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The Impact of Choice Closure on Satisfaction

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Declaration

I certify that the ideas, empirical work and conclusions of this dissertation are solely my own, except where otherwise acknowledged. Studies 2, 3, 4a and 4b have been included in an article co-authored with Simona Botti and David Faro, forthcoming at *Journal of Consumer Research*.

Abstract

In my dissertation, I introduce the concept of *choice closure*, defined as the psychological process by which consumers come to perceive a decision to be resolved and complete. Choice closure allows consumers to perceive a decision to be final and inhibits their tendency to revert to the decision process.

In the first part of the dissertation, I argue that choice closure enhances satisfaction with a decision outcome in the context of difficult decisions. Five studies show that specific physical acts metaphorically associated with the concept of closure—turning one's back on, covering or turning a page on the rejected alternatives—trigger choice closure in the context of choices made from an extensive number of alternatives. These studies also show that performing acts of closure prevents consumers from reconsidering their decisions and engaging in unfavourable comparisons between the chosen and forgone options. As a result, choice closure leads to greater satisfaction with the outcome of choices made from large sets.

In the second part of the dissertation, I study the possibility that choice closure does not always enhance satisfaction with the selected option. Specifically, I posit that the impact of choice closure on satisfaction depends on the valence of the decision outcome. Four studies further demonstrate that choice closure, this time triggered by visual cues associated with the notion of closure, enhances satisfaction with a negative decision outcome because comparisons are unfavourable against that outcome. However, choice closure reduces satisfaction with a positive decision outcome because comparisons are favourable against that outcome. Despite this, consumers do not seem to have an intuition for when they should and should not try

to facilitate closure, and they may act in ways that could be detrimental to their satisfaction.

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Chapter 1: Introduction

"There's a trick to the 'graceful exit.' It begins with the vision to recognize when a job, a life stage, or a relationship is over—and let it go. It means leaving what's over without denying its validity or its past importance to our lives. It involves a sense of future, a belief that every exit line is an entry, that we are moving up, rather than out."

— *Ellen Goodman, columnist*

We have all heard the familiar call for *closure*, as the quotation above reflects. Seeking closure is ubiquitous in people's daily life. People chase closure in order to relieve grief and pain, and enable themselves to move on. Anecdotal evidence shows that individuals often use physical acts to symbolize closure. For example, individuals bury or encase meaningful objects associated with the event on which they are trying to reach closure. Relationship gurus and clinical therapists also cannot extoll enough the virtues of small acts of finality such as throwing away love letters hidden at the back of a closet, or deleting old contacts for good.

In this dissertation, I relate the concept of closure to the decision-making setting. I refer to the psychological process by which decision makers come to perceive a decision to be complete and settled as *choice closure* and show that choice closure can influence consumers' satisfaction with the decision outcome. In line with the anecdotal examples above, I argue that sensory-motor experiences related to the notion of closure may not only reflect people's resolve to seal off a decision but also enable the resolution of that decision.

The first part of my dissertation investigates choice closure in the context of a specific type of difficult choice: a choice made from an extensive set (Iyengar and Lepper 2000). Research has shown that an increase in the number of options renders

decisions more complex (Malhotra 1982; Timmermans 1993) and lowers the attractiveness of the final outcome relative to the alternatives (Brenner, Rottenstreich, and Sood 1999; Carmon, Wertenbroch, and Zeelenberg 2003). I hypothesize that, under certain conditions, physical acts of closure can signal to consumers that their difficult decision is complete and should not be revisited, thus triggering choice closure. I also hypothesize that, by inhibiting consumers from reassessing their decision, choice closure limits unfavorable comparisons between the chosen and the forgone options and results in greater satisfaction with an outcome selected from an extensive set. These hypotheses were tested in studies 1, 2, 3, 4a and 4b, in which I facilitated choice closure by different physical acts that are associated with the notion of closure.

