 18 to 88 ($M = 46.38$, $SD = 17.14$). Informed consent was obtained from all participants before proceeding with the experiment.

Procedure

[5] Based on a multivariate test, with $\alpha = 0.01$, power = 0.80, number of predictors = 3, number of groups = 18, number of outcomes = 3, and a $f^2(V) = 0.014$, our required sample size was $N = 514$.

Participants were randomly assigned to one of eighteen conditions in a 2 (behavior: flipping a switch, not flipping a switch) x 3 (outcome: positive, negative, unspecified) x 3 (intentionality: high, low, unspecified) between-subjects design. All participants were told, "*Imagine yourself flipping [*or *not flipping] a switch.*" Participants in the positive- and negative-outcome conditions and participants in the high- and low-intentionality conditions were given additional information (as described in Experiments 1 and 2, respectively). Participants in the positive outcome x high-intentionality condition read:

> *Imagine yourself flipping the light switch as you leave a room, because flipping it is consistent with a particular purpose you have. You flip the switch* ***intently, with a goal in mind****. When you flip the switch, you* ***turn off the lights*** *in the (now empty) room. You end up* ***conserving some energy****.*

Participants in the positive outcome x low-intentionality condition read:

> *Imagine yourself flipping the light switch as you leave a room, even though flipping it is not consistent with any particular purpose you have. You flip the switch* ***incidentally, without a goal in mind****. When you flip the switch, you* ***turn off the lights*** *in the (now empty) room. You end up* ***conserving some energy****.*

Participants in the negative outcome x high-intentionality condition read:

> *Imagine yourself flipping the light switch as you leave a room, because flipping it is consistent with a particular purpose you have. You flip the switch* ***intently, with a goal in mind****. When you flip the switch, you* ***turn on the lights*** *in the (now empty) room. You end up* ***wasting some energy****.*

Participants in the negative outcome x low-intentionality condition read:

> *Imagine yourself flipping the light switch as you leave a room, even though flipping it is not consistent with any particular purpose you have. You flip the switch* ***incidentally, without a goal in mind****. When you flip the switch, you* ***turn on the lights*** *in the (now empty) room. You end up* ***wasting some energy****.*

Participants in the unspecified conditions were presented with the behavior alone, with no additional information on the outcome or intentionality. This manipulation thus served to modify both the outcome information and the levels of intentionality associated with each behavior.

After reading the assigned behavior, participants provided various ratings of action, evaluation, and intentionality (see Experiment 1). Each set of items correlated highly and were averaged to form three indices (action: $r(975) = .63$, evaluation: $r(949) = .72$, intentionality: $r(953) = .72$). Upon the completion of this task, participants were debriefed and thanked for their participation.

Results

Manipulation Checks on Ratings of Action/Inaction and Evaluations

We first performed checks to determine if each of our manipulations had the intended effect. Results supported the conclusion that all manipulations worked as expected.

The effect of the behavior manipulation. An independent samples *t*-test was conducted to gauge differences in rated action or inaction across the two behavioral conditions. As expected, the behavior describing an action was perceived as more active ($M = 5.01$, $SD = 1.85$) than the behavior describing an inaction ($M = 4.08$, $SD = 1.96$), $t(988) = 7.70$, $p < .001$, $d = 0.49$.

The effect of the outcome manipulation. An analysis of variance was conducted to detect differences in evaluations across the three outcome conditions. Evaluations were most positive when a behavior was paired with positive outcome information ($M = 5.38$, $SD = 1.76$),

followed by unspecified outcome information (M = 4.65, SD = 1.83), and then by negative outcome information (M = 3.43, SD = 1.96); $F(2, 971) = 92.44$, $p < .001$, $d = 0.73$.

The effect of the intentionality manipulation. An analysis of variance was conducted to detect differences in intentionality across the three intentionality conditions. Intentionality was rated highest when a behavior was associated with high intentionality (M = 4.69, SD = 1.90), followed by unspecified intentionality (M = 4.34, SD = 2.10), and then by low intentionality (M = 4.09, SD = 2.10); $F(2, 970) = 7.14$, $p = .001$, $d = 0.23$.

