THE VALUE OF ACTION: AN EXAMINATION OF WHEN AND HOW ACTIONS ARE EVALUATED MORE POSITIVELY THAN INACTIONS

BY

AASHNA SUNDERRAJAN

DISSERTATION

Submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Psychology in the Graduate College of the University of Illinois at Urbana-Champaign, 2019

Urbana, Illinois

Doctoral Committee:

Professor Dolores Albarracín, Chair Professor Dov Cohen Associate Professor Ravi Mehta Assistant Professor Sean Laurent Dr. Andrea Miller

ABSTRACT

Human behavior varies along a continuum of activity, with demanding behaviors characterizing actions and restful states characterizing inactions. Action and inaction are integral components of daily life, affecting our decision-making, goal pursuit, self-regulation, well-being, and health. Understanding how people conceptualize and evaluate action and inaction is thus important. The present research found that actions are perceived differently than inactions (Studies 1-2). People not only evaluate actions more favorably than inactions (Study 3) but prefer to engage in actions over inactions as well (Study 4). This phenomenon is driven by a natural tendency to think of actions as more intentional (Study 5), but making intentionality salient does not always reduce the bias favoring action (Study 6). Balancing action and inaction is important for healthy human functioning, underlining the importance of further understanding evaluative biases in this domain.

ACKNOWLEDGEMENTS

Those that know me understand I am not a person of few words. So, thanking all of the people that have supported and guided me through my doctoral journey is especially difficult for me. I would first like to thank my advisor, Dr. Dolores Albarracín, for providing critical feedback on drafts of this manuscript. Her mentorship on this project, as well as her guidance and support throughout my PhD program, has been invaluable. I would also like to thank the other members of my doctoral committee whose comments and feedback on my preliminary and final defenses greatly improved the quality of this work. I would like to thank my parents who have been my greatest advocates during this time. They have supported me in every possible way and have helped me become the person I am today. I would also like to thank my friends, Sophie Lohmann and Jack McDonald, who have been with me every step of the way. They pulled me through the rough times and soared with me in the good ones. I would like to thank my lab mates (and a certain couch) for their advice, support, and friendship. I would also like to thank every single one of the research assistants I have worked with over the last few years who have diligently and conscientiously worked with me on the studies included in my dissertation. Finally, to everyone in the Psychology department, thank you for being awesome.

TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION 1
CHAPTER 2: STUDY 1 – NAÏVE DEFINITONS OF ACTION AND INACTION 19
CHAPTER 3: STUDY 2 – PREDICTORS OF ACTION AND INACTION
CHAPTER 4: STUDY 3 – EVALUATIONS OF ACTION AND INACTION 30
CHAPTER 5: STUDY 4 – PREFERENCES FOR ACTION AND INACTION 36
CHAPTER 6: STUDY 5 – A MEDIATOR OF ACTION, INACTION, AND POSITIVITY 40
CHAPTER 7: STUDY 6 – ACTION AND INACTION IN HEALTH DECISIONS 47
CHAPTER 8: GENERAL DISCUSSION
TABLE AND FIGURES 61
REFERENCES

CHAPTER 1: INTRODUCTION

Human behavior varies along a continuum of activity, with demanding behaviors characterizing *actions* and restful states characterizing *inactions* (Albarracín & Handley, 2011; Albarracín, Hepler, & Tannenbaum, 2011; McCulloch, Li, Hong, & Albarracín, 2012; Zell et al., 2013). Actions allow organisms to explore their surroundings and discover new solutions to problems, whereas inactions increase energy conservation and reduce poor decisions (Albarracín et al., 2008). These variations in behavior stem from biological, evolutionary, regional, and cultural processes (Albarracín & Handley, 2011; McCulloch et al., 2012; Zell et al., 2013), and are integral components of daily life, affecting our decision-making (e.g., Kahneman & Tversky, 1982), goal pursuit (e.g., Albarracín et al., 2008; Albarracín et al., 2011), self-regulation, wellbeing, and health (e.g., Albarracín, Wilson, Chan, Durantini, & Sanchez, 2018; Baumeister, Bratslavsky, Muraven, & Tice, 1998; Connolly & Reb, 2005; Dickman, 1990; Hepler, Wang, & Albarracín, 2012). Understanding how people conceptualize and evaluate action and inaction is thus important. The goals of my thesis were to study these valuations, the intentionality or effort judgments that underlie them, and how to use this knowledge to reduce the pressure towards action in health decisions.

Definitions of Action and Inaction

The *first* question explored in this thesis examines definitions of action and inaction. Activity can be measured objectively by quantifying the amount of force exerted, or the amount of glucose consumed, during movement. Yet, whether a behavior is an action or an inaction is a subjective judgment made by an observer based on concepts of action and inaction (Albarracín, Sunderrajan, Dai, & White, 2019). The terms *action* and *inaction* have been used in the study of psychology, morality, economics, and decision-making to describe attitudes, behaviors, and goals (e.g., Albarracín & Handley, 2011; Albarracín et al., 2008; Albarracín et al., 2011; Albarracín et al., 2018; Baumeister et al., 1998; Connolly & Reb, 2005; Dickman, 1990; Hepler et al., 2012; Kahneman & Tversky, 1982; McCulloch et al., 2012; Zell et al., 2013). Yet, despite interest in the topic, there has been limited work defining what action and inaction are (cf. Feldman, Kutscher, & Yay, 2018). Therefore, across domains and authors, the conceptualization of action and inaction has not always been consistent, making generalizing between different lines of research difficult.

My review of the literature has identified four dimensions along which action and inaction differ (see Table 1). First, action and inaction are most commonly defined in terms of the occurrence (or doing) versus the absence (or not doing) of a behavior (Kahneman & Tversky, 1982). Actions are those behaviors one performs, whereas inactions are those behaviors one does not perform. Therefore, it is not the specific behavior or the specific concept that is important, but simply the act of doing or not doing something. From this perspective, then, *running* is an action, whereas *not running* is an inaction. Although definitions of action as occurrence versus absence are necessary, they are not sufficient.¹ Instead, what plays a more vital role is whether concepts of action and inaction are defined in relation to features of (a) intentionality (whether a behavior can be initiated willfully), (b) effort (whether a behavior demands energy), and (c) change (whether a behavior involves changes in state). Second, therefore, action and inaction are distinguished in terms of agency, with action, more so than inaction, associated with behavioral intentionality and control (Rosset, 2008). Therefore, *pushing somebody* or *breaking a vase* are both perceived as actions, and thus, as agentic. Third, action and inaction are defined in terms of energy demands or effort (Albarracín et al., 2008; Albarracín et al., 2011). As such, running is

¹ For example, according to this definition, *sleeping* would be an action and *not sleeping* would be an inaction when, in fact, the reverse is true.

perceived as more active than *sleeping*, even though sleeping often requires preparatory actions such as getting ready for bed. Fourth, action and inaction are defined in terms of change. Within a sequence of behaviors, any change requires activity or effort.² Therefore, changes from action to inaction and from inaction to action are both effortful, whereas remaining in the same state is relatively effortless, as in the case of inertia or continued rest.³ According to this definition, then, action can also be defined by deviations from the norm or routine, or by changes to the status-quo. In contrast, inactions can be defined by following the norm or routine, or by maintaining the status-quo (Baron & Ritov, 2009; Byrne, 2016; Johnson & Goldstein, 2003; Kahneman, Knetsch, & Thaler, 1990; Samuelson & Zeckhauser, 1988).

In this thesis I see action and inaction representing opposing ends of an activity continuum (Albarracín et al., 2008; Albarracín et al., 2011; McCulloch et al., 2012), with the action end including agentic and effortful motor or cognitive processes (e.g., *running, thinking*) and the inaction end including passive, idle, and restful states (e.g., *lying down, quieting the mind, sleeping*). Each end thus unifies a variety of behaviors, often driven by specific goals, but which all involve either action or inaction of some kind (Albarracín et al., 2008; Albarracín et al., 2011; McCulloch et al., 2012).

Although these theoretical definitions of action and inaction exist, we currently know very little about how laypersons define and interpret the terms action and inaction (cf. McCulloch et al., 2012). It is likely that these four definitions of action as (a) occurrence versus absence, (b) agentic versus non-agentic, (c) effortful versus effortless, and (d) change versus

² Consider downhill skiing. Stopping while descending requires counterforce and movement. Therefore, stopping is an action, even though its endstate is an inaction. Similarly, restarting after interruption requires energy and is, thus, considered an action.

³ It is likely that, because of how effortful it is to change from one state to another, definitions of change might somewhat overlap with definitions of effort.

stasis resemble how naïve people think about action. And yet, there is little empirical work to suggest if that is the case, or whether different people agree on how these terms are defined. This thesis examines the degree to which each dimension confers meaning for what constitutes action or inaction. Yet, it also explores which definitions of action and inaction prevail in naïve representations.

Evaluations of Action and Inaction

The *second* question in this thesis concerns naïve evaluations of, and preferences for, action and inaction. According to the classic assumptions in economic theory, when facing a decision, people should choose what to do based on the possible outcome of each choice rather than the process by which the outcome comes about (Bar-Eli, Azar, Ritov, Keidar-Levin, & Schein, 2007). Therefore, when given an option between A and B, and informed that both lead to a negative outcome, the probability between choosing one or the other should be equal. Yet, five decades of research suggests that preferences for a behavior not only depend on the actual or expected outcome of the behavior but also on the way the outcome comes about (i.e., be it through an action or an inaction). First investigated by Kahneman and Tversky (1982), research on action and inaction biases has since proliferated to become a fundamental part of work on biases and heuristics (for example, see Bar-Eli et al., 2007; Baron & Ritov, 1994; Feldman & Albarracín, 2017; Feldman & Wong, 2018; Gilovich & Medvec, 1995; Gilovich, Wang, Regan, & Nishina, 2003; Kahneman & Miller, 1986; Kordes-de Vaal, 1996; Kruger, Wirtz, & Miller, 2005; Landman, 1987; McCulloch et al., 2012; N'gbala & Branscombe, 1997; Patt & Zeckhauser, 2000; Ritov & Baron, 1990, 1992, 1995; Spranca, Minsk, & Baron, 1991; Zeelenberg, van den Bos, van Dijk, & Pieters, 2002).

Much of the work on action and inaction biases is based on the notion that people attribute more responsibility to their actions, which thus amplifies either the positive or negative affective feelings associated with the outcome and the behavior. The action effect (Kahneman & Tversky, 1982), for example, describes a phenomenon wherein people feel greater regret for negative outcomes that are the result of an action (versus an inaction). This effect was first demonstrated by asking participants to evaluate the decision made by two investors, Paul and George. In the scenario, George decides to switch his stock to a new company, whereas Paul decides against switching. Ultimately, both their decisions lead to the loss of an equivalent amount of money. Yet, when participants were asked, they claimed that the person who acted (i.e., George) would feel the most regret. This type of bias also arises in situations where people are asked to evaluate moral behaviors. Therefore, when given the option, people show a preference for 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), primarily because they judge harm arising from an action as more immoral than harm arising from an inaction (action principle of harm, Cushman, Young, & Hauser, 2006; Cushman, 2013). Therefore, in situations that give rise to negative outcomes, people prefer inaction.

This bias, however, reverses when the outcome of a behavior is positive. According to the *actor effect* (Landman, 1987), people anticipate greater pleasure over successful outcomes achieved through action than inaction. This effect was first demonstrated using a modified version of Kahneman and Tversky's (1982) investment scenario. Participants were asked to evaluate the decision made by two students, Paul and George. In the scenario, George decides to switch into a different section of Biology at the start of the semester, whereas Paul decides against switching. Ultimately, both their decisions result in them achieving an A in the course. Yet, participants reported that the person who acted (i.e., George) was likely to feel better about his grade. Therefore, in situations that give rise to positive outcomes, people prefer action.

A summary of the extant literature thus shows that biases for behavior not only arise as a response to the actual or expected outcome of the behavior (Spranca et al., 1991), but also depend on the way the outcome came about (be it through action or inaction). When an outcome is expected to be negative, there is a preference for inaction as an attempt to avoid regret (Kahneman & Tversky, 1982), harm (Baron & Ritov, 2004; Ritov & Baron, 1990; Spranca et al., 1991), and risk (Tversky & Kahneman, 1991, 1992). In contrast, when an outcome is expected to be positive, there is a preference for action as an attempt to promote rewards (Kahneman & Tversky, 1982; Landman, 1987). Therefore, the affective response to consequences of action and inaction can, and does, differ, generating a biased preference for one over the other.⁴

People's preference for action and inaction is, however, also informed by what is normal in the situation. In the examples reviewed thus far, inaction has been the norm. For example, in situations where there are costs for engaging in a behavior (e.g., regret, harm), or there is uncertainty regarding the consequences of engaging in such behavior (e.g., risk), it is only logical to minimize these negative outcomes (Anderson, 2003; Feldman et al., 2018) by not acting.⁵ What happens when you deviate from the norm? Past research suggests that people feel greater

⁴ This contrasts with research on other biases that are largely based on the outcome. When making decisions, people prefer to avoid losses over acquiring equivalent gains (*loss aversion*, Tversky & Kahneman, 1991) or they prefer a situation with a predictable, but lower, payoff than a situation with an unknown payoff (*risk aversion*, Tversky & Kahneman, 1992). Here, then, the outcome of loss or uncertainty shifts preferences towards that which is least risky, and can involve either taking action or inaction. Oftentimes, however, people prefer options that produce no change (Anderson, 2003; Samuelson & Zeckhauser, 1988). In such situations, people tend to maintain the preset decision (*status-quo bias*, Kahneman et al., 1990; Samuelson & Zeckhauser, 1988), choose the default option (*default bias*, Johnson & Goldstein, 2003), or avoid moving away from a preset reference point (*no-change bias*, Baron & Ritov, 2009). Although it seems likely that the status-quo bias and omission bias are a unitary phenomenon, this is not the case. Instead, the primary aim of the status-quo bias is to maintain the default, which can be achieved through engagement in either action or inaction (Schweitzer, 1994). Overall, then, these biases are orthogonal to favoring action or inaction.

⁵ By extension, inaction can often minimize accountability for the negative consequences of a behavior, including judgments of blame and punishment (DeScioli, Christner, & Kurzban, 2011; Feldman et al., 2018).

regret, more harm, and higher levels of negative affect. What happens in situations where the norm is reversed? Evidence suggests that the bias also reverses. The action effect, for example, can be attenuated or reversed into an *inaction effect* (Zeelenberg et al., 2002) when action is more normal (Feldman et al., 2018) – because of the social context (Feldman & Albarracín, 2017), situational expectations (Zeelenberg et al., 2002), or past behavior (McElroy & Dowd, 2007). For instance, when the situational expectation favors action, regret is higher for inaction than it is for action (i.e., the norm) (Bar-Eli et al., 2007). Similarly, when people receive information that a past outcome was negative, they show greater regret after engaging in an inaction, rather than an action, suggesting that a past negative outcome provides a reason to act (Zeelenberg et al., 2002), shifting preferences.