The second part of my dissertation examines a boundary condition under which the positive impact of choice closure on satisfaction can be reversed. The literature on counterfactual thinking has shown that a negative decision outcome causes individuals to engage in upward comparisons, resulting in lower satisfaction with the outcome, whereas a positive decision outcome elicits downward comparisons, leading to greater satisfaction (Markman et al. 1993). I hypothesize that choice closure is beneficial in the context of negative decision outcomes, when it inhibits comparisons that would lower consumers' satisfaction, but it is detrimental in the context of positive decision outcomes, when it inhibits comparisons that would actually increase consumers' satisfaction. These hypotheses were tested in three studies, in which choice closure was triggered by visual cues connected with the notion of closure.

In this part of my dissertation I further hypothesize that consumers do not understand when choice closure may help or hinder their wellbeing, and as a result

they often act in ways that decrease, rather than enhance, their satisfaction. Study 8 revealed that when given the opportunity to choose between a visual cue that would trigger choice closure and another that would instead keep the choice open, consumers chose against their best interests: they were less likely to choose the trigger after experiencing a negative outcome and more likely to choose the trigger after experiencing a positive outcome.

Finally, I discuss theoretical and practical implications. The concept of choice closure extends the literature on psychological closure (Beike, Adams, and Wirth-Beaumont 2007), as choice closure suggests that a sense of closure can be reached not only by preventing direct access to the negative emotions associated with past experiences but also by avoiding processes (unfavourable comparisons) that may lead to those negative emotions. The study of choice closure also contributes to the literature on decision irreversibility (Gilbert and Ebert 2002), as choice closure operates above and beyond decision irreversibility: even after controlling for the objective availability of forgone options, participants' satisfaction with their decision outcomes tended to depend on whether their bodily actions or sensations associated with closure were triggered or not. The construct of choice closure also carries important implications for managers. The findings of this dissertation suggest that under certain circumstances, subtle cues, which do not alter the actual choice context, can improve satisfaction with a decision outcome.

Choice Closure

Most decisions require consumers to compare alternatives in order to identify the option that best meets their preferences (Bettman, Luce, and Payne 1998). After

their choice had been made, the decision process involving option comparisons is complete, and the preferred option is usually consumed separately from the rejected alternatives (Hsee et al. 1999).

However, literature has suggested that despite having made a choice, consumers do not always deem the decision phase complete. For example, literature on regret shows that decision-makers feel post-choice regret as they continue comparing the chosen and the forgone options, imagining what their present situation would be if they had chosen differently (Bell 1982; Zeelenberg 1999). By the same token, decision-makers forced to give up alternatives they have grown attached to during the decision-making may re-evaluate these alternatives as being relatively more attractive after the choice than before it (Carmon et al. 2003).

These common experiences of post-choice regret and option attachment suggest that consumers tend to revert to the decision phase after having made their choice. I refer to *choice closure* as the psychological process through which consumers overcome this propensity, come to perceive a decision as finished and resolved, and limit the extent to which they reassess the chosen alternative relative to the forgone options. In my conceptualization, therefore, the choice-closure process entails two interrelated elements: a sense that a decision is complete, and an associated inhibition from re-engaging in the comparisons that were involved in this decision.

Choice Closure and Related Theories

In the following section, I discuss how choice closure relates to and differs from existing theories, such as psychological closure (Beike et al. 2007), option

accessibility (Gilbert and Elbert 2002; Hafner, White, and Handley 2012; Mischel, Shoda, and Rodriguez 1989; Painter, Wansink, and Hieggelke 2002) and need for closure (Kruglanski 1990).

Psychological Closure

The concept of choice closure is based on that of psychological closure. Psychological closure originates from Zeigarnik's work on memory showing that individuals remember unfinished tasks better than finished ones (Zeigarnik 1927; see also Lewin 1928).