Experimental Effects

A multivariate analysis of variance was conducted to determine whether there were differences in intentionality and evaluation as a function of the two-level (action, inaction) behavior condition, the three-level (positive, negative, unspecified) outcome condition, and the three-level (high, low, unspecified) intentionality condition. As shown by the F-ratios, there was a significant interaction between behavior, intentionality, and outcome, $F(12, 2850) = 1.81$, $p = .04$, $d = 0.97$. We describe these findings below in relation to the questions guiding this research.

Table 3

Ms, SDs, *and* F-*ratios for Experiment 3.*

Conditions and Statistics	Statistics		
	Evaluation		
	Flipping a Switch *M*(*SD*)	Not Flipping a Switch *M*(*SD*)	*t* for action vs inaction contrast
Descriptives			
Unspecified intentionality			
Positive-outcome	5.89(1.31)	5.26(1.65)	2.23[0.43]*
Unspecified-outcome (control)	5.31(1.84)	3.68(1.87)	4.43[0.84]***
Negative-outcome	3.15(2.04)	3.25(1.78)	-0.38[0.07]
High intentionality			
Positive-outcome	5.51(1.71)	5.34(1.61)	0.45[0.09]
Unspecified-outcome (control)	5.56(1.24)	4.62(1.88)	2.61[0.52]*
Negative-outcome	3.35(1.95)	3.44(1.88)	-0.25[0.05]
Low intentionality			
Positive-outcome	5.22(2.17)	5.07(1.96)	0.36[0.07]
Unspecified-outcome (control)	4.75(1.73)	3.96(1.55)	2.60[0.50]*
Negative-outcome	3.75(1.99)	3.64(2.10)	0.30[0.06]
Contrasts for outcome conditions			
Within unspecified intentionality			
t for positive-outcome vs unspecified-outcome contrast	1.94[0.38]	4.45[0.86]***	
t for unspecified-outcome vs negative-outcome contrast	5.98[1.15]***	1.40[0.27]	
t for positive-outcome vs negative-outcome contrast	8.55[1.66]***	6.03[1.17]***	

Conditions and Statistics	Statistics	
Within high intentionality		
t for positive-outcome vs unspecified-outcome contrast	0.04[0.01]	2.07[0.40]*
t for unspecified-outcome vs negative-outcome contrast	6.44[1.23]***	3.19[0.61]**
t for positive-outcome vs negative-outcome contrast	6.07[1.16]***	5.56[1.07]***
Within low intentionality		
t for positive-outcome vs unspecified-outcome contrast	1.13[0.22]	3.28[0.63]**
t for unspecified-outcome vs negative-outcome contrast	2.88[0.55]**	0.92[0.18]
t for positive-outcome vs negative-outcome contrast	3.65[0.70]***	3.73[0.72]***
Direct effects for outcome conditions		
F(2, 950) simple main effects for outcome	64.50[0.52]***	39.92[0.41]***
Contrasts for intentionality conditions		
Within unspecified outcome		
t for high-intentionality vs unspecified-intentionality contrast	0.52[0.10]	2.37[0.46]*
t for unspecified-intentionality vs low-intentionality contrast	1.53[0.30]	-0.66[0.13]
t for high-intentionality vs low-intentionality contrast	2.24[0.43]*	1.95[0.37]
Within positive outcome		
t for high-intentionality vs unspecified-intentionality contrast	-1.42[0.27]	0.12[0.02]
t for unspecified-intentionality vs low-intentionality contrast	1.98[0.38]*	0.54[0.10]
t for high-intentionality vs low-intentionality contrast	0.71[0.14]	0.76[0.15]
Within negative outcome		
t for high-intentionality vs unspecified-intentionality contrast	0.63[0.12]	0.55[0.11]
t for unspecified-intentionality vs low-intentionality contrast	-1.68[0.32]	-1.04[0.20]
t for high-intentionality vs low-intentionality contrast	-1.07[0.21]	-0.52[0.10]

Conditions and Statistics	Statistics	
Direct effects for intentionality conditions		
F(2, 950) simple main effects for intentionality	35.59[0.38]***	19.74[0.29]***
Main effects and interactions		
F(1, 950) main effect: behavior	16.19[0.26]***	
F(2, 950) main effect: outcome	95.97[0.63]***	
F(2, 950) main effect: intentionality	1.67[0.08]	
F(2, 950) interaction: behavior x outcome	8.40[0.19]***	
F(2, 950) interaction: behavior x intentionality	1.17[0.07]	
F(4, 950) interaction: outcome x intentionality	3.48[0.12]**	
F(4, 950) interaction: behavior x outcome x intentionality	0.62[0.05]	