What, then, affects the desirability of a behavior? Based on this review, the desirability of a behavior stems from the desirability of its outcomes weighted by what is normal in the situation. What is normal, in turn, is determined by the extent to which a behavior (a) conforms to general social norms, (b) obeys situational or role expectations, or (c) resembles past behavior (Feldman & Albarracín, 2017; Kahneman & Miller, 1986).

$$Behavior \ desirability = \frac{Outcome \ Desirability}{Normalcy} = \frac{Outcome \ Desirability}{Norms + Expectations + Past}$$

The effects of outcome desirability and normalcy on behavior desirability are represented in the equation above. When a situation produces a positive outcome, the norm is to seek it out (i.e., an action), whereas, when a situation produces a negative outcome, the norm is to avoid it or, at least, not seek it out (i.e., an inaction). People are thus expected to engage in behaviors that produce a positive outcome and to avoid behaviors that produce a negative outcome. When deviations from this pattern occur, people experience negative affect. Different norms thus produce different evaluations of action and inaction, with violations of norms contributing to stronger evaluations of the behavior in either the positive or the negative direction based on the desirability of the outcome.

This past research has been vital in explicating evaluations of action and inaction that produce positive or negative outcomes. This research, however, has not addressed how action and inaction are perceived in situations wherein the outcome is neutral or the norm is not salient. For example, 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). Following this information, participants are told that both stock brokers earn as much money as they initially invested, breaking even. In this scenario, will participants' evaluation of the stock brokers' behavior still depend on the interaction between the outcome, norm, and whether the behavior is an action or an inaction? Or, will participants' evaluation depend on inherent biases favoring one type of behavior over another?

There is some evidence to suggest that actions and inactions considered in a similar, abstract, manner generate different evaluations. For example, recent work has suggested that naïve definitions of action and inaction differ in valence, with evaluations of action being more positive than those of inaction. In a study by McCulloch and colleagues (2012), participants were given a list of words to rate, ranging in activity levels from most active (e.g., *run*) to least active (or inactive; e.g., *sleep*). Their results revealed that, people rated words like *active*, *run*, and *jump*, more positively than words like *inactive*, *stationary*, and *still*. Research exploring cross-cultural attitudes towards action and inaction has similarly found that the general concept of action (measured with statements such as *action is good*) is subjectively more favorable than the

general concept of inaction (measured with statements such as *inaction is good*), especially in Western cultures (Ireland, Hepler, Li, & Albarracín, 2015; Zell et al., 2013).

Although informative, the conclusions from these findings are limited to evaluations of action and inaction *words* (McCulloch et al., 2012) and *concepts* (Zell et al., 2013). Consequently, this thesis explores naïve evaluations of action and inaction in broader contexts, including whether a preference for action (over inaction) extends from words to behaviors.

An Underlying Mechanism for the Action and Inaction Bias

The *third* question in this thesis explores the underlying mechanisms driving evaluations of action and inaction. In my conceptualization, the reason actions are likely to be evaluated more positively is that actions are perceived to be more intentional or goal-directed, (Ferguson & Bargh, 2004; Kordes-de Vaal, 1996), more controllable (Cornwell, Franks, & Higgins, 2014; Eitam, Kennedy, & Higgins, 2013), and more effortful (Aronson & Mills, 1959; Norton, Mochon & Ariely, 2012) than inactions.

Action is often distinguished in terms of agency (Bègue, Bushman, Giancola, Subra & Rosset, 2010; Ferguson & Bargh, 2008; Kordes-de Vaal, 1996; Monroe, Reeder & James, 2015; Rosset, 2008; Spranca et al., 1991), because of its strong association with both goals and behavior. For example, because the contingency between a behavior and an outcome is easier to detect for an action than it is for an inaction (Kordes-de Vaal, 1996), actions are perceived as more causally related to outcomes than inactions (Spranca et al., 1991). Similarly, because they reflect a fundamental property of goals, actions are seen to provide a more concrete indicator of progress on a task than inactions (Ferguson & Bargh, 2008). According to Rosset (2008), however, this association between action and intentionality is more inherent, and occurs automatically. Rosset thus argues that, when people encounter an action, an attribution of intentionality is the default – a response described as an *intentionality bias* (Rosset, 2008). In one study, participants were asked to decide whether an action (e.g., *She set the table, She scratched herself*) was performed on purpose or by accident. Results showed that, participants judged behaviors as more intentional when they made decisions about ambiguous actions or were asked to make decisions quickly. The attribution of intentionality thus appears to happen automatically when evaluating actions.^{6,7}

But, does this mean that actions are also seen more positively? The Protestant social ethic that permeates Western cultures prescribes work and condemns laziness (Miller, Woehr, & Hudspeth, 2002). Thus, any behavior falling under the overarching heading of "agentic action" may be more valuable than behaviors categorized as inaction. Similarly, greater intentionality may be ascribed to desirable behaviors as a way to strategically direct members toward actions that are necessary for the group's survival, as well as ensure that group members will invest resources in those behaviors (Ryan, 2002). And, in fact, we see that intentionality is often associated with positive evaluation. For example, there is ample evidence that positive attitudes are associated with strong intentions (Ajzen & Fishbein, 2005), both because attitudes cause intentions and behaviors can be used as evidence for attitudes (Albarracín

⁶ It is the application of more deliberate processes that alters this automatic attribution of intentionality (Rosset, 2008).

⁷ As Rosset's (2008) work only included examples of actions, it is unclear whether the reverse holds true for inactions. That is, while actions are automatically attributed with intentionality, are inactions automatically seen as occurring incidentally?

& Wyer, 2000). Thus, actions are likely to be judged more intentional and more positive than inactions.^{8,9}

Definitions of action have also frequently invoked the dimension of effort. For example, according to Albarracín and colleagues (2008), behaviors involving high motor or cognitive output are more characteristic of action (e.g., *running*), and those involving neither motor nor cognitive output are more characteristic of inaction (e.g., *non-REM sleep*). This association between action, inaction, and effort is most apparent in McCulloch et al.'s work (2012). In Study 1, participants received a list of words to classify as actions or inactions, and rate on activity and valence. Three words participants characterized as actions included *select*, *walk*, and *run*. However, none of these words had the same average rating on activity. Instead, *select* was rated as the least active word, *run* was rated as the most active word, and *walk* was rated somewhere in between – a pattern consistent with the amount of effort attributable to each behavior. Although not conclusive, this data suggests that lay definitions associate action with effort.

More interestingly, however, is the association between action, effort, and evaluation. In the same study, although participants evaluated all words positively, the averages were not equivalent. Instead, as with ratings of activity, *select* was rated as the least positive word, *run*

⁹ Other explorations of agency have uncovered a strong relation between action, control and motivation (Cornwell et al., 2015 Eitam et al., 2013). For example, in a study conducted by Eitam and colleagues (2013), participants were asked to press a key corresponding to stimuli moving on the screen. When their key press effected the stimuli in a discernable way (e.g., when the stimuli flashed and then disappeared from the screen), participants' task performance improved relative to those whose button presses did not result in any discernable change to the stimuli. When a time lag was introduced between participants' button press and the effect, performance in the experimental condition became comparable to a control one. This result suggests that participants' performance only improves when they can associate an effect with their action and be certain they have control over the action. In other words, when behaviors can be controlled (i.e., when one can direct what will happen), people's motivation to perform the behavior is higher (Kanfer, 1990). This link between action and motivation also extends to how desirable a behavior is perceived. Therefore, when control and motivation are high, the outcomes of the behavior are also perceived more favorably (Higgins, 2012; see Botvinick & Braver, 2015 for similar findings in the domain of cognitive control and motivation).

⁸ Of course, this is likely only true under the conditions investigated in this thesis, with neutral actions or inactions lacking outcome or norm information.

was rated as the most positive word, and *walk* was rated somewhere in between. Empirical evidence further corroborates this notion. For example, in a study by Norton, Mochon, and Ariely (2012), participants were asked to either build an IKEA storage box or inspect one. Participants were then asked to bid for the box and rate how much they liked the product. Supporting predictions, participants who built the storage box were not only willing to pay more but also liked the product more. Therefore, labor and love are connected such that the more effort placed into some pursuit, the more value is attached to it. Presumably, the subjective value of a behavior stems from the effort that goes into the behavior in order to justify that effort (*effort justification theory*, Aronson & Mills, 1959).

Effort not only affects attitudes, but behavior preferences as well. Hsee, Yang, and Wang (2010) conducted a study in which participants were given the option to be busy or remain idle. Specifically, after completing a survey, participants were given a 15-minute break, during which they had the option to deliver their completed survey to a nearby location and wait out the remaining time (idle option) or deliver their completed survey to a faraway location (busy option). Participants who chose to be busy reported higher feelings of happiness than participants who chose to be idle. It would thus appear that people desire busyness and dread idleness (Hsee et al., 2010), to the extent that keeping busy increases reported feelings of happiness.

Intentionality and effort may confer positive valence for two reasons. First, these agentic properties may inherently be seen as positive, or drive desirability, because the Protestant work ethic conceptualizes effort as moral and laudable. This value for effort, in and of itself, may overgeneralize to any action, making actions appear positive (McCulloch et al., 2012). Second, these agentic properties may be seen as positive because people learn to set goals to pursue valuable outcomes. Accordingly, if action is more goal-directed than inaction, action should

appear better than inaction. Evaluations of action and inaction are therefore likely to stem from (1) the normative association of action with work and effort, or (2) associations between goals and positivity created by learning to self-regulate – both of which would form an association between action, intention, effort, and positivity. This thesis examines this process, by exploring the degree to which intentionality serves as a mediator for the relation between action, inaction, and positivity.

An Application of the Action and Inaction Bias

Finally, a *fourth* question in my thesis concerns the consequences of different evaluations of action and inaction. When given the opportunity to engage in an action or an inaction, which do people choose? We know that people desire busyness and dread being idle (Hsee et al., 2010), to the extent that keeping busy increases reported feelings of happiness. This research is consistent with findings that show that people dislike being bored (Fahlman, Mercer, Gaskovski, Eastwood, & Eastwood, 2009) but enjoy and appreciate work (e.g., *the IKEA effect*, Norton et al., 2012). It is thus likely that, in health settings, this same trend may hold true. Yet, although action is valuable, excessive action can lead to stress, diminished health, and poor well-being (e.g., in situations involving smoking or excessive alcohol consumption; Albarracín, Wang & Leper, 2009). Therefore, it is important to explore how we can change evaluations of action or inaction, especially when engagement in one or the other can be unfavorable.

The health domain is an important domain in which people must decide whether to take action or not (Scherer et al., 2016). Although both action and inaction are viable options, evidence suggest that people often favor action when deciding between two health options (Fagerlin, Zikmund-Fisher, & Ubel, 2005; Gavaruzzi, Lotto, Rumiati, & Fagerlin, 2011). This finding has been replicated in both populations of medical professionals as well as laypeople. In a classic study (American Child Health Association, 1934; Bakwin, 1945), for example, researchers asked pediatricians to screen school children for indications of tonsillectomy. Results revealed that school physicians were biased toward the intervention, believing that roughly 45% of school children needed a tonsillectomy. In a conceptual replication of this study (Ayanian & Berwick, 1991), pediatricians were asked to evaluate case scenarios and decide upon the best course of action. Results again showed a bias toward action. That is, when given the option, pediatricians more often recommended intervening over more inactive strategies.

Not only physicians show these biases. Laypeople also appear to favor active strategies to more passive ones, choosing treatments with potentially devastating side effects over less invasive, and equally effective, approaches (Fagerlin et al., 2005; Zikmund-Fisher, Windschitl, Exe, & Ubel, 2011). For example, in one study (Fagerlin et al., 2005), participants were asked to read a scenario describing a cancer diagnosis and to choose between one of two treatment options: Watchful waiting or an active treatment (either medication or surgery). The study found that, a significant proportion of participants chose the active treatment, even when doing so would increase their probability of death. People thus seem to not only care about what happens to them but also about whether the outcome occurs as a direct result of an action or an inaction.

But why? When given the option between two equally effective or ineffective strategies, why do people choose action? There are three possible explanations. First, research shows that risks tend to elicit behavioral responses that are insensitive to probabilistic information (Rottenstreich & Hsee, 2001; Sunstein & Zeckhauser, 2011). As many decisions made in the health domain (e.g., about cancer) involve risk, anxiety can cause a person to neglect probabilities and choose treatment (medication or surgery) as their preference. Second, treatment may provide greater reassurance and reduce uncertainty (Cantor et al., 2002) relative to a more inactive option. Finally, because of the ignored base rates and high anxiety, the health domain has a norm favoring action. Evidence for this comes from the study conducted by Fagerlin and colleagues (2005) described earlier. In the study, after making their selection, participants were asked to elaborate on their decisions. One participant wrote, "'I would want to try to cure the disease rather than just 'watch and wait' for symptoms to develop. I would feel like I had to try to do things instead of just letting it go" (p. 618). This suggests that anxiety and uncertainty produce a norm against just standing by.

Although taking action can be useful in many health situations, it is not always beneficial. Under some situations, engaging in action, especially when excessive, can lead to stress, diminished health, and poor well-being (e.g., in situations involving smoking or excessive alcohol consumption; Albarracín et al., 2009). Under other conditions, taking action can be akin to making a hasty or risky decision (e.g., in situations involving decisions between a risky treatment versus a more passive strategy; Fagerlin et al., 2005; Zikmund-Fisher et al., 2011). Therefore, it is important to understand how to change evaluations of, or preferences for, action or inaction.

One way to change preferences for action or inaction is through how choices are described (i.e., framed). Research on message framing has revealed that messages can be pitched in multiple ways, influencing people's choices, evaluations, and behaviors differently (Tversky & Kahneman, 1981). For example, 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).¹⁰ According to *prospect theory* (Kahneman & Tversky, 1982, 2013;

¹⁰ Gain- and loss-framed appeals are similar to, but inconsistent with, action and inaction frames, because the focus of such frames are on the consequence of the behavior (i.e., Do you gain something? Do you lose something), rather than the behavior itself (i.e., Does it involve being active? Does it involve being inactive?).

Tversky & Kahneman, 1981, 1986), gains and losses activate different processes: People who think about gains avoid risks, whereas people who think about losses seek risks. The influence of a given frame on evaluations thus depends on whether the behavior under consideration will achieve a gain or avert a risk.

An alternative option to changing how options are presented is to change what has been activated (i.e., instead of manipulating the way the options are presented, you could manipulate how people view and interpret the options to begin with). Prior research has shown evidence that the activation of concepts, through such external signals as words and pictures, can influence performance on behavioral tasks (aka priming effects; for a review, see Weingarten et al., 2016). For example, participants who unscramble words denoting rudeness during a sentence scramble task are more likely to interrupt a conversation than those who unscramble words about either politeness or neutral topics (Bargh, Chen, & Burrows, 1996). Similarly, participants who access words relevant to the elderly stereotype walk down the hallway more slowly than control participants (Bargh et al., 1996). Despite the fact that some of these priming effects have been resistant to direct replication (Doyen, Klein, Pichon, & Cleeremans, 2012; Harris, Coburn, Rohrer, & Pashler, 2013), a large meta-analysis revealed a small, but robust, behavioral priming effects ($d_{FE} = 0.332$, $d_{RE} = 0.352$) (Weingarten et al., 2016).