	Intentionality		
	Flipping a Switch *M*(*SD*)	Not Flipping a Switch *M*(*SD*)	*t* for action vs inaction contrast
Descriptives			
Unspecified intentionality			
Positive-outcome	5.61(1.56)	5.10(1.70)	1.62[0.31]
Unspecified-outcome (control)	5.36(1.78)	3.43(1.86)	5.55[1.07]***
Negative-outcome	3.14(2.16)	3.22(1.85)	-0.21[0.04]
High intentionality			
Positive-outcome	5.31(1.80)	5.15(1.61)	0.51[0.10]
Unspecified-outcome (control)	5.19(1.63)	4.74(1.93)	1.26[0.25]
Negative-outcome	3.83(1.93)	3.93(1.98)	0.01[0.00]
Low intentionality			
Positive-outcome	4.47(2.16)	4.66(1.84)	-0.50[0.10]

Conditions and Statistics		Statistics	
Unspecified-outcome (control)	4.25(2.56)	3.71(1.83)	1.34[0.26]
Negative-outcome	3.50(2.11)	3.97(2.23)	-1.15[0.22]
Contrasts for outcome conditions			
Within unspecified intentionality			
t for positive-outcome vs unspecified-outcome contrast	0.78[0.15]	4.85[0.93]***	
t for unspecified-outcome vs negative-outcome contrast	5.92[1.14]***	0.59[0.11]	
t for positive-outcome vs negative-outcome contrast	6.89[1.34]***	5.46[1.96]***	
Within high intentionality			
t for positive-outcome vs unspecified-outcome contrast	0.37[0.07]	1.15[0.23]	
t for unspecified-outcome vs negative-outcome contrast	3.62[0.72]***	2.12[0.41]*	
t for positive-outcome vs negative-outcome contrast	3.92[0.74]***	3.48[0.66]**	
Within low intentionality			
t for positive-outcome vs unspecified-outcome contrast	0.53[0.10]	2.70[0.52]**	
t for unspecified-outcome vs negative-outcome contrast	1.77[0.34]	-0.67[0.13]	
t for positive-outcome vs negative-outcome contrast	2.36[0.45]*	1.78[0.34]	
Direct effects for outcome conditions			
F(2, 950) simple main effects for outcome	0.82[0.06]	1.98[0.09]	
Contrasts for intentionality conditions			
Within unspecified outcome			
t for high-intentionality vs unspecified-intentionality contrast	-0.53[0.10]	3.50[0.67]**	
t for unspecified-intentionality vs low-intentionality contrast	2.88[0.56]**	-0.78[0.15]	
t for high-intentionality vs low-intentionality contrast	2.43[0.47]*	2.79[0.54]**	
Within positive outcome			
t for high-intentionality vs unspecified-intentionality contrast	-0.94[0.18]	0.24[0.05]	

Conditions and Statistics		Statistics
t for unspecified-intentionality vs low-intentionality contrast	3.15[0.61]**	1.29[0.25]
t for high-intentionality vs low-intentionality contrast	2.20[0.42]*	1.44[0.28]
Within negative outcome		
t for high-intentionality vs unspecified-intentionality contrast	2.03[0.39]*	1.89[0.36]
t for unspecified-intentionality vs low-intentionality contrast	-0.88[0.17]	-1.91[0.37]
t for high-intentionality vs low-intentionality contrast	1.12[0.22]	-0.12[0.02]
Direct effects for intentionality conditions		
F(2, 950) simple main effects for intentionality	6.61[0.17]**	5.38[0.15]**
Main effects and interactions		
F(1, 950) main effect: behavior	6.08[0.16]*	
F(2, 950) main effect: outcome	47.28[0.44]***	
F(2, 950) main effect: intentionality	8.00[0.18]***	
F(2, 950) interaction: behavior x outcome	8.02[0.18]***	
F(2, 950) interaction: behavior x intentionality	4.09[0.13]*	
F(4, 950) interaction: outcome x intentionality	4.23[0.13]**	
F(4, 950) interaction: behavior x outcome x intentionality	1.12[0.07]	

Note. The *t*-statistic is reported for each of the differences based on planned contrasts. The simple effects report the *F* value for the simple effect of outcome and intentionality under action and under inaction. The *F*-statistic is reported for each of the main effects and interaction. Values in brackets represent Cohen's *d* effect sizes. Asterisks represent the significance of the contrasts.
*** $p < .001$ ** $p < .01$ * $p < .05$

Experiments 1 and 2 showed that actions are judged to be more positive and more intentional than inactions in the absence of outcome and intention information, respectively. As shown in Table 3, this finding replicated in Experiment 3. Specifically, when no outcome or intentionality information was provided, participants evaluated actions as more positive and more intentional than inactions. Therefore, in the absence of additional information, the answer to our first question is again yes, indicating both an action positivity bias and an action intentionality bias.

Experiment 3 further replicated the findings that providing outcome and intentionality information alters spontaneous evaluations. These results supported the notion that participants spontaneously assumed that actions led to more positive outcomes and were more intentional, whereas inactions led to less positive outcomes and were less intentional. The data comparable to Experiment 1 (see Table 3) showed that, relative to conditions without outcome information, participants judged actions as less positive and less intentional when they were described as having a negative outcome, and inactions as more positive and more intentional when they were described as having a positive outcome. Similarly, the data comparable to Experiment 2 (see Table 3) showed that relative to conditions without intentionality information, participants judged actions as less positive and less intentional when they were described as being low in intentionality, and inactions as more positive and more intentional when they were described as being high in intentionality.

What is the relative weight of the action outcome and action intentionality biases?

Experiments 1 and 2 provided good evidence that both the action outcome bias and action intentionality bias have an influence on each other but could not answer the question of whether outcome positivity or intentionality plays a stronger role in determining the action positivity bias.

Experiment 3 was designed to answer this question. By comparing the direct effect of manipulating outcome information with the direct effect of manipulating intentionality information on evaluations, we see that the direct effects of outcome information were stronger.

Discussion

The purpose of Experiment 3 was to assess the role of both outcome and intentionality in evaluations of action and inaction. The findings showed that participants evaluated actions as more positive and more intentional than inactions, replicating prior experiments. However, when outcome and intentionality information both varied, the effect of outcome information on evaluations was stronger, implying that the action outcome bias dominates over the action intentionality bias.

Experiment 4

Experiment 4 was designed to test the implications of the action positivity bias on behavior, by examining whether evaluations favoring action would similarly translate into preferences for active behaviors. We hypothesized that, (a) when given the opportunity to engage in an action or an inaction, actions would be preferred, suggesting that biases for action extend to behaviors as well. Consistent with prior experiments, we further hypothesized that, (b) when asked to evaluate the behavior engaged in, actions might be evaluated more favorably than inactions. All measures, manipulations, and exclusions are reported below.

Method

Preregistration

The design, hypotheses, and analysis plan were all preregistered at the Open Science Framework (https://osf.io/7pu5z/?view_only=9a8e4a5df403488d8bd90cd7eca8cb75).

Power Analysis

This experiment employed a 2 (behavior: pressing a button, not pressing a button) between-subjects design. The power analysis was based on results of a pilot study that employed the same design. A $d_f = 0.29$ (a small-to-medium effect, according to Cohen's 1992 effect size convention) was chosen because it was the size of the effect observed in the pilot study. An $\alpha = 0.01$ was chosen to minimize the likelihood of false positives. Thus, to determine the sample size needed to detect an effect of this size in Experiment 4, a power analysis was conducted, with $\alpha = 0.01$, power = 0.80, df = 1, and a $d_w = 0.29$. This analysis indicated that the required sample size should be $N = 139$.

Participants

One hundred and forty-one participants, recruited from Amazon Mechanical Turk, participated in exchange for $0.75. To be eligible for participation, individuals had to be 18 years of age or older and current residents of the United States. To control for data quality, we included a qualification that prevented the same participants from completing the experiment more than once. A sensitivity analysis with $\alpha = 0.01$, power = 0.80, df = 1, and our actual sample size revealed that we could detect a minimum effect of $d_w = 0.29$. The sample consisted of 68 females (73 males), and ranged in age from 18 to 65 ($M = 37.86$, $SD = 11.57$). Informed consent was obtained from all participants before proceeding with the experiment.