The literature reviewed in this section suggests that people evaluate actions more favorably because doing something gives them a sense of control and attenuates the uncertainty associated with their decision. Therefore, their action is associated with agency, whereas their inaction is associated with indecision or a lack of action. If people were reminded of how inactions can be intentional, then, they may be more likely to favor the inactive choice. This thesis investigates this process.

The Present Research

The goal of the present work is to test evaluations of action, explore its underlying judgment mechanisms, and investigate how to change evaluations based on the principles uncovered. More specifically, the present research tests the following hypotheses:

Hypothesis 1: Lay definitions of action and inaction will overlap with theoretical definitions of action as (a) occurrence versus absence, (b) agentic versus non-agentic, (c) effortful versus effortless, and (d) change versus stasis (Study 1). However, the four proposed definitions of action will not equally confer meaning for what constitutes action or inaction. Instead, because of the strong associations between action as the occurrence of intentional and effortful behaviors, it is more likely that (a), (b), and (c) will serve as the most important dimensions (Study 2).

Hypothesis 2: When action and inaction are encountered in the absence of outcome information, actions will be evaluated more positively. Otherwise, positive and negative outcomes will drive positive and negative evaluations of behavior, consistent with previous research on action-inaction biases (Study 3). When given the opportunity to engage in an action or an inaction, actions will be selected more frequently (Study 4), suggesting that attitudes affect behaviors as well.

Hypothesis 3: Information about agency, however, can override spontaneous evaluations of action and inaction. Therefore, actions manipulated to be non-agentic will be evaluated less positively than actions without any specific agency information. Likewise, inactions manipulated to be agentic will be evaluated more positively than inactions without any specific agency information (Study 5).

Hypothesis 4: Due to this bias favoring action, manipulating the intentionality associated with inaction should make the inactive choice more appealing, thereby attenuating the action bias (Study 6).

CHAPTER 2: STUDY 1 – NAÏVE DEFINITONS OF ACTION AND INACTION

The *first* question explored in this thesis examines definitions of action and inaction. The terms *action* and *inaction* have been used in the study of psychology, morality, economics, and decision-making to describe attitudes, behaviors, and goals (e.g., Albarracín & Handley, 2011; Albarracín et al., 2008; Albarracín et al., 2011; Albarracín et al., 2018; Baumeister et al., 1998; Connolly & Reb, 2005; Dickman, 1990; Hepler et al., 2012; Kahneman & Tversky, 1982; McCulloch et al., 2012; Zell et al., 2013). Yet, despite the interest in this topic, there has been limited work defining what action and inaction are, or how they are conceptualized (cf. Feldman et al., 2018). My review of the literature suggests that definitions of action vary in four ways as (a) occurrence versus absence, (b) agentic versus non-agentic, (c) effortful versus effortless, and (d) change versus stasis. It is, however, unclear whether laypeople define and interpret the terms action and inaction in a similar way (cf. McCulloch et al., 2012)

The purpose of this study was to investigate how definitions of action and inaction prevail in naïve representations. In this study, participants were asked how they define action and inaction and, specifically, the words, thoughts, feelings, physical responses, and behaviors they associate with action and inaction. I hypothesized that naïve definitions of action and inaction would overlap with proposed theoretical definitions of action. Yet, I also anticipated that these naïve definitions might also reveal other facets of action and inaction yet unconsidered, providing greater insight into how behaviors are conceptualized. This study is the first step in testing *Hypothesis 1*.

Method

Participants. Two hundred and twenty undergraduates, recruited from a Midwestern university subject pool, participated in exchange for partial course credit. Six participants had

missing values for the primary outcome measures, resulting in a final sample size of N = 214. The sample included 161 females, 52 males, and 1 person who chose not to disclose their gender. The sample ranged in age from 18 to 24 years (M = 18.83, SD = 1.13). Informed consent was obtained from all participants before proceeding with the experiment.

Procedure. Participants were told that the purpose of this study was to explore how people define and understand what it means to be active and what it means to be inactive. In an open-ended format, participants were asked to respond to the following prompt:

How would you describe action? What does it mean to "do something?" In the space provided, please write down anything that comes to mind when you think about an action. Think about any <u>words</u> you would associate with doing something; the <u>thoughts</u> that run through your mind when you are active; how you <u>feel</u> when you are doing something; any <u>physical responses</u> you might experience while doing something; or any <u>behaviors</u> you might associate with action.

Participants were also asked to respond to an identical prompt regarding inaction. The presentation of the action and inaction prompts was counterbalanced.

After responding to each prompt, participants were asked to summarize their descriptions into one sentence by identifying what they felt were key features of action and inaction. Participants were then asked to complete individual difference measures¹¹ and, upon the completion of those measures, given a debriefing and thanked for their participation.

Data Analysis Plan

¹¹ These included the Attitudes Towards Action/Attitudes Towards Inaction Scale (McCulloch et al., 2012) and the Beliefs about Intended Action Scale (Sunderrajan & Albarracín, 2017). As the focus of this study was not on response variability due to individual differences, these scales are not included in any of the analysis below.

As the data collected in this study was qualitative in nature, it was analyzed using topic modeling, as well as manual coding. Topic modeling is a form of text mining that involves finding and tracing recurring patterns of co-occurring words (aka "topics") in a corpus (Garfinkel, 2012). For this analysis, a Latent Dirichlet Allocation (LDA) algorithm was used. LDA is a technique that facilitates the automatic discovery of themes in a collection of documents. The basic assumption behind LDA is that each of the documents in a collection consist of a mixture of topics. As we only observe the words within each document, the topics are latent. Thus, the aim of LDA is to infer this latent topic structure given the information we have. LDA does this by recreating the documents in the corpus by adjusting the relative importance of topics in documents and words in topics iteratively. Therefore, the benefit of topic modeling is that it lets you quickly search, organize, and summarize large collections of textual information, while identifying latent text patterns. It was thus an optimal analysis strategy to use to sift through the large body of qualitative responses collected in this study.

To supplement this analysis, the data was also manually coded. A subset of participant responses was scanned to identify characteristics in the descriptions of action and inaction not already identified by the topic modeling analysis. This process led to the inclusion of eight coding categories: Occurrence (e.g., Did the description involve something [versus nothing] happening?), agency (e.g., Did the description mention intention, control, or behaviors happening incidentally?), effort (e.g., Did the description include effortful behaviors?), change (e.g., Did the description involve conditions of change [versus stasis]?), evaluation (e.g. Did the description involve positivity [versus negativity]?), outcome (e.g., Did the description include outcome information?), physicality (e.g., Did the description involve physical behaviors [versus mental processes]), and requirement (e.g., Did the description describe a situation that you

wanted, that you needed, or that you could not engage in?). These categories were not mutually exclusive and, thus, it was possible for a definition to include descriptions of how a behavior was, for example, both positive and negative. To assess inter-rater reliability, two independent pairs of coders were trained to code participant responses. Each pair double-coded 30 of the same responses. Inter-rater agreement was adequate, with an average of Cohen's $\kappa = .61$ across the two pairs ($\kappa > .40$ is regarded as moderate, Landis & Koch, 1977; or as fair to good, Fleiss, 1981). Throughout the coding process, any disagreements and questions were resolved by discussion and further examination of each response item.

Results

Topic modeling. In this dataset, each participant was treated as a document (i.e., the words from their responses were combined into one single word-by-frequency matrix) and associated with a list of topics (where each topic referred to a group of semantically related words that co-occurred frequently). During pre-processing, the files loaded into the corpus were stripped of punctuation, digits, stopwords, and whitespace, to produce a document-term matrix. They were then mined to identify patterns of frequently occurring words. Some of the most frequently occurring words in the corpus (excluding *action, inaction, active,* and *inactive*) included words like, *not, something, feel, think,* and *physical* (see Figure 1). The correlation¹² between the words *action* and *inaction* and these words that occurred in the corpus revealed that action was commonly associated with the occurrence of behaviors (e.g., *fidgeting,* r = .31), that were agentic (e.g., *planned,* r = .26), and effortful (e.g., *performing,* r = .31). In contrast, inaction

¹² In this context, the correlation between words is a quantitative measure of the co-occurrence of words across multiple documents. An important point to note is that the presence of a term in this list is not indicative of its frequency. Rather it is a measure of the frequency with which the two terms co-occur across documents.

was commonly associated with the absence of behaviors (e.g., *not*, r = .51) and, perhaps, with a lack of intention (e.g., *simply*, r = .25; *happened*, r = .23) (see Table 2).¹³

The LDA algorithm generated four topics (see Table 3). The four topics generated did not perfectly correspond with the four theoretical definitions proposed in Chapter 1, but did partially overlap with them. Topic 1 shared similarities with the first dimension, occurrence versus absence. The terms included in this topic suggested that behavior was often defined in terms of *something* happening, *physically*. Topic 2 shared similarities with the second dimension, agentic versus non-agentic. The terms included in this topic suggested that behavior, particularly *action*, included descriptions of *think*ing and *will* (i.e., components of agency, to some extent). Topic 3 encompassed inaction, revealing that it was described as the absence of behavior, low in effort. Topic 4 encompassed action, revealing that it was described as the occurrence of behavior, high in effort.

These results suggest that naïve conceptualizations of action and inaction involve action as the occurrence of intentional and effortful behaviors, and inaction as the absence of behavior, due to the lack of action or indecision. The change versus stasis dimension did not seem to show up in any of the topics, suggesting that this may not be an important component in how laypeople define and interpret action and inaction.

Coding. Paired-sample *t*-tests were conducted for each of the coding categories to ascertain whether participants were more likely to use them when describing actions or inactions (see Figure 2). Results showed that participants were more likely to describe actions as agentic and effortful occurrences of behavior, associated with change. Actions were also described more positively, and as involving both physical and mental processes. Descriptions of actions often

¹³ The correlation between inaction and *justified* (r = .23) is also interesting, as it suggests that many found it important to justify engaging in inaction.

included outcome information and, finally, included phrases to suggest that they were something participants needed to, and could, do.¹⁴ All ps < .02. See Table 4 for *Ms* and *SDs*.

Discussion

The purpose of Study 1 was to investigate how definitions of action and inaction prevail in naïve representations. The topic modeling analyses generated k = 4 topics partly overlapping with definitions of actions as agentic and effortful behavior. The coding further supported this, but also revealed other characteristics laypeople commonly associate with action and inaction. First, actions, but not inactions, were often described in positive terms, bolstering the argument that there is a strong association between action and positivity. Second, descriptions of action tended to include outcome information. This finding is not surprising based on the evidence showing that actions are often perceived as more causally related to outcomes than inactions (Spranca et al., 1991) because the contingency between a behavior and an outcome is easier to detect for an action than for an inaction (Kordes-de Vaal, 1996). Third, actions were seen to involve both physical behaviors and mental processes, reinforcing the notion that inactions are conceptualized as a lack of (all) action. Finally, actions were more often described as something participants *needed* to do, rather than something participants *wanted* to do. The results thus find support that lay conceptualizations of action and inaction overlap with theoretical definitions of action as (a) occurrence versus absence, (b) agentic versus non-agentic, (c) effortful versus effortless, and, to a lesser extent, (d) change versus stasis (supporting *Hypothesis 1*). Importantly, however, the results find support that lay definitions of action and inaction are richer, encompassing other facets of behavior.

¹⁴ This is in contrast to inaction, which was described using words like *can't*, *unable*, *paralyze*, and *frozen*.

CHAPTER 3: STUDY 2 – PREDICTORS OF ACTION AND INACTION

The purpose of this study was to extend the results of Study 1 and determine the degree to which different characteristics predict judgments of action and inaction. In this study, participants were asked to evaluate behaviors on agency, control, effort, change, evaluation, physicality, want, and need. I hypothesized that, because of the strong associations between action as the occurrence of intentional and effortful behaviors, agency, control, and effort would serve as the most important dimensions in predicting action. Based on the associations between action and positivity in Study 1, I further hypothesized that the more active a behavior was, the more positively it would be evaluated. This study therefore tests *Hypothesis 1*.

Method

Participants. A hundred and eighty-five undergraduates, recruited from a Midwestern university subject pool, participated in exchange for partial course credit. Five participants did not submit the survey, resulting in a final sample size of N = 180. The sample included 99 females, 78 males, and 3 people who chose not to disclose their gender. The sample ranged in age from 18 to 26 years (M = 19.06, SD = 1.30). Informed consent was obtained from all participants before proceeding with the experiment.

Procedure. Participants were told that the purpose of this study was to explore how people define and understand what it means to be active and what it means to be inactive. Participants were presented with a subset of words included in McCulloch et al. (2012) that were characteristic of action, inaction, or a combination of the two. Participants were presented with three words that were rated high in action (*run, jump, kick*), three words that were rated high in inaction (*paralyze, unable, stationary*), three words that fell somewhere in between the action-inaction continuum (*interrupt, compare, judge*), as well as the terms *active* and *inactive*. As these

words have previously been pre-tested, I had *a priori* expectations that these words would represent the full activity continuum. In addition to these words, participants were also presented with words used in subsequent studies in this dissertation. These included words I expected to be rated high in action (*press*, *push*, *pull*, *doodle*) and words I expected to be rated high in inaction (*meditate*, *mind wander*).

Participants were then asked to rate each word on a list of characteristics found to be most commonly associated with action and inaction. This included an assessment of how much a word appeared *intentional*, *goal-directed*, *purposeful*, *deliberate*, *accidental*¹⁵, *controllable* (both in terms of the behavior it described and the outcome of the behavior), *effortful*, *desirable*, *favorable*, *beneficial*, *positive*, and *physical*. This also included an assessment of whether the word represented a *want* or a *need*, and whether the word represented a *change* or remaining in *stasis*. Each characteristic was measured on a five-point scale, ranging from 1 (*not at all*) to 5 (*a great deal*). As the Cronbach's alpha for the scales assessing agency (*intentional*, *goal-directed*, *purposeful*, *deliberate*, *accidental*¹⁶), the scales assessing control (*behavior control*, *outcome control*), and the scales assessing evaluation (*desirable*, *favorable*, *beneficial*, *positive*) ranged from moderate to high across words (agency: $\alpha = 0.54-0.80$, control: $\alpha = 0.50-0.83$, evaluation: α = 0.80-0.91), participants' responses were averaged on these scales to form an index of agency, control, and evaluation. Participants were then given a debriefing, and thanked for their participation.

Results

The means for action, with agency, control, effort, change, valence, physicality, want, and need were calculated (see Figures 3-4). An examination of the means shows that the

¹⁵ Reverse scored.

¹⁶ Reverse scored.

behaviors that were perceived as more active were also perceived as more agentic, controllable, effortful, and positive. These results are concordant with findings from McCulloch and colleagues (2012).