Procedure

Participants were informed that they would be participating in a decision-making task and would be assigned to either express their responses by selecting a specific button (action condition) or checking whether a specific button was already selected based on given prompts (inaction condition) (see Figure 1). Participants were told, however, that they could indicate their preference for which task they would like to do. This indication was taken as an assessment of

whether participants preferred action or inaction. Following their indication, participants were asked to complete the decision-making task, which always corresponded to participants' indicated preference. Participants were then asked to respond to a few questions about the task. These questions involved rating how *active* and *effortful* the task was on a scale from 1 (*not at all*) to 5 (*extremely*), which served as the manipulation checks, and rating how much participants enjoyed the task on a scale from 1 (*not at all*) to 5 (*extremely*). Participants were then asked to complete an individual difference measure. This measure included the Health Lifestyle and Personal Control Questionnaire (Darviri et al., 2014). As data on this scale was collected for exploratory work to be used in future projects, it is not included in any of the analysis below. Upon the completion of this measure, participants were debriefed and thanked for their participation.

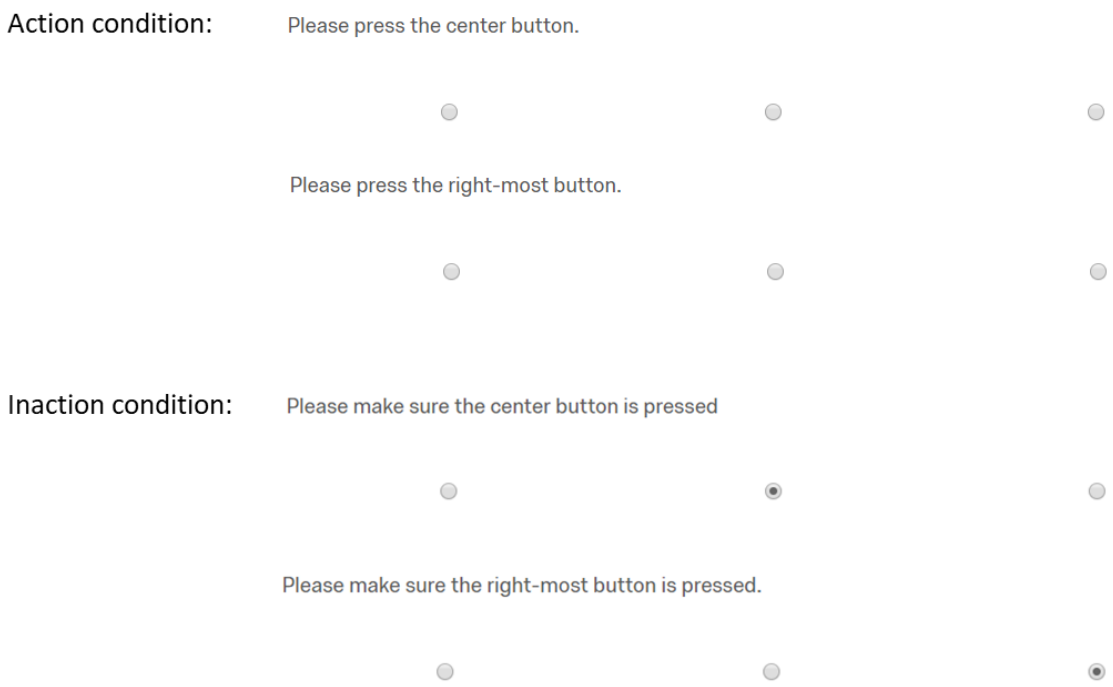

Figure 1

The behavior conditions in Experiment 4. Participants were randomly assigned to either express their responses by selecting a specific button (action condition) or checking whether a specific button was already selected based on given prompts (inaction condition).

Results

Manipulation Checks on Ratings of Action/Inaction and Effort

An independent samples *t*-test was conducted to examine differences in rated action or inaction across the two experimental conditions. As intended, the task involving an action was perceived as more active ($M = 2.95$, $SD = 1.04$) than the task involving an inaction ($M = 1.50$, $SD = 0.93$), $t(139) = 6.32$, $p < .001$, $d = 1.47$. The same held true for effort; for action: $M = 2.19$, $SD = 1.17$; for inaction: $M = 1.58$, $SD = 1.02$; $t(139) = 2.35$, $p = .02$, $d = 0.56$.