Predictors of action and inaction.¹⁷ Simple linear regression models were calculated by regressing activity ratings onto ratings of agency, control, effort, and change. Results revealed a positive relation, with all four variables independently predicting how active or inactive a behavior was perceived. See Table 5 for regression coefficients and standard errors.¹⁸ Results from Study 1, however, revealed that people define action and inaction in complex ways while taking into consideration multiple characteristics simultaneously. Thus, the previous analysis was rerun using a multiple regression model, including all eight characteristics measured. The model significantly predicted perceptions of action and inaction, F(1, 15) = 76.45, p < .001, corresponding to 99% of the variance. But, this time, not all the predictors added significantly to the model. Instead, only agency, control, and effort predicted perceptions of action and inaction. There was a positive relation between control and action/inaction ratings, b = 0.63, t(15) = 2.49,

p = .038, as well as between effort and action/inaction ratings, b = 1.22, t(15) = 3.93, p = .004.

Interestingly, however, there was a negative relation between agency and action/inaction ratings,

¹⁷ As ratings for each word were nested with a person, a multilevel modeling analysis was conducted. The null model was first computed to give an indication of how much variance each person could account for. The inter-class correlation (ICC) for this model was $\rho = 0.01$, suggesting that participants accounted for 1% of the variance in how active a word was rated. Many methodologists suggest that with low ICCs ($\rho < .05$), multilevel modeling may not be needed and, instead, the data may be analyzed using single-level regression models (e.g., Hayes, 2006; Thomas & Heck, 2001). Therefore, the results of our null model were taken as an indicator of no significant variation across groups, suggesting no clustering. A a similar null model was produced when evaluation was as the dependent variable, with an $\rho = 0.02$.

¹⁸ Simple regression models were also run regressing activity ratings onto ratings of evaluation, physicality, want, and need. Results revealed that all four variables independently predicted how active or inactive a behavior was perceived. These results suggest that, considering characteristics like how positive or how physical a behavior is in isolation can impact how active a behavior is perceived. Yet, results from the multiple regression analysis show that, when considering different characteristics simultaneously, only agency, control, and effort are significant predictors of how active a behavior is perceived, explaining most of the variance. Therefore, while evaluation, physicality, want, need, and change do play a role in definitions of action and inaction, they seem to be overshadowed by agency, control, and effort. See Table 5 for regression coefficients and standard errors.

b = -0.95, t(15) = -2.84, p = .022. A look at Figure 3 reveals that this trend is partly due to the fact that not all inactive behaviors chosen were automatically perceived to be low in intentionality, goal-directedness, purposefulness, or deliberateness, but that, agency was attributed to such behaviors as *meditating*, *judging*, or choosing to be *inactive*. This is interesting and suggests that, perhaps, by making the agentic qualities that often underlie other inactions more salient, perceptions of these behaviors can be changed.¹⁹ See Table 6 for regression coefficients and standard errors.

Predictors of evaluation. A simple linear regression model was calculated by regressing evaluation ratings onto ratings of activity. Results revealed that how active a behavior was significantly predicted evaluation, F(1, 15) = 13.39, p = .002. Particularly, there was a positive relation between these variables, b = 0.52, t(15) = 3.66, p = .002, corresponding to 47% of the variance shared by ratings of action, inaction, and evaluation. Therefore, as predicted, people appear to perceive behaviors that are more active as more positive.

Discussion

The purpose of Study 2 was to determine the degree to which different characteristics predict judgments of action and inaction. When considering all dimensions of behavior, only agency, control, and effort predicted perceptions of action and inaction (supporting *Hypothesis 1*). An interesting discovery in this study was that not all inactive words were automatically perceived to be low in agency. Instead, behaviors like *meditating* or *judging* were seen as intentional or goal-directed, even though they were also classified as inactions. This finding suggests that inactions can be agentic as well and, perhaps, by emphasizing these agentic qualities of inaction, it may be feasible to generate positive evaluations of them. Finally, the

¹⁹ This result is also partly due to a suppression effect (Horst, 1941).

results found that action and evaluation were associated with each other, with more active behaviors evaluated more positively. Therefore, the results from this study indicate how laypeople define action and inaction, and which of the theoretical definitions posited are integral in distinguishing between the two.

CHAPTER 4: STUDY 3 – EVALUATIONS OF ACTION AND INACTION

A *second* question in this thesis concerns naïve evaluations of action and inaction. Prior research on action-inaction biases (e.g., Baron & Ritov, 2004; Kahneman & Tversky, 1982; Landman, 1987; Ritov & Baron, 1990; Spranca et al., 1991) reveals that the desirability of a behavior stems from the outcome of the behavior. The purpose of this study was to empirically evaluate whether outcome information determines the desirability of a behavior. In this study, participants were provided with the trivial behavior of "flipping a switch," and then asked to rate the level of action and intentionality associated with the behavior, as well as to evaluate the behavior overall. In this study, both the behavior condition (action, inaction) and the outcome (positive, negative, unspecified) were directly manipulated.

I hypothesized an interaction between the behavior and outcome conditions. First, I predicted that (1) when outcome information is provided, judgments of evaluation would be based on whether the outcome was positive or negative. Thus, inactions with a positive outcome would be evaluated favorably, whereas actions with a negative outcome would be evaluated unfavorably, relative to a control condition. However, based on existing research on action-inaction biases, this effect is likely to be uneven. Therefore, evaluations of actions with negative outcomes, whereas evaluations of actions with positive outcomes would be more unfavorable than evaluations of inactions with negative outcomes, whereas evaluations of actions with positive outcomes would be more favorable then evaluations of inactions with positive outcomes. This prediction would thus be consistent with prior research showing that people prefer negative outcomes produced by an inaction (*omission bias*, Baron & Ritov, 2004; Ritov & Baron, 1990; Spranca et al., 1991) or positive outcomes produced by an action (*actor effect*, Landman, 1987). Second, I predicted that (2) in conditions where the outcome of a behavior is neutral, judgments of evaluation of actions would be more favorable

than inactions, because of normative associations between action and general positivity. Considering that the behavior in this study is trivial, such a bias could suggest an inherent preference for action. This study is the first step in testing *Hypothesis 2*.

Method

Pre-registration. The design, hypotheses, and analysis plan were all pre-registered at the Open Science Framework (https://osf.io/tb6r2).

Power analysis. The size of the effect observed in a pilot study was $d_f = 0.18$ (i.e., a small effect, according to Cohen's 1992 effect size convention). Thus, to determine the sample size needed to detect an effect of this size in Study 3, a power analysis was conducted for a factorial design, with $\alpha = 0.01$, power = 0.80, number of groups = 6, and a $d_f = 0.18$. This revealed that the required sample size should be $N = 458^{20}$.

Participants. Four hundred and sixty-five participants, recruited from Amazon Mechanical Turk, participated in exchange for 75 cents. The sample consisted of 202 females, 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 were informed:

 $^{^{20}}$ During the pilot study, there were some unexpected problems with the data collection (e.g., participants not showing up, technical issues that resulted in the experiment ending prematurely). Therefore, more participants were run than required to ensure that, after any exclusions, the final *N* was still near the goal.

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 were informed:

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 manipulation thus served to modify the outcome information associated with each behavior.

After reading the assigned behavior, participants provided various ratings.²¹ 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 the manipulation check. Participants were asked to rate the subjective 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*).²² Participants were also asked to evaluate the behavior on two scales from 1 (*completely desirable*). As the correlation between the two scales for action, the two scales for subjective intentionality, and the two scales for evaluation were high (action: r = .85, subjective intentionality: r = .86, evaluation: r = .89), participants' responses were averaged to form three indices. Participants were then asked to complete individual difference

²¹ In order to determine the wording of each rating scale, a series of pilot studies were conducted to test variations, until two rating scale items were identified (for action, intentionality, and evaluation) that shared conceptual overlap, and led to consistently similar ratings across participants.

²² As I did not have *a priori* hypotheses about intentionality in this study, it is not described in the results section.
measures²³ and, upon the completion of those measures, were debriefed and thanked for their participation.

Results

Manipulation check. An independent samples *t*-test was conducted to gauge differences in rated action or inaction across the two experimental conditions. The manipulation check revealed that scenarios describing an action were perceived as more active (M = 5.67, SD = 1.43) than scenarios describing an inaction (M = 3.35, SD = 2.09), t(481) = 14.28, p < .001, d = 1.30.

Judgments of evaluation. A multivariate analysis of variance was conducted to determine whether there were differences in judgments of evaluation as a function of the two-level (action, inaction) behavior condition, and the three-level (positive, negative, unspecified) outcome condition. As predicted, the omnibus interaction between the behavior and outcome conditions was significant for judgments of evaluation F(2, 473) = 6.92, p = .001. See Table 7 for *M*s and *SD*s corresponding to these analyses.

Judgments of evaluation were based on whether the outcome was positive or negative. Therefore, judgments of evaluation were highest in the positive-outcome condition, followed by the unspecified-outcome condition, and then the negative-outcome condition. This finding suggests a step-wise relation between behavior, outcome, and evaluation, with manipulations of outcome affecting judgments of evaluation. This effect was qualified by an interaction between behavior and outcome type. When outcome information was provided, judgments of evaluation for actions with positive outcomes were more favorable than evaluations of inactions with

²³ These measures included the Action-Inaction Value Scale, Temporal Action Initiation Scale (Freitas, Liberman, Salovey, & Higgins, 2002), Impulsiveness Decision Making Scale (Hinson, Jameson, & Whitney, 2003), Unethical Decision Making Scale (Detert, Trevino, & Sweitzer, 2008), and the State Self-Control Capacity Scale (Twenge, Muraven & Tice, 2004). As the focus of this study was not on response variability due to individual differences, these scales are not included in any of the analysis below.

positive outcomes. But, there was no difference in judgments of evaluation between actions and inactions with negative outcomes. Actions that produce a positive outcome are thus more favored than their inactive counterparts, while both behaviors are evaluated equivalently when they produce a negative outcome. When outcome information was unspecified, judgments of evaluation were higher for actions than inactions. Therefore, in the absence of outcome information, people have a natural tendency to associate actions, more so than inactions, with a positive outcome, perhaps alluding to an inherent bias (see Figure 5).

Discussion

The purpose of Study 3 was to empirically evaluate whether actual or expected outcome information determines the desirability of a behavior. Judgments of evaluation were based on whether the outcome was positive or negative. Therefore, judgments of evaluation were highest in the positive-outcome condition, followed by the unspecified-outcome condition, and then the negative-outcome condition. This effect was qualified by an interaction between behavior and outcome type (supporting *Hypothesis 2*). Evaluations of actions with positive outcomes was more favorable than evaluations of inactions with positive outcomes, consistent with work on the actor effect (Landman, 1987). However, evaluations of actions with negative outcomes were not less favorable than evaluations of inactions with negative outcomes, contrary to prior research showing that people feel less regret after inaction (e.g., Kahneman & Tversky, 1982) or prefer harm by omission (e.g., Spranca et al., 1991). This pattern could be due to the fact that the behavior (and outcome) used in this study was trivial. If so, then perhaps a bias favoring action under positive conditions is not dependent on the severity of the behavior or outcome, but a bias favoring inaction under negative conditions is. Finally, when the outcome of the behavior was unspecified, judgments of evaluation were higher for actions than inactions (further supporting

Hypothesis 2), perhaps because of the normative associations between action and general positivity. Considering the behavior in this study was a trivial one of flipping a switch, such a bias supports the notion of an inherent preference for action.

CHAPTER 5: STUDY 4 – PREFERENCES FOR ACTION AND INACTION

The purpose of this study was to investigate whether evaluations favoring action also apply to behavioral preferences. The relation between evaluation and behavior has been wellexplored. Attitudes predict behavior, but the relation between the two is not always consistent (for a review, see Glasman & Albarracín, 2006). Instead, attitude-behavior correlations have been shown to range from r = .09 (Fishbein & Ajzen, 1974) to r = .81 (Cohen, 2003), for a metaanalytic value of r = .52 (Glasman & Albarracín, 2006). Therefore, it is important not only to assess evaluations of action and inaction, but actual behavioral preferences for one or the other.

The purpose of this study was to see whether, when given the opportunity to engage in an action or an inaction, actions would be selected more frequently. In this study, participants were given the option to engage in action or to engage in inaction. I hypothesized that, when given the opportunity to engage in an action or an inaction, actions would preferred, suggesting that biases for action extend to behaviors as well. This study therefore tests *Hypothesis 2*.

Method

Pre-registration. The design, hypotheses, and analysis plan were all pre-registered at the Open Science Framework (https://osf.io/7pu5z).

Power analysis. The size of the smallest effect observed in a pilot study was $d_w = 0.29$ (i.e., a small-to-medium effect, according to Cohen's 1992 effect size convention). Thus, to determine the sample size needed to detect an effect of this size in Study 4, a power analysis was conducted, with $\alpha = 0.01$, power = 0.80, df = 1, and a $d_w = 0.29$. This revealed that the required sample size should be $N = 139^{24}$.

 $^{^{24}}$ During the pilot study, there were some unexpected problems with the data collection (e.g., participants not showing up, technical issues that resulted in the experiment ending prematurely). Therefore, more participants were run than required to ensure that, after any exclusions, the final *N* was still near the goal.

Participants. One hundred and forty-one participants, recruited from Amazon Mechanical Turk, participated in exchange for 75 cents. The sample consisted of 68 females, 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 decisionmaking task and would be assigned to either express their responses by pressing a button (action) or not pressing a button (inaction). Participants were further told, however, that they could indicate their preference for what they would like to do. This indication was taken as an assessment of whether participants prefer action or inaction. Following their indication, participants were asked to complete the decision-making task. Assignment of response condition was based on participants' indicated preferences. During the decision-making task, participants were asked to either (a) select a specific button (action-condition) or (b) check whether a specific button was already selected (inaction-condition) based on given prompts. Participants were then asked to respond to a few questions about the task. Participants were asked to rate how active they found the task and how effortful they found the task on a scale from 1 (not at all) to 5 (*extremely*). These served as the manipulation checks. Participants were also asked to rate how much they enjoyed the task on a scale from 1 (not at all) to 5 (extremely). Participants were then asked to complete an individual difference measure²⁵ and, upon the completion of this measure, were debriefed and thanked for their participation.

²⁵ This measure included the Health Lifestyle and Personal Control Questionnaire (Darviri et al., 2014). As the focus of this study was not on response variability due to individual differences, this scale is not included in any of the analysis below.

Results

Manipulation check. An independent samples *t*-test was conducted to gauge differences in rated action or inaction across the two experimental conditions. The manipulation check revealed that the response option involving an action was perceived as more active (M = 2.95, SD = 1.04) than the response option 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).

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

Evaluations. An independent samples *t*-test was conducted to test whether participants found the active response option more favorable than the inactive response format. There was no significant difference in how favorably participants evaluated the active response option (M = 2.99, SD = 1.24), relative to the inactive response option (M = 2.79, SD = 1.59), p = .49 (see Figure 6).

Discussion

The purpose of this study was to investigate whether conclusions about evaluations of action and inaction concepts had implications for behavioral preferences. Study 4 extends the results from Study 3, showing that attitudes favoring action extend to behaviors as well (supporting *Hypothesis 2*). Interestingly, however, there were no significant difference in evaluations of action and inaction. This lack of difference could be because participants enjoyed

both response options equally. Some qualitative comments, however, supported that participants enjoyed clicking buttons.

"For some reason clicking the buttons at the beginning was a welcomed and enjoyable task in my day."

"I don't know why, but pressing blank pointless buttons was sorta fun. It makes no sense."

No participant commented on the inactive condition of this study. Therefore, although not conclusive, this qualitative evidence suggests that people will not only choose action over inaction, but enjoy it as well.

CHAPTER 6: STUDY 5 – A MEDIATOR OF ACTION, INACTION, AND POSITIVITY

A *third* question in this thesis explores the underlying mechanisms driving evaluations of action and inaction. In my conceptualization, actions are evaluated more positively than inactions because actions are subjectively more intentional or goal-directed (Ferguson & Bargh, 2004; Kordes-de Vaal, 1996), controllable (Cornwell et al., 2014; Eitam et al., 2013), and effortful (Aronson & Mills, 1959; Norton et al., 2012) than inactions. Evidence for this comes from several areas. First, positive attitudes are associated with strong intentions (Ajzen & Fishbein, 2005) and people often reason that an intended behavior is better than an unintended one. Second, the subjective value of a behavior is determined by the effort that goes into the behavior (Aronson & Mills, 1959), such that, mere engagement in labor increases the value of the task outcomes (Norton et al., 2012). Taken together, the association between action and these agentic properties appears likely in creating these positive evaluations.

The purpose of this study was to assess if agency serves as a mediator for the relation between action, inaction, and evaluation. In this study, participants were provided with the trivial behavior of "pressing a button," and then asked to rate the level of action and intentionality associated with the behavior, as well as to evaluate the behavior overall. In this study, both the behavior condition (action, inaction) and the level of agency (high, low, unspecified) were directly manipulated.

I hypothesized that, although the naïve conception is that actions are more intentional than inactions, these judgments would be malleable and sensitive to information about how agentic the behavior is. Specifically, I hypothesized that (1) when participants encounter behaviors that describe an action or an inaction devoid of agentic information (i.e., the control group), actions would be judged as more intentional and more positive than inactions. In contrast, (2) when behaviors include descriptions of agency, there would be congruent changes in intentionality and evaluation. Particularly, inactions associated with high agency would be perceived more positively, and actions associated with low agency would be perceived more negatively, than inactions and actions in the unspecified-agency (control) condition. This pattern should be reflected in an interaction between the behavior (action and inaction) and the agency manipulations (high, low, and unspecified). This study therefore tests *Hypothesis 3*.

Method

Pre-registration. The design, hypotheses, and analysis plan were all pre-registered at the Open Science Framework (https://osf.io/srb7s).

Power analysis. The size of the smallest effect observed in a pilot study was $d_f = 0.19$ (i.e., a small effect, according to Cohen's 1992 effect size convention). Thus, to determine the sample size needed to detect an effect of this size in Study 5, 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 revealed that the required sample size should be $N = 377^{26}$.

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. The sample included 244 females, 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 (agency: high, low, unspecified) between-

 $^{^{26}}$ During the pilot study, there were some unexpected problems with the data collection (e.g., participants not showing up, technical issues that resulted in the experiment ending prematurely). Therefore, more participants were run than required to ensure that, after any exclusions, the final *N* was still near the goal.

subjects design. All participants were told, "*Imagine yourself pressing* [or *not pressing*] *a button*." Participants in the high- and low-agency conditions were given additional information. Participants in the high-agency condition were informed:

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-agency condition were informed:

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-agency condition were presented with the behavior alone, with no additional information on agency. This manipulation thus served to modify the levels of agency 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 the manipulation check. Participants were asked to rate the subjective 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*). Further, participants were also asked to evaluate the behavior on two scales from 1 (*completely negative/completely not desirable*) to 7 (*completely passive/completely desirable*). As the correlation between the two scales for action, the two scales for subjective intentionality, and the two scales for evaluation ranged from moderate to high (action: r = .64, subjective intentionality: r = .81, evaluation: r = .71),

participants' responses were averaged to form three indices. Participants were then asked to complete individual difference measures²⁷ and, upon the completion of those measures, were debriefed and thanked for their participation.

Results

Manipulation check. An independent samples *t*-test was conducted to gauge differences in rated action or inaction across the two experimental conditions. The manipulation check revealed that scenarios describing an action were perceived as more active (M = 4.90, SD = 1.64) than scenarios describing an inaction (M = 3.45, SD = 1.57), t(369) = 8.75, p < .001, d = 0.91.

Judgments of subjective intentionality. A multivariate analysis of variance was conducted to determine whether there were differences in judgments of subjective intentionality and evaluation as a function of the two-level (action, inaction) behavior condition, and the three-level (high, low, unspecified) agency condition. As predicted, the omnibus interaction between the behavior and agency conditions was significant for judgments of subjective intentionality F(2, 363) = 8.93, p < .001. See Table 8 for *M*s and *SD*s corresponding to this analysis. For actions, judgments of subjective intentionality were consistent with the manipulation of agency. Therefore, judgments of subjective intentionality was highest in the high-agency condition and lowest in the low-agency condition. Interestingly, when comparing differences between conditions, differences in judgments of subjective intentionality were greater when actions with unspecified-levels of agency were compared with actions with low-agency, than with actions with high-agency. This finding suggests that, in the absence of additional information, actions

²⁷ These measures included the Temporal Action Initiation Scale (Freitas, Liberman, Salovey, & Higgins, 2002), Impulsiveness Decision Making Scale (Hinson, Jameson, & Whitney, 2003), Unethical Decision Making Scale (Detert, Trevino, & Sweitzer, 2008), and the State Self-Control Capacity Scale (Twenge, Muraven & Tice, 2004). As the focus of this study was not on response variability due to individual differences, these scales are not included in any of the analysis below.

are associated with higher levels of intentionality. In contrast, differences in judgments of subjective intentionality were greater when inactions with unspecified-levels of agency were compared with inactions with high-agency, than with inactions with low-agency. This finding suggests that, in the absence of additional information, inactions are associated with lower levels of intentionality (see Figure 7).

Judgments of evaluation. As predicted, the omnibus interaction between the behavior and agency conditions was significant for judgments of evaluation F(2, 363) = 7.70, p = .001. See Table 8 for *M*s and *SD*s corresponding to these analyses. Regardless of the behavior condition, judgments of evaluation were higher in the high-agency condition than the unspecified-agency condition or the low-agency condition. For actions, judgments of evaluation were also higher in the unspecified-agency condition compared to the low-agency condition. This finding suggests a step-wise relation between action, agency, and evaluation, with manipulations of agency affecting judgments of evaluation. Yet, for inactions, judgments of evaluation between the low-agency condition and the unspecified-agency condition. This result implies that inactions are spontaneously associated with less positive evaluations when no information about agency is provided, but that manipulations of agency can act to counter this (see Figure 8).

Moderated mediation model. I hypothesized that actions are associated with greater agency, and therefore, perceived more positively, relative to inactions. An examination of the data, however, revealed that agency affected evaluations of action and inaction differently. A moderated mediation model was therefore conducted to determine whether the effect of action and inaction on evaluations was mediated by subjective intentionality differently, depending on the type of behavior (see Figure 9). The correlation coefficients for each path (i.e., the relation between each variable) in the mediation model were statistically significant (behavior-subjective intentionality: r = .14, p = .009; behavior-evaluation: r = .23, p < .001; subjective intentionalityevaluation: r = .59, p < .001). These results indicated that, at a bivariate level, each of the conditions necessary to test for the possible role of mediation were met. A moderated mediation analyses was thus conducted using bootstrapping with bias-corrected confidence estimates using a 95% interval and 5000 resamples (Hayes, 2013; Preacher & Hayes, 2008). Results of the model revealed significant indirect effects of subjective intentionality on evaluation at different levels of behavior (action = 0.53 [0.36, 0.70]; inaction = 0.34 [0.22, 0.49]). In fact, the index of moderated mediation was 0.18 [0.07, 0.32]. Therefore, the subjective intentionality associated with a behavior appears to be important in driving some of the differences we observe between actions and inactions, but is stronger for actions.

A moderated mediation model was also conducted to determine whether the effect of action and inaction on evaluations was mediated by subjective intentionality differently, depending on the level of agency (see Figure 9). Results revealed that they were (unspecified-agency = 0.09 [0.04, 0.15]; high-agency = 0.16 [0.09, 0.25]; low-agency = 0.01 [-0.07, 0.09]). The index of moderated mediation was 0.09 [0.03, 0.17]. Therefore, intentionality mediates the relation between action, inaction, and evaluation, but not so at low-levels of agency. In other words, when the agency associated with a behavior is low, evaluation of action and inaction become similar.

Discussion

The purpose of Study 5 was to assess if agency serves as a mediator for the relation between action, inaction, and evaluation. The results showed that people have a natural tendency to evaluate actions more intentionally and more positively than inactions. Results further revealed that inactions associated with higher agency were perceived more positively, and actions associated with lower agency were perceived more negatively, relative to inactions and actions in the unspecified-agency condition, respectively (supporting *Hypothesis 3*). This pattern suggests that manipulations of agency are intrinsically related to, and can help, attenuate biases favoring action. An analysis of the moderated mediation model further revealed that the conditional indirect effect of behavior condition on evaluations was mediated by subjective intentionality, but that this varied as a function of behavior. That is, the role of subjective intentionality was stronger for actions than it was for inactions. This pattern suggests that actions (but not inactions) might automatically be attributed with greater intentionality, which then results in actions being evaluated more favorably.

CHAPTER 7: STUDY 6 – ACTION AND INACTION IN HEALTH DECISIONS

Finally, a *fourth* question in this thesis concerns the consequences of different evaluations of action and inaction. Although both action and inaction are viable options, evidence suggest that people often favor action when deciding between two health options (Fagerlin et el., 2005; Gavaruzzi et al., 2011). That is, when given the option, people more often recommend treatment (e.g., medication, surgery) over more inactive strategies. Although taking action can be useful in many health situations, it is not always beneficial. Instead, relying on action can lead to diminished health, or be akin to making a hasty or risky decision (e.g., in situations involving decisions between a risky treatment versus a more passive strategy; Fagerlin et al., 2005; Zikmund-Fisher et al., 2011).

The purpose of this last study was to investigate whether associations between action, inaction, and health affect decisions and preferences. In this study, participants were presented with a cancer scenario and asked to select between one of two options: An action or an inaction. In this study, both the behavior condition (action, inaction) and the level of intentionality (high, low, unspecified) were directly manipulated.

I hypothesized that, (1) when given the option between action versus inaction, participants would be more likely to select the active option. Therefore, when given the option between watchful waiting (inaction) and surgery (action), participants should opt for surgery. I further hypothesized that (2) when participants are asked to engage in a task that makes the intentionality associated with a behavior more salient, preferences would shift. Particularly, when asked to think about intentional actions, participants' preferences for action would remain (similar to a control condition). In contrast, when asked to think about intentional inactions, participants' preferences would shift, revealing either (a) an attenuation of the action bias, or (b) a reversal, with greater preference for inaction instead.

Method

Pre-registration. The design, hypotheses, and analysis plan were all pre-registered at the Open Science Framework (https://osf.io/trzn9).

Power analysis. The size of the smallest effect observed in a pilot study was $d_w = 0.2$ (i.e., a small effect, according to Cohen's 1992 effect size convention). Thus, to determine the sample size needed to detect an effect of this size in Study 6, a power analysis was conducted, with $\alpha = 0.01$, power = 0.80, degrees of freedom = 2, and a $d_w = 0.2$. This revealed that the required sample size should be $N = 348^{28}$.

Participants. Three hundred and fifty participants, recruited from Amazon Mechanical Turk, participated in exchange for 75 cents. The sample consisted of 159 females, 189 males, and 2 individuals who chose not to disclose their gender. The sample ranged in age from 18 to 66 (M = 35.62, SD = 11.56). Informed consent was obtained from all participants before proceeding with the experiment.

Procedure. Participants were randomly assigned into one of three conditions. In all three conditions, participants were asked to describe a situation where they engaged in a behavior. To ensure detail, participants were told to include information, such as the background that led to the situation, the context in which the situation happened, the situation itself, how they felt during the situation, and their thoughts afterwards. Participants in the intentional-action condition were informed:

 $^{^{28}}$ During the pilot study, there were some unexpected problems with the data collection (e.g., participants not showing up, technical issues that resulted in the experiment ending prematurely). Therefore, more participants were run than required to ensure that, after any exclusions, the final *N* was still near the goal.

Action = physical or mental activity that requires intent and effort while one is engaged in it.

Please describe a situation when you engaged in an action that was intentional. This could be a situation where you made the choice and decided to do something. This could be a situation where you engaged in a willful decision, a planned action, or a behavior that was meant or done on purpose.

In contrast, participants in the intentional-inaction condition were informed:

Inaction = restful physical or mental activity that does not require intent or effort while one is engaged in it.

Please describe a situation when you engaged in an inaction that was intentional. This could be a situation where you made the choice and decided not to do something. This could be a situation where you engaged in a willful decision, a planned inaction, or a behavior that was meant or done on purpose.

Participants in the control condition were simply asked to describe a situation where they engaged in a behavior, with no additional information. This manipulation thus served to modify the salience of intentionality associated with either action or inaction.

Following this task, participants provided various ratings. Participants were asked to rate the extent to which they felt like they were being *active*, *passive*, *busy*, *idle*, *moving*, and *static*, and the extent to which the behavior they described was *controllable* and *effortful* on a five-point scale from 1 (*not at all*) to 5 (*a great deal*). This served as the manipulation check for both action and intentionality. As the Cronbach's alpha for the scales assessing action (*active*, *passive*, *busy*, *idle*, *moving*, *static*) and the scales assessing agency (*controllable*, *effortful*) were moderate (action: $\alpha = 0.42$, agency: $\alpha = 0.54$), participants' responses were averaged on these scales to form an index of action and agency.

Participants were then presented with a cancer scenario adapted from Fagerlin, Zikmund-Fisher, and Ubel (2005) (See Table 9). In the scenario, participants were asked to imagine that they had just been diagnosed with a slow-growing cancer that was, currently, not a problem. Participants were told that they could select from one of two treatment options: Watchful waiting (inaction) or surgery (action). Regardless of which option participants chose, their chance of dying was kept constant at 10%. Participants were asked to select which option they preferred, and explain their answer. Participants were then debriefed and thanked for their participation.

Results

Manipulation check. A one-way ANOVA was conducted to gauge differences in rated action and rated agency across the three manipulated conditions. The manipulation check revealed that there were significant differences in rated action and agency across conditions (for action: F(2, 347) = 4.44, p = .01; for agency: F(2, 347) = 3.82, p = .02). Participants felt most active in the intentional-action condition (M = 3.36, SD = 0.66), compared to either the intentional-inaction condition (M = 3.16, SD = 0.70) or the control condition (M = 3.13, SD = 0.56), ps < .02. Participants felt most agentic in both the intentional conditions (intentional-action: M = 3.83, SD = 0.74; intentional-inaction: M = 3.68, SD = 0.80), compared to the control condition (M = 3.54, SD = 0.82), ps < .03.