Behavior Preference

A chi-square goodness of fit test was conducted to determine if there were differences in the number of participants selecting the active versus the inactive tasks. Results revealed a statistically significant difference in the percentage of participants who selected each option, $\chi^2(1) = 61.34$, $p < .001$, $d = 0.97$, with just over 75% of the participants selecting the active task.

Behavior Evaluation

An independent samples *t*-test was also conducted to test whether participants found the active task more enjoyable than the inactive task. Results revealed no significant difference in how favorably participants evaluated the active task ($M = 2.99$, $SD = 1.24$), relative to the inactive task ($M = 2.79$, $SD = 1.59$), $t(139) = 0.69$, $p = .49$, $d = 0.15$. Interestingly then, people expect actions to be more positive (Experiment 1-3) and chose them more frequently (Experiment 4). However, people do not always enjoy action more than inaction.

Discussion

The purpose Experiment 4 was to investigate whether conclusions about the action positivity bias had implications for behavioral preferences. Experiment 4 extended the results from previous experiments, showing that people choose action over inaction. Once people had

engaged in the task, however, the actual experience with the task (i.e., pressing or not pressing a button) was evaluatively neutral. As actual experience with a behavior should shape evaluations based on the nature of that experience (Fazio et al., 1978), our results suggest that the behavior of pressing buttons is neutral in valence.

General Discussion

The goals of this paper were to test whether neutral actions and inactions differ in evaluation, whether neutral actions and inactions differ in intentionality, and whether assumptions in outcome evaluations matter more than assumptions about intentionality. In our experiments, we found that (a) people evaluate actions as more positive (an *action positivity bias*) and more intentional (an *action intentionality bias*) than inactions, (b) people assume positive outcomes for actions and more negative outcomes for inaction (an *action outcome bias*), and that (c) assumed outcome positivity is most influential than assumed intentionality. We also found that (d) these differences are reflected in behavioral preferences as well.

Our findings complement the literature examining biases associated with actions and inactions. This literature has almost solely focused on variations of the action effect, which shows that people feel more regret for actions over inactions (Kahneman & Tversky, 1982), and the associated omission bias, which occurs when people show a preference for omissions over commissions when faced with a decision that may lead to a negative consequence (Baron & Ritov, 1994; Ritov & Baron, 1990; Spranca et al., 1991). The prolific decision-making literature exploring these, and associated, effects has demonstrated that actions produce more blame and more regret than inactions. In this context, our research contributes in two ways. First, considering that, in everyday life, many behaviors one encounters are trivial in nature, knowledge about such mundane judgments are important. Second, we propose an interrelated set

of biases in which actions may be evaluated more positively because of differences in expected outcomes or differences in expected intentionality. Although both outcomes and intentionality play a role, an action bias in outcome evaluations seems to play a larger role in the action positivity bias than an action bias in intentionality.

Past research has shown that action is easier than inaction in behavioral change contexts. For example, people have an easier time forming action than inaction goals (Albarracín, Wang, et al., 2018), behavioral skills programs already tend to emphasize what new behaviors to introduce (Albarracín et al., 2005), and telling people what not to do elicits psychological reactance (Brehm, 1966; Rains, 2013; Rosenberg & Siegel, 2018). However, an action focus may not always be ideal. For example, people experience greater difficulty in response to multiple action demands than in response to multiple inaction demands (Albarracín, Wang, et al., 2018). Supporting this possibility, a series of experiments using a multiple Go/No-go task showed that both misses and false alarms were more frequent when participants had to press a key in response to three targets than when they had to *not* press a key in response to three targets. This pattern is attributable to the greater cognitive load posed by the multiple action goals and by people's natural focus on action. Corroborating this finding, when participants were encouraged to focus on inaction, the difference in errors decreased. Thus, even though people have an easier time forming action than inaction goals, requesting inactions appears necessary for better self-regulation and performance. Under these conditions, increasing the perceived positivity and intentionality of inaction might prove beneficial.