Response preference. A chi-square goodness of fit was conducted to determine whether the number of participants selecting the active versus inactive response options were equivalent. Results revealed that there was a statistically significant difference in the number of participants who selected each option, $\chi^2(1) = 13.14$, p < .001, with approximately 60% of the participants selecting the active response. To examine whether manipulating the salience of intentionality affected behavior preference, a binomial logistic regression was conducted. Results found that the relation between these variables was not significant, $\chi^2(2) = .21$, p = .90. That is, there was no difference in preference for watchful waiting or surgery across conditions (see Figure 10).

Discussion

The purpose of Study 6 was to replicate the action bias observed in health decisions and see if this bias could be attenuated by linking intentionality to inaction. An examination of the data revealed that, overall, people preferred surgery to watchful waiting. This is consistent with the findings produced by Fagerlin and colleagues (2005), as well as the conclusions from the health literature overall. What was interesting, however, was that the manipulation of intentionality did not attenuate this bias. This finding suggests that, perhaps, reminding people that inactions can be intentional is not sufficient to mitigate the preference for action. Instead, intentionality may only be able to alter how decisions are made when it is part of the actual choice option (see Gavaruzzi et al., 2011).

CHAPTER 8: GENERAL DISCUSSION

The goals of this thesis were to test evaluations of action, explore the intentionality or effort judgments that underlie it, and investigate how to reduce the pressure towards action in health decisions based on the identified principles. Study 1 found that lay conceptualizations of action overlap with theoretical definitions of action as (a) occurrence versus absence, (b) agentic versus non-agentic, (c) effortful versus effortless, and, to a lesser extent, (d) change versus stasis (supporting *Hypothesis 1*). An examination of the coded data revealed that actions were also described more positively, included outcome information, encapsulated both physical behavior and mental processes, and were behaviors people felt they needed to perform. Lay conceptualizations of action and inaction thus involve action as more than just agentic and effortful behaviors. Study 2 found that, when considering all dimensions of behavior, only agency, control, and effort predicted perceptions of action and inaction (further supporting *Hypothesis 1*). Although actions were associated with greater agency, not all inactive words were automatically perceived to be low agency, suggesting that manipulation of these judgments for inaction is possible.

Study 3 found that actual or expected outcome information determines the desirability of a behavior, but that this effect is qualified by an interaction (supporting *Hypothesis 2*). Therefore, evaluations of actions with positive outcomes were more favorable than evaluations of inactions with positive outcomes. Yet, evaluations of actions with negative outcomes were equivalent to evaluations of inactions with negative outcomes. An examination of the control condition further revealed that, in the absence of outcome information, evaluations were higher for actions than inactions, suggesting an inherent preference for action. Study 4 found that evaluations favoring action also apply to behavioral preferences (further supporting *Hypothesis 2*). Interestingly,

however, there was no a significant difference in how much participants enjoyed their actions and inactions once they experienced them.

Study 5 found that people have a natural tendency to evaluate actions more intentionally and more positively than inactions. Therefore, inactions associated with higher agency were perceived more positively, and actions associated with lower agency were perceived more negatively, relative to inactions and actions in the unspecified-agency condition, respectively (supporting *Hypothesis 3*). An analysis of the moderated mediation model further found that the conditional indirect effect of behavior condition on evaluations was mediated by subjective intentionality, but that this varied as a function of behavior, suggesting that actions (but not inactions) might automatically be attributed greater intentionality which then results in a positivity bias. Finally, Study 6 found that, although participants preferred the active choice when making health decisions, this bias could not be attenuated by making the intentionality associated with inactions more salient. Overall, the present research demonstrated that (a) naïve conceptualizations of action and inaction overlap with theoretical definitions of action as agentic and effortful behaviors, (b) people not only evaluate actions more favorably, but prefer to engage in them as well, (c) intentionality serves to, partly, mediate this relation between action and positivity, but (d) making intentionality salient does not reduce a bias towards action in health decisions.

Limitations

Despite the knowledge gained in the present research, there are a few limitations. First, we were not able to replicate prior interactions between action/inaction and positive/negative outcomes (Study 3). Contrary to prior work, the results found that evaluations of actions with negative outcomes were not less favorable than evaluations of inactions with negative outcomes.

53

This failure to replicate prior findings could reflect a methodological flaw in the design of the study. It is more likely, however, that this result was because the behavior (and outcome) used in this study was trivial. If so, then perhaps a bias favoring action under positive conditions is not dependent on the severity of the behavior or outcome, but a bias favoring inaction under negative conditions is. Further work will be necessary to determine if this is true, and how it may affect preferences for action and inaction in other domains.

Second, we were not able to find significant differences in participants' level of enjoyment after they had engaged in an active or inactive response option (Study 4). It is possible that participants enjoyed both response options equally. However, this interpretation would be contrary to findings that have shown that people who choose to be busy report higher feelings of happiness than those who choose to be idle (Hsee et al., 2010). And, in fact, participant comments at the end of Study 4 revealed that many found the task "a welcomed and enjoyable task" that was "sorta fun." Therefore, it will be important to conceptually replicate work in this area to identify when people enjoy action over inaction, and if there are conditions under which enjoyment of both occur at equivalent levels.

Finally, we were unable to attenuate the action bias by activating the concept of intentionality in relation to inactions (Study 6). Perhaps, reminding people that inactions can be intentional is not sufficient to mitigate the preference for action. Instead, intentionality may only be able to alter how decisions are made when it is part of the actual choice option (see Gavaruzzi et al., 2011). Even then, priming concepts alone is sometimes unlikely to exert predictable effects because the direction of the effects depends on people's pre-existing motivations (Hart & Albarracín, 2009; Strahan, Spencer, & Zanna, 2002). And, although the manipulation was

significant, the difference between conditions was small. It is thus worth future research to try other procedures.

Relations with Relevant Theory

These findings complement the literature examining biases associated with actions versus 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). The prolific decision-making literature exploring these, and associated, effects has demonstrated some fundamental differences in the way that people think about, and process, behaviors of actions and inactions, resulting in irrational biases. As this work has considered risky situations, with likely negative outcomes, actions have been shown to produce more blame and more regret than inactions. This thesis has extended work in this area in two ways. First, considering that in everyday life, many behaviors one encounters are trivial in nature, this thesis explored the biases that occur under these neutral conditions. Second, as intentionality is ascribed with desirability, this thesis further explored how its association with actions could alternatively lead people to perceive actions more favorably.

These findings also complement a growing literature on differences between actions and inactions in attitude and goal research (Albarracín et al., 2011). Thus far, research in this domain has focused on understanding the effects of priming action or inaction goals on behavior (e.g., Albarracín et al., 2008; Noguchi et al., 2011), while trying to identify differences in individual, religious, and cultural preferences for action and inaction (e.g., Ireland et al., 2015; Levine & Norenzayan, 1999; Zell et al., 2013). Prior studies have shown that both priming action and

inaction can lead to changes in behavior, but that people value actions and inactions to a different extent. These findings bolster these results, by highlighting differences in the judgments associated with actions and inactions and showing that these two types of behavior are perceived in fundamentally different ways, with a general bias favoring action over inaction.

Practical Applications

Presenting inaction as action. If actions are perceived more favorably, it is only natural to try to reframe inactions as actions. And, in fact, this possibility would align with research showing that (a) people have an easier time conceptualizing the occurrence of a behavior over the absence of a behavior (Albarracín, Wang, & McCulloch, 2018), (b) behavioral skills programs already tend to emphasize what you are going to do to change your behavior (Albarracín & Wyer, 2001), rather than what you are not going to do, and (c) telling people what not to do tends to elicit psychological reactance (Brehm, 1966),. If you are seeking to change health behavior, it might thus be better to tell people what to do instead of what not to do.

The degree to which recommending action may be more successful than recommending inaction is illustrated in part in research conducted by Albarracín, Cohen, and Kumkale (2003) on abstinence and moderation. In their research, participants received a message that recommended either abstinence from (inaction), or moderation in (action), the use of a new type of alcohol product. After reading persuasive messages, participants either tried the product or performed a filler task before reporting their intentions to drink in the future. Participants who did not try the product reported similar intentions to drink regardless of the message they received. However, when participants tried the product after receiving the message, recipients of the abstinence message had significantly stronger intentions to drink than recipients of the moderation message. Apparently, trying the product after an inaction recommendation led

participants to the conclusion that they truly liked the forbidden product. Therefore, in such conditions, it might make more sense to present recommendations anticipating some engagement in a risky behavior, rather than recommendations advocating for complete abstinence.

Requesting inaction over action. Although, people are more likely to spontaneously form action goals, they are also more likely to experience difficulty in response to multiple action demands, relative to multiple inaction demands (Albarracín 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. Although actions receive more attention (Kahneman & Miller, 1986) and elicit stronger emotional reactions, when multiple behaviors are requested, a greater number of actions may have more detrimental effects (Albarracín et al., 2018). Thus, even though people have an easier time forming action than inaction goals, requesting inaction over action may be necessary for goal maintenance and overall behavior change.

Directions for Future Research

Consistency of the action bias. Past work shows that the health domain favors an action bias. It is unclear, however, if this type of bias extends to all realms of health decisions. Instead, decisions to favor action are likely to depend on the kind of diagnoses and the type of decision being made. For example, in work by Gavaruzzi and colleagues (2011), participants were presented with a diagnosis for a malignant tumor, a benign one, or a nontumor pathology. Results found that an action bias prevailed when participants were diagnosed with a malignant

tumor, but not so when they were diagnosed with one of the other options. This can, at least partly, be explained by diagnoses severity. When diagnosed with a malignant tumor, death is perceived more imminent than when diagnosed with a benign tumor. This would make people more likely to ignore probabilistic information and seek out an active option (concordant with work by Rottenstreich & Hsee, 2001; Sunstein & Zeckhauser, 2011).

The status of the illness can also impact preferences for action. For example, before being diagnosed with an illness, one might be faced with a preventative decision (e.g., to wear sunscreen and minimize the risk of developing skin cancer) or an identification decision (e.g., to get tested for a genetic predisposition for cancer). Once diagnosed, one might be faced with a decision to treat the cancer (e.g., taking medications) or the decision to cure the cancer (e.g., having surgery to excise the tumor). In each instance, the status of the illness changes, affecting the probability of harm, risk, and uncertainty. As such, it is unlikely that an action bias would prevail throughout.²⁹ A next step could thus involve determining at which point an action bias arises and at which point inaction is preferred.

Framing inaction as a gain. One way to change preferences for action or inaction is through how choices are framed. For example, 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.,

²⁹ In fact, some researchers have suggested that an omission bias should be greater for decisions made to cure, rather than prevent, an illness (Connolly & Reb, 2003: although, empirical evidence has found no difference between the two types of decisions, Baron & Ritov, 2004).

2005). What was manipulated was the presentation of the inactive option. In one condition, participants were informed that if they chose to wait, there was a possibility that their cancer would metastasize, making surgery impossible. Therefore, this 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 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 an inaction is 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 whether similar gain-frame approaches can attenuate the action bias in other areas of health.

Inaction as positive. Universal associations between action and intentionality are unlikely. To begin, much like actions, inactions can be goal-directed, and a large literature on inhibitory control suggests that refraining from risky or detrimental behaviors is intentional and effortful (e.g., Baumeister et al., 1998; Hepler et al., 2012). From this point of view, even though actions may be perceived as more intentional and more positive than inactions by default, some inactions are clearly perceived as intentional. Moreover, low intentionality may not produce low evaluations of inactions when inactions stem from exhaustion and occur without the need for intentionality. For example, sleep occurs automatically when the brain shuts down, to the point that people may create conditions that facilitate sleep, but cannot intentionally fall asleep. Therefore, a behavior like sleeping may be evaluated based on criteria other than intentionality, such as whether the behavior conserves energy for later pursuits. Future work could thus explore possible boundary conditions for the action bias.

Concluding Remarks

In conclusion, the present research found that actions are perceived differently than inactions (Studies 1-2). Particularly, these findings show that people not only evaluate actions more favorably than inactions (Study 3) but prefer to engage in actions over inactions as well (Study 4). This phenomenon is driven by a natural tendency to think of actions as more intentional (Study 5), but making intentionality salient does not always reduce a bias towards action (Study 6). Balancing action and inaction is important for healthy human functioning, underlining the importance of understanding evaluative biases in this domain. As more research accumulates, it should be a priority to test these ideas and implement them in the development of successful programs to change behavior.

TABLES AND FIGURES

Table 1

Four ways in which definitions of action and inaction can vary (adapted from Feldman et al.,

2018).

Number	Definition	Action	Inaction
1	Occurrence versus Absence	Doing something	Doing nothing
2	Agentic versus Non-agentic	Intentional; purposeful; deliberate	Unintentional; aimless; accidental
3	Effortful versus Effortless	Demanding; busy	Facile; idle
4	Change versus Stasis	Changing status (changes from action to inaction and from inaction to action); deviating from normality; selecting the non-default option	Not changing status (remaining in the same state, as in the case of inertia or continued rest); maintaining normality; selecting the default option

Action			Inac	ction
Term	Correlation	Т	'erm	Correlation
every	0.32	n	ot	0.51
someone	0.31	in	nactive	0.26
performing	0.31	aı	nything	0.25
bounce	0.31	si	mply	0.25
dream	0.31	g	ive	0.23
enter	0.31	ez	xactly	0.23
fidgeting	0.31	ha	appened	0.23
providing	0.31	ju	istified	0.23
thinks	0.31	n	otice	0.23
trouble	0.31	re	efrain	0.23
flows	0.31	ro	ough	0.23
gonna	0.31	SC	omewhere	0.23
main	0.31	sr	paced	0.23
results	0.31	w	hats	0.23
uncommon	0.31	yo	ouve	0.23
emotion	0.30	n	othing	0.22
complete	0.26	la	ıck	0.22
ambition	0.26	ha	appening	0.21
planned	0.26	ez	xample	0.20

The correlation between action (left), inaction (right), and other words in the corpus (Study 1).

Topics generated by the LDA algorithm (Study 1).

Topic	Word Cloud	Terms	Probabilities
1	<text></text>	something can may someone means physically	0.14160732 0.04049064 0.02906005 0.02554295 0.02334476 0.01762947
2	wording and the second	action think like things word will	0.11788653 0.05532225 0.03561022 0.01932636 0.01889784 0.01804080

Topics generated by the LDA algorithm (Study 1).



Ms and SDs for Study 1.