Another way to change preferences for action or inaction is through how choices are framed. Information about a behavior can either emphasize the benefits of taking action (i.e., a gain-framed appeal) or the costs of failing to take action (i.e., a loss-framed appeal). Recent work

shows that this type of framing can be used to explain the prevalence of an action bias. Gavaruzzi and colleagues (2011) presented participants with a scenario describing a cancer diagnosis and asked them to choose between one of two treatment options: Watchful waiting or surgery (similar to the design used in Fagerlin et al., 2005). What was manipulated was the presentation of the inactive option. In one condition, participants were informed that if they chose to wait, the cancer could possibly metastasize, making surgery impossible. Therefore, the presentation of the inactive choice emphasized the possible loss associated with this option. In the other condition, participants were informed that watchful waiting did not preclude future surgery, thereby emphasizing the gains associated with this inactive option. Their results found that surgery was preferred over watchful waiting only when the inactive choice was framed as a loss, but the preference for watchful waiting was stronger when action remained an option for the future. This suggests that how the outcomes of an inactive choice are framed can affect preferences and, in most situations, framing inaction as a deferred decision, with room for future action, leads to the attenuation of the action bias. It would thus be interesting to replicate these results and identity how similar gain-frame approaches can interact with positivity and intentionality to attenuate the action bias in other areas of health.

It is important to consider the limitations of this research. First, the conclusions from this study are constrained by our methodological choices. For example, in three out of the four experiments described here, participants were asked to imagine doing or not doing something. Yet, is imagining a behavior similar to engaging in it? Maybe. Recent work suggests that, when considering threatening stimuli, our imagination can affect the neural pathways in our brains much like actual behavior (Reddan et al., 2018; see also Benoit et al., 2019). If the same holds true for neutral behaviors, it is likely that imagining a behavior is similar to enacting it. And, in

fact, the choices in Experiment 4 suggest that the judgments people report are consistent with overt choice for action. Nonetheless, it will be important to replicate these results with actual behavior. Second, work by Zell and colleagues (2013) has found that cultural differences exist in attitudes towards action and inaction. Specifically, people from nations that score higher in dialecticism (generally, East Asian societies) report more positive attitudes toward action than people from nations that score lower in dialecticism. The research reported in this paper is exclusively based on participants from the United States. Therefore, although we find evidence for an action positivity bias, an action outcome bias, and an action intentionality bias, we cannot confirm whether these biases are present in other societies as well. Investigating these judgments with international samples is thus necessary. Finally, although we find statistically significant results, we also need to consider the practical significance of these findings (Cohen, 1990). The importance and meaning of an effect size depends on multiple factors, such as the context of the study and the importance of the outcomes (Henson, 2006). In our study, we consistently find medium-to-large effects, suggesting that, when presented with two choices (to act or not), people are likely to choose and enjoy action. Although this bias to press buttons might seem trivial, an overall preference for action could become detrimental to health. For example, excessive action is conducive to stress, diminished health, and poor psychological well-being (e.g., in situations involving smoking or excessive alcohol consumption, Albarracín et al., 2009; or situations involving chronic stress, Lupien et al., 2009). Understanding the magnitude of this bias in everyday life is thus vital.

Concluding Remarks

In this paper, we found that people not only evaluate actions more favorably than inactions (Experiment 1-3), but also prefer to engage in actions more than inaction (Experiment

4). Importantly, these preferences for action over inaction are driven by interrelated biases in outcomes and intentionality, with the action outcome bias predominating over the action intentionality bias (Experiments 3). This work thus offers a possible way of balancing action and inaction by countering these biases. In particular, whereas the positive outcomes of actions need not be emphasized, we recommend that practitioners belabor the positive outcomes of inactions. Likewise, whereas the negative outcomes of inactions need not be emphasized, we recommend that practitioners belabor the negative outcomes of actions. As more research accumulates, these ideas could directly be applied to the development of successful programs to increase behaviors with positive outcomes, and decrease behaviors with negative outcomes, for individuals and society.

Open Practices

All experiments in this paper were preregistered. For the preregistration plans, see: https://osf.io/tb6r2/?view_only=52728760eb9d4582a23189f1283c4f94 (Experiment 1), https://osf.io/srb7s/?view_only=fdeed2f3cd0c4166ad16603c460cf2ec (Experiment 2), https://osf.io/gpvue/?view_only=235f2e8ef35d42018de4ce7a4554ed72 (Experiment 3), and https://osf.io/7pu5z/?view_only=9a8e4a5df403488d8bd90cd7eca8cb75 (Experiment 4).

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