Categories	Action M(SD)	Inaction M(SD)
Occurrence Agency	0.90(0.31)	0.14(0.39)
Intentional	0.61(0.49)	0.22(0.46)
Controllable	0.29(0.49)	0.19(0.39)
Incidental	0.06(0.31)	0.07(0.32)
Effort	0.47(0.50)	0.02(0.13)
State		
Change	0.14(0.35)	0.05(0.21)
Stasis	0.02(0.13)	0.22(0.42)
Evaluation		
Positive	0.49(0.50)	0.25(0.44)
Negative	0.18(0.39)	0.63(0.48)
Outcome	0.40(0.49)	0.28(0.49)
Physicality		
Physical Behaviors	0.56(0.50)	0.10(0.36)
Mental Processes	0.24(0.47)	0.14(0.35)
Requirement		
Want	0.05(0.22)	0.05(0.22)
Need	0.07(0.26)	0.02(0.13)
Change	0.01(0.08)	0.10(0.31)

	В	SE	β
Constant	-0.95	0.66	
Agency	1.20	0.20	0.84***
Constant	-0.96	0.81	
Control	1.15	0.24	0.78***
Constant	-0.43	0.23	
Effort	1.16	0.07	0.97***
Constant	0.59	0.66	
Valence	0.91	0.25	0.69**
Constant	0.49	0.20	
Physicality	0.90	0.07	0.96***
Constant	0.67	0.83	
Want	0.95	0.34	0.58*
Constant	-0.49	0.59	
Need	1.39	0.24	0.84***
Constant	-1.87	0.54	
Change	1.53	0.17	0.92***

Predictors of action ratings using simple regression analysis (Study 2).

Note. The slope coefficient represents the change in the dependent variable for a one unit change in the independent variable. B = unstandardized coefficients. SE = standard error. β = standardized coefficients.

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

	В	SE	β
Constant	-0.33	0.53	
Agency	-0.95	0.33	-0.66*
Control	0.63	0.25	0.43*
Effort	1.22	0.31	1.02**
Valence	-0.07	0.51	-0.05
Physicality	0.20	0.16	0.21
Want	0.04	0.64	0.02
Need	0.07	0.40	0.04
Change	0.01	0.25	0.01

Predictors of action ratings using multiple regression analysis (Study 2).

Note. The slope coefficient represents the change in the dependent variable for a one unit change in the independent variable. B = unstandardized coefficients. SE = standard error. β = standardized coefficients.

** p < .01 * p < .05

Ms and SDs for Study 3.

Conditions and Statistics	Statistics Evaluation Ratings			
	Flipping a Switch <i>M</i> (SD)	Not Flipping a Switch $M(SD)$	<i>t</i> for action vs inaction contrast	
Positive-outcome	6.41(0.80)	5.80(1.47)	3.23**	
Unspecified-outcome (control)	5.44(1.13)	4.33(1.12)	6.37***	
Negative-outcome	3.07(2.05)	3.16(1.76)	-0.28	
<i>t</i> for positive-outcome vs unspecified-outcome contrast	6.23***	7.23***		
<i>t</i> for unspecified-outcome vs negative-outcome contrast	9.12***	5.06***		
t for positive-outcome vs negative-outcome contrast	13.42***	10.33***		
F(2, 473) simple main effects for outcome	110.17***	67.07***		
F(1, 473) main effect: behavior	17.02***			
F(2, 473) main effect: outcome	170.80***			
F(2, 473) interaction: behavior x outcome	6.92**			
	Subjective In		tionality Ratings	
	Flipping a Switch <i>M</i> (SD)	Not Flipping a Switch $M(SD)$	<i>t</i> for action vs inaction contrast	
Positive-outcome	5.64(1.44)	5.04(1.76)	2.29*	
Unspecified-outcome (control)	5.81(1.24)	3.57(1.92)	8.87***	
Negative-outcome	3.22(2.15)	3.08*1.81)	0.45	
t for positive-outcome vs unspecified-outcome contrast	-0.87	5.07***		
<i>t</i> for unspecified-outcome vs negative-outcome contrast	9.47***	1.72		
<i>t</i> for positive-outcome vs negative-outcome contrast	8.33***	6.97***		
Table 7 (continued)

Ms and SDs for Study 3.

F(2, 473) simple main effects for outcome	54.20***	27.56***
F(1, 473) main effect: behavior	38.91***	
F(2, 473) main effect: outcome	65.92***	
F(2, 473) interaction: behavior x outcome	15.99***	

Note. The *t*-statistic is reported for each of the differences. 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. Asterisks represent the significance of the contrasts.

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

Ms and SDs for Study 5.

Conditions and Statistics		Statistics	
	Subjective Intentionality Ratings		
	Pressing a Button <i>M</i> (<i>SD</i>)	Not Pressing a Button $M(SD)$	<i>t</i> for action vs inaction contrast
High-intentionality	5.67(1.15)	4.90(1.60)	3.13**
Unspecified-intentionality (control)	4.90(1.83)	3.62(1.53)	4.11***
Low-intentionality	2.32(1.57)	2.69(1.65)	-1.43
<i>t</i> for high-intentionality vs unspecified-intentionality contrast	2.83**	4.38***	
<i>t</i> for unspecified-intentionality vs low-intentionality contrast	8.53***	3.18**	
t for high-intentionality vs low-intentionality contrast	13.71***	7.41***	
F(2, 363) simple main effects for intentionality	79.31***	30.34***	
F(1, 363) main effect: behavior	12.00**		
F(2, 363) main effect: intentionality	99.30***		
F(2, 363) interaction: behavior x intentionality	8.93***		
	Evaluation Ratings		
	Pressing a Button $M(SD)$	Not Pressing a Button $M(SD)$	<i>t</i> for action vs inaction contrast
High-intentionality	5.55(1.10)	4.46(1.47)	4.71***
Unspecified-intentionality (control)	4.71(1.01)	3.82(0.94)	4.78***
Low-intentionality	3.54(1.32)	3.57(1.21)	-0.19
<i>t</i> for high-intentionality vs unspecified-intentionality contrast	4.43***	2.66**	
<i>t</i> for unspecified-intentionality vs low-intentionality contrast	5.60***	1.40	
t for high-intentionality vs low-intentionality contrast	9.29***	3.64***	

Table 8 (continued)

Ms and SDs for Study 5.

F(2, 363) simple main effects for intentionality	45.31***	9.07***
F(1, 363) main effect: behavior	27.58***	
F(2, 363) main effect: intentionality	45.85***	
F(2, 363) interaction: behavior x intentionality	7.70**	

Note. The t-statistic is reported for each of the differences. 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. Asterisks represent the significance of the contrasts. *** p < .001, ** p < .01

Table 9

Cancer scenario (Study 6) (adapted from Fagerlin et al., 2005)

Scenario

Imagine that you have been diagnosed with a slow-growing cancer. Right now, the cancer is not causing you to feel sick. For most people, the cancer will grow so slowly it will never cause them any trouble. For others, the cancer will grow to the point that it makes them sick. Untreated, ten percent (10 out of 100) will die of the cancer.

Your doctor tells you that you have two treatment options: <u>watchful waiting</u> or <u>surgery</u>. Watchful waiting means you will not receive any treatment immediately, but your doctor will follow your cancer closely and treat any symptoms that you have if it begins to spread. There are no side effects to watchful waiting, but ten percent (10 out of 100) of the people who choose this option will develop symptoms and die from their cancer within five years.

On the other hand, the surgery would cure your cancer permanently. The only side effect of this surgery is that, afterwards, you will feel more tired than usual and will experience stomach upsets occasionally. Additionally, there is a ten percent (10 out of 100) risk of death during the surgery.

Our Question

Imagine that both of these options are completely covered by your health insurance. Which would you choose?

I would not take the surgery

I would take the surgery

Please explain your answer:



Figure 1

The most frequently occurring words in the corpus (Study 1). All words that occurred at least 40 times are included.





Means comparing the frequency with which each category was used when describing an action or inaction (Study 1). Paired-sample *t*-tests showed a significant difference between all categories, except whether a behavior was incidental or not, and whether a behavior was a want or not. Error bars are based on standard error values.



Mean ratings of action and the theoretically-based definition of action as (a) agentic versus non-agentic, (b) effortful versus effortless, and (c) change versus stasis (Study 2). Bars are shown for both action (grey) and agency (top left), control (top right), effort (bottom left), and change (bottom right). Behaviors that were perceived as more active were also perceived as more agentic, controllable, effortful, and changeable. Error bars are based on standard error values.



Mean ratings of action (grey bars) and evaluation (top left), physicality (top right), need (bottom left), and want (bottom right) (Study 2). Behaviors that were perceived as more active were also perceived as more positive, physical, and (to a lesser extent) a need. Error bars are based on standard error values.



Mean ratings of evaluation by behavior condition (Study 3). Error bars are based on standard error values.



Mean ratings of enjoyment by active and inactive response conditions (Study 4). Error bars are based on standard error values.



Mean ratings of subjective intentionality by behavior condition (Study 5). Error bars are based on standard error values.



Mean ratings of evaluation by behavior condition (Study 5). Error bars are based on standard error values.



Moderated mediation models to determine whether the effect of action and inaction on evaluations was mediated by subjective intentionality differently, depending on (a) the type of behavior or (b) the level of agency (Study 5).





Preferences for watchful waiting versus surgery by intentionality condition (Study 6).

REFERENCES

- Ajzen, I., & Fishbein, M. (2005). The influence of attitudes on behavior. In D. Albarracín, B. T.Johnson, & M. P. Zanna (Eds.), *The handbook of attitudes* (pp. 173-222). New York, NY: Psychology Press.
- Albarracin, D., Cohen, J. B., & Kumkale, G. T. (2003). When communications collide with recipients' actions: effects of post-message behavior on intentions to follow the message recommendation. *Personality and Social Psychology Bulletin, 29*(7), 834-845. doi:10.1177/0146167203029007003
- Albarracín, D., & Handley, I. M. (2011). The time for doing is not the time for change: Effects of general action and inaction goals on attitude retrieval and attitude change. *Journal of Personality and Social Psychology*, 100(6), 983. doi:10.1037/a0023245
- Albarracín, D., & Wyer Jr, R. S. (2000). The cognitive impact of past behavior: Influences on beliefs, attitudes, and future behavioral decisions. *Journal of Personality and Social Psychology*, 79(1), 5. doi:10.1037/0022-3514.79.1.5
- Albarracín, D., & Wyer Jr, R. S. (2001). Elaborative and nonelaborative processing of a behavior-related communication. *Personality and Social Psychology Bulletin*, 27(6), 691-705. doi:10.1177/0146167201276005
- Albarracín, D., Handley, I. M., Noguchi, K., McCulloch, K. C., Li, H., Leeper, J., . . . Hart, W. P. (2008). Increasing and decreasing motor and cognitive output: A model of general action and inaction goals. *Journal of Personality and Social Psychology*, 95(3), 510-523. doi:10.1037/a0012833

- Albarracín, D., Hepler, J., & Tannenbaum, M. (2011). General action and inaction goals: Their behavioral, cognitive, and affective origins and influences. *Current Directions in Psychological Science*, 20(2), 119-123. doi:10.1177/0963721411402666
- Albarracín, D., Sunderrajan, A., Dai, W., & White, B. (2019). The social creation of action and inaction: From concepts to goals to behaviors. *Advances in Experimental Social Psychology*. Elsevier.
- Albarracín, D., Wang, W., & Leeper, J. (2009). Immediate increase in food intake following exercise messages. *Obesity*, *17*, 1451-1452. doi:10.1038/oby.2009.16
- Albarracín, D., Wang, W., & McCulloch, K. C. (2018). Action dominance: The performance effects of multiple action demands and the benefits of an inaction focus. Personality and Social Psychology Bulletin, 44(7), 996-1007. doi:10.1177/0146167218756031
- Albarracín, D., Wilson, K., Chan, M. P. S., Durantini, M., & Sanchez, F. (2018). Action and inaction in multi-behaviour recommendations: a meta-analysis of lifestyle interventions. Health psychology review, 12(1), 1-24. doi:10.1080/17437199.2017.1369140
- American Child Health Association. (1934). Physical defects: The pathway to correction. *American Child Health Association*, 80-96.
- Anderson, C. J. (2003). The psychology of doing nothing: forms of decision avoidance result from reason and emotion. *Psychological Bulletin, 129*(1), 139.
- Aronson, E., & Mills, J. (1959). The effect of severity of initiation on liking for a group. The Journal of Abnormal and Social Psychology, 59(2), 177.
- Ayanian, J. Z., & Berwick, D. M. (1991). Do physicans have a bias toward action? A classic study revisited. Medical Decision Making, 11(3), 154-158.
 doi:10.1177/0272989X9101100302

Bakwin, H. (1945). Pseudodoxia pediatrica. New England Journal of Medicine, 232, 691-7.

- Bar-Eli, M., Azar, O. H., Ritov, I., Keidar-Levin, Y., & Schein, G. (2007). Action bias among elite soccer goalkeepers: The case of penalty kicks. *Journal of Economic Psychology*, 28(5), 606-621. doi:10.1016/j.joep.2006.12.001
- Bargh, J. A., Chen, M., & Burrows, L. (1996). Automaticity of social behavior: Direct effects of trait construct and stereotype activation on action. Journal of personality and social psychology, 71(2), 230. doi:10.1037/0022-3514.71.2.230
- Baron, J., & Ritov, I. (1994). Reference points and omission bias. *Organizational Behavior and Human Decision Processes*, *59*(3), 475-498. doi:10.1006/obhd.1994.1070
- Baron, J., & Ritov, I. (2004). Omission bias, individual differences, and normality.
 Organizational Behavior and Human Decision Processes, 94(2), 74-85.
 doi:10.1016/j.obhdp.2004.03.003
- Baron, J., & Ritov, I. (2009). Protected values and omission bias as deontological judgments. *Psychology of Learning and Motivation*, 50, 133-167. doi:10.1016/S0079-7421(08)00404-0
- Baumeister, R. F., Bratslavsky, E., Muraven, M., & Tice, D. M. (1998). Ego depletion: Is the active self a limited resource?. *Journal of Personality and Social Psychology*, 74(5), 1252. doi:10.1037/0022-3514.74.5.1252
- Bègue, L., Bushman, B. J., Giancola, P. R., Subra, B., & Rosset, E. (2010). "There is no such thing as an accident," especially when people are drunk. *Personality and Social Psychology Bulletin*, 36(10), 1301-1304. doi:10.1177/0146167210383044

- Botvinick, M., & Braver, T. (2015). Motivation and cognitive control: From behavior to neural mechanism. *Annual Review of Psychology*, *66*, 83-113. doi:10.1146/annurev-psych-010814-015044
- Brehm, J. W. (1966). A theory of psychological reactance.
- Byrne, R. M. (2016). Counterfactual thought. *Annual Review of Psychology*, 67, 135-157. doi:10.1146/annurev-psych-122414-033249
- Cantor, S. B., Volk, R. J., Cass, A. R., Gilani, J., & Spann, S. J. (2002). Psychological benefits of prostate cancer screening: The role of reassurance. *Health Expectations*, 5, 104–113. http://dx.doi.org/10.1046/j.1369-6513.2002.00166.x
- Cohen G. L. (2003). Party over policy: The dominating impact of group influence on political beliefs. *Journal of Personality and Social Psychology*, 85, 808–822.
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, *112*(1), 155-159. doi:10.1037/0033-2909.112.1.155
- Connolly, T., & Reb, J. (2005). Regret in cancer-related decisions. *Health Psychology*, 24(4S), S29-S34. doi:10.1037/0278-6133.24.4.S29
- Cornwell, J. F., Franks, B., & Higgins, E. T. (2014). Truth, control, and value motivations: The "what," "how," and "why" of approach and avoidance. *Frontiers in Systems Neuroscience*, 8, 1-15. doi:10.3389/fnsys.2014.00194

Cushman, F. (2013). Action, outcome, and value: A dual-system framework for morality.
 Personality and Social Psychology Review, 17(3), 273-292.
 doi:10.1177/1088868313495594

- Cushman, F., Young, L., & Hauser, M. (2006). The role of conscious reasoning and intuition in moral judgment: Testing three principles of harm. *Psychological Science*, *17*(12), 1082-1089. doi:10.1111/j.1467-9280.2006.01834.x
- DeScioli, P., Christner, J., & Kurzban, R. (2011). The omission strategy. *Psychological Science*, 22(4), 442-446. doi:10.1177/0956797611400616
- Detert, J. R., Treviño, L. K., & Sweitzer, V. L. (2008). Moral disengagement in ethical decision making: A study of antecedents and outcomes. *Journal of Applied Psychology*, 93(2), 374-391. doi:10.1037/0021-9010.93.2.374
- Dickman, S. J. (1990). Functional and dysfunctional impulsivity: personality and cognitive correlates. *Journal of Personality and Social Psychology*, 58(1), 95-102.
 doi:10.1037/0022-3514.58.1.95
- Doyen, S., Klein, O., Pichon, C. L., & Cleeremans, A. (2012). Behavioral priming: it's all in the mind, but whose mind?. PloS one, 7(1), e29081. doi:10.1371/journal.pone.0029081
- Eitam, B., Kennedy, P. M., & Higgins, E. T. (2013). Motivation from control. *Experimental Brain Research*, 229(3), 475-484. doi:10.1007/s00221-012-3370-7
- Fagerlin, A., Zikmund-Fisher, B. J., & Ubel, P. A. (2005). Cure me even if it kills me: preferences for invasive cancer treatment. Medical decision making, 25(6), 614-619. doi:10.1177/0272989X05282639
- Fahlman, S. A., Mercer, K. B., Gaskovski, P., Eastwood, A. E., & Eastwood, J. D. (2009). Does a lack of life meaning cause boredom? Results from psychometric, longitudinal, and experimental analyses. *Journal of Social and Clinical Psychology*, 28(3), 307-340. doi:10.1521/jscp.2009.28.3.307

- Feldman, G., & Albarracín, D. (2017). Norm theory and the action-effect: The role of social norms in regret following action and inaction. *Journal of Experimental Social Psychology*, 69, 111-120. doi:10.1016/j.jesp.2016.07.009
- Feldman, G., & Kutscher, L., & Yay, T. (2018). What is action, what is inaction? A review of action-inaction biases and recommendations for term use and typology.
- Feldman, G., & Wong, K. F. E. (2018). When action-inaction framing leads to higher escalation of commitment: A new inaction-effect perspective on the sunk-cost fallacy.
 Psychological Science, 29(4). doi:10.1177/0956797617739368
- Ferguson, M. J., & Bargh, J. (2008). Evaluative readiness: The motivational nature of automatic evaluation. *Handbook of Approach and Avoidance Motivation*, (13298), 289–306. doi:10.4324/9780203888148.ch17
- Ferguson, M. J., & Bargh, J. A. (2004). Liking is for doing: The effects of goal pursuit on automatic evaluation. *Journal of Personality and Social Psychology*, 87(5), 557. doi:10.1037/0022-3514.87.5.557
- Fishbein, M., & Ajzen, I. (1974). Attitudes towards objects as predictors of single and multiple behavioral criteria. *Psychological Review*, 81(1), 59. doi:10.1037/h0035872
- Fleiss, J. L. (1981). Balanced incomplete block designs for inter-rater reliability studies. Applied *Psychological Measurement*, *5*(1), 105-112. doi:10.1177/014662168100500115
- Freitas, A. L., Liberman, N., Salovey, P., & Higgins, E. T. (2002). When to begin? Regulatory focus and initiating goal pursuit. *Personality and Social Psychology Bulletin*, 28(1), 121-130. doi:10.1177/0146167202281011

- Gavaruzzi, T., Lotto, L., Rumiati, R., & Fagerlin, A. (2011). What makes a tumor diagnosis a call to action? On the preference for action versus inaction. Medical Decision Making, 31(2), 237-244. doi:10.1177/0272989X10377116
- Gilovich, T., & Medvec, V. H. (1995). The experience of regret: What, when, and why. *Psychological Review*, *102*(2), 379.

Gilovich, T., Wang, R. F., Regan, D., & Nishina, S. (2003). Regrets of action and inaction across cultures. *Journal of Cross-Cultural Psychology*, *34*(1), 61-71. doi:10.1177/0022022102239155

- Glasman, L. R., & Albarracín, D. (2006). Forming attitudes that predict future behavior: A metaanalysis of the attitude-behavior relation. *Psychological Bulletin, 132*(5), 778.
- Harris, C. R., Coburn, N., Rohrer, D., & Pashler, H. (2013). Two failures to replicate high-performance-goal priming effects. PloS one, 8(8), e72467.
 doi:10.1371/journal.pone.0072467
- Hart, W., & Albarracín, D. (2009). The effects of chronic achievement motivation and achievement primes on the activation of achievement and fun goals. Journal of *Personality and Social Psychology*, 97(6), 1129. doi:10.1037/a0017146
- Hayes, A. F. (2006). A primer on multilevel modeling. *Human Communication Research*, 32(4), 385-410. doi:10.1111/j.1468-2958.2006.00281.x
- Hayes, A. F. (2013). Introduction to mediation, moderation, and conditional process analysis: A regression-based approach. New York, NY: Guilford Press.
- Hepler, J., Wang, W., & Albarracín, D. (2012). Motivating exercise: The interactive effect of general action goals and past behavior on physical activity. *Motivation and Emotion*, 36(3), 365-370. doi:10.1007/s11031-011-9267-0

- Higgins, E. T. (2012). Motivation science in social psychology: A tale of two histories. In A. W.
 Kruglanski & W. Stroebe (Eds.), *Handbook of the history of social psychology* (pp. 199-218). New York, NY: Psychology Press.
- Hinson, J. M., Jameson, T. L., & Whitney, P. (2003). Impulsive decision making and working memory. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 29(2), 298-306. doi:10.1037/0278-7393.29.2.298
- Horst, P. (1941). The role of predictor variables which are independent of the criterion. *Social Science Research Council Bulletin*, 48, 431–436.
- Hsee, C. K., Yang, A. X., & Wang, L. (2010). Idleness aversion and the need for justifiable busyness. *Psychological Science*, 21(7), 926-930. doi:10.1177/0956797610374738
- Ireland, M. E., Hepler, J., Li, H., & Albarracín, D. (2015). Neuroticism and attitudes toward action in 19 countries. *Journal of Personality*, *83*(3), 243-250. doi:10.1111/jopy.12099
- Johnson, E. J., & Goldstein, D. (2003). Do defaults save lives? *Science*, *302*(5649), 1338-1339. doi:10.1126/science.1091721
- Kahneman, D., & Miller, D. T. (1986). Norm theory: Comparing reality to its alternatives. *Psychological Review*, *93*(2), 136. doi:10.1037/0033-295X.93.2.136
- Kahneman, D., & Tversky, A. (1982). The psychology of preferences. *Scientific American*, 246(1), 160-173. doi:10.1038/scientificamerican0182-160
- Kahneman, D., & Tversky, A. (2013). Choices, values, and frames. In Handbook of the Fundamentals of Financial Decision Making: Part I (pp. 269-278).
 doi:10.1142/9789814417358_0016
- Kahneman, D., Knetsch, J. L., & Thaler, R. H. (1990). Experimental tests of the endowment effect and the Coase theorem. *Journal of Political Economy*, *98*(6), 1325-1348.

- Kanfer, R. (1990). Motivation theory and industrial and organizational psychology. *Handbook of industrial and organizational psychology*, 1(2), 75-130.
- Kordes-de Vaal, J. H. (1996). Intention and the omission bias: Omissions perceived as nondecisions. *Acta Psychologica*, *93*(1), 161-172. doi:10.1016/0001-6918(96)00027-3
- Kruger, J., Wirtz, D., & Miller, D. T. (2005). Counterfactual thinking and the first instinct fallacy. *Journal of Personality and Social Psychology*, 88(5), 725. doi:10.1037/0022-3514.88.5.725
- Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics*, 159-174.
- Landman, J. (1987). Regret and elation following action and inaction: Affective responses to positive versus negative outcomes. *Personality and Social Psychology Bulletin*, 13(4), 524-536.
- Levine, R. V., & Norenzayan, A. (1999). The pace of life in 31 countries. *Journal of Cross-Cultural Psychology*, *30*(2), 178-205. doi:10.1177/0022022199030002003
- McCulloch, K. C., Li, H., Hong, S., & Albarracín, D. (2012). Naïve definitions of action and inaction: The continuum, spread, and valence of behaviors. *European Journal of Social Psychology*, 42(2), 227-234. doi:10.1002/ejsp.860
- McElroy, T., & Dowd, K. (2007). Action orientation, consistency and feelings of regret. *Judgment and Decision Making*, 2(6), 333.
- Miller, M. J., Woehr, D. J., & Hudspeth, N. (2002). The meaning and measurement of work ethic: Construction and initial validation of a multidimensional inventory. *Journal of Vocational Behavior*, 60(3), 451-489. doi:10.1006/jvbe.2001.1838

- Monroe, A. E., Reeder, G. D., & James, L. (2015). Perceptions of intentionality for goal-related action: Behavioral description matters. *PLoS One*, 10(3), e0119841. doi:10.1371/journal.pone.0119841
- N'gbala, A., & Branscombe, N. R. (1997). When does action elicit more regret than inaction and is counterfactual mutation the mediator of this effect?. *Journal of Experimental Social Psychology*, *33*(3), 324-343. doi:10.1006/jesp.1996.1322
- Norton, M. I., Mochon, D., & Ariely, D. (2012). The IKEA effect: When labor leads to love. *Journal of Consumer Psychology*, 22(3), 453-460. doi:10.1016/j.jcps.2011.08.002
- Patt, A., & Zeckhauser, R. (2000). Action bias and environmental decisions. *Journal of Risk and Uncertainty*, 21(1), 45-72. doi:10.1023/A:1026517309871
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40(3), 879-891. doi:10.3758/BRM.40.3.879
- Ritov, I., & Baron, J. (1990). Reluctance to vaccinate: Omission bias and ambiguity. *Journal of Behavioral Decision Making*, 3(4), 263-277. doi:10.1002/bdm.3960030404
- Ritov, I., & Baron, J. (1992). Status-quo and omission biases. *Journal of Risk and Uncertainty*, 5(1), 49-61.
- Ritov, I., & Baron, J. (1995). Outcome knowledge, regret, and omission bias. *Organizational Behavior and Human Decision Processes*, 64(2), 119-127. doi:10.1006/obhd.1995.1094
- Rosset, E. (2008). It's no accident: Our bias for intentional explanations. *Cognition*, *108*(3), 771-780. doi:10.1016/j.cognition.2008.07.001

- Rottenstreich, Y., & Hsee, C. K. (2001). Money, kisses, and electric shocks: On the affective psychology of risk. *Psychological Science*, *12*, 185–190. http://dx.doi.org/10.1111/1467-9280.00334
- Ryan, J. J. (2002). Work values and organizational citizenship behaviors: Values that work for employees and organizations. *Journal of Business and Psychology*, 17(1), 123–132. https://doi.org/10.1023/A:1016246103190
- Samuelson, W., & Zeckhauser, R. (1988). Status quo bias in decision making. *Journal of Risk* and Uncertainty, 1(1), 7-59. doi:10.1007/BF00055564
- Scherer, L. D., Caverly, T. J., Burke, J., Zikmund-Fisher, B. J., Kullgren, J. T., Steinley, D., ... Fagerlin, A. (2016). Development of the Medical Maximizer-Minimizer Scale. *Health Psychology*, 35, 1276–1287. doi:10.1037/hea0000417
- Schweitzer, M. (1994). Disentangling status quo and omission effects: An experimental analysis.
 Organizational Behavior and Human Decision Processes, 58(3), 457-476.
 doi:10.1006/obhd.1994.1046
- Spranca, M., Minsk, E., & Baron, J. (1991). Omission and commission in judgment and choice. *Journal of Experimental Social Psychology*, 27(1), 76-105. doi:10.1016/0022-1031(91)90011-T
- Strahan, E. J., Spencer, S. J., & Zanna, M. P. (2002). Subliminal priming and persuasion:
 Striking while the iron is hot. *Journal of Experimental Social Psychology*, *38*(6), 556-568. doi:10.1016/S0022-1031(02)00502-4
- Sunderrajan, A., & Albarracín, D. (2017). *How to initiate adoption of healthy behaviors: Action, inaction, and intentionality*. Unpublished manuscript.

- Sunstein, C. R., & Zeckhauser, R. (2011). Overreaction to fearsome risks. *Environmental and Resource Economics*, 48, 435–449. http://dx.doi.org/10.1007/s10640-010-9449-3
- Thomas, S. L., & Heck, R. H. (2001). Analysis of large-scale secondary data in higher education research: Potential perils associated with complex sampling designs. *Research in Higher Education*, 42(5), 517-540. doi:10.1023/A:1011098109834
- Tversky, A., & Kahneman, D. (1981). The framing of decisions and the psychology of choice. *Science*, *211*(4481), 453-458. doi:10.1126/science.7455683
- Tversky, A., & Kahneman, D. (1986). Rational choice and the framing of decisions. *Journal of Business*, *59*(4), S251-S278.
- Tversky, A., & Kahneman, D. (1991). Loss aversion in riskless choice: A reference-dependent model. *The Quarterly Journal of Economics*, 106(4), 1039-1061. doi:10.2307/2937956
- Tversky, A., & Kahneman, D. (1992). Advances in prospect theory: Cumulative representation of uncertainty. *Journal of Risk and Uncertainty*, 5(4), 297-323.
- Twenge, J. M., Muraven, M., & Tice, D. M. (2004). Measuring state self-control: Reliability, validity, and correlations with physical and psychological stress. Unpublished manuscript, San Diego State University, San Diego, CA.
- Weingarten, E., Chen, Q., McAdams, M., Yi, J., Hepler, J., & Albarracín, D. (2016). From primed concepts to action: A meta-analysis of the behavioral effects of incidentally presented words. Psychological Bulletin, 142(5), 472. doi:10.1037/bul0000030
- Zeelenberg, M., Van den Bos, K., Van Dijk, E., & Pieters, R. (2002). The inaction effect in the psychology of regret. *Journal of Personality and Social Psychology*, 82(3), 314.

Zell, E., Su, R., Li, H., Ho, M. R., Hong, S., Kumkale, T., . . . Albarracín, D. (2013). Cultural differences in attitudes toward action and inaction: The role of dialecticism. *Social Psychological and Personality Science*, 4(5), 521-528. doi:10.1177/1948550612468774

Zikmund-Fisher, B. J., Windschitl, P. D., Exe, N., & Ubel, P. A. (2011). 'I'll do what they did":
Social norm information and cancer treatment decisions. *Patient Education and Counseling*, 85(2), 225-229. doi:10.1016/j.pec.2011.01.031