More relevant to my work, Beike, Adams, and Wirth-Beaumont (2007, 375) have defined psychological closure as "the sense that a life experience is complete; that is, a feeling of 'pastness' when recollecting a life event." Reaching psychological closure is associated with holding back the emotional details aroused by life events, whereas lacking a sense of closure is correlated with having greater access to and better recall of these emotional details, and more intense feelings (Beike, Markman, and Kardogan 2009). For example, Beike and Wirth-Beaumont (2005; study 1) asked study participants to recall event memories and then judge the extent to which they felt the events were open or closed by rating their agreement to a series of statements such as "the event is a 'close book' to me", "the event is 'unfinished business' for me", and "I have put the event behind me completely." Participants were then asked to list details from their event memories. Correlation analyses showed that the fewer the number of emotional details recalled, the greater the psychological closure. More specifically, psychological closure alleviated negative emotion, such that individuals who experience greater closure feel less

regretful about past decisions (Li, Wei and Soman 2010) and less frustrated after solving difficult puzzles (Beike et al. 2007).

Psychological closure is related to choice closure in that it refers to the sense that a past event is resolved. However, psychological closure refers broadly to memory of life experiences and works by preventing access to the emotional details of particular autobiographical events. In contrast, choice closure relates specifically to decision-making processes and, rather than making the emotional details of a decision less accessible, it inhibits further comparisons between the chosen and the forgone options once a decision has been made.

Option Accessibility

Choice closure is also related to various theories concerned with external interventions that prevent consumers from reconsidering choice options by making these options less accessible. These external interventions include hindering material accessibility, visual accessibility, and cognitive accessibility to the choice options.

Material accessibility. The research on decision irreversibility has shown that inhibiting material accessibility to rejected options, by eliminating the possibility of changing people's selected course of action, bolsters the subjective value of their satisfaction with the decision outcome (Frey 1981; Gilbert and Ebert 2002). When a decision cannot be reversed, individuals automatically activate a psychological immune system, which functions like the body's immune system to protect them against undesirable emotional consequences from suboptimal outcomes (Frey 1981; Frey et al. 1984; Frey and Rosch 1984; Gilbert and Ebert 2002; Gilbert et al. 1998). The psychological immune system includes different psychological

mechanisms—dissonance reduction, positive illusion, and emotion-based coping—that help individuals improve their subjective evaluation of an option they have chosen relative to the foregone ones (Frey 1981; Frey et al. 1984; Gilbert and Ebert 2002; Gilbert et al. 1998; Lowe and Steiner 1968; Vaillant 1993). As a result, the psychological immune system activated by an irreversible decision increases the attractiveness of the chosen options (Frey et al. 1984) and the decision-makers' satisfaction with them (Gilbert and Ebert 2002). For example, in one of Gilbert and Ebert's studies (2002), participants were asked to give up one of two photos and keep the other for themselves: those who could not change their mind about which photo to give up preferred the retained photo more than the participants who could change their mind.

Visual accessibility. The literature on self-control suggests that inhibiting visual accessibility to a tempting target by moving it out of sight enables people to restrain themselves more effectively. For instance, in a classic series of studies, children were shown to be more capable of delaying the consumption of inviting food when the food was covered or when they avoided looking at it, or, more generally, when their attention was directed away from it (Mischel et al. 1989). Similarly, in another study, secretaries were found to eat more candies when these were placed in a glass bowl right on their desks than when they were hidden away inside a drawer (Painter et al. 2002).

Cognitive accessibility. Recent findings have demonstrated that hindering cognitive accessibility to choice alternatives by reducing the mental resources needed to engage in counterfactual thinking increases individuals' satisfaction with their decision outcome (Hafner et al. 2012). For example, in one study, participants who chose from a large set while under cognitive load contemplated fewer

alternative outcomes and counterfactual thoughts than those who were not under cognitive load, and reported greater satisfaction with their choices than participants who chose from a small set (Hafner et al. 2012; study 1).

Like choice closure, the theories mentioned above assess external interventions that inhibit material, visual or cognitive accessibility to the options. However, these theories are based on setting actual limits to this accessibility. For example, in Gilbert and Ebert's study (2002), participants in the irreversible condition could not reconsider the rejected photo because it was physically not available. In the studies by Mischel et al. (1989) and Painter et al. (2002), the options were removed from the participants' sight. Similarly, in the studies by Hafner and his colleagues (2012), participants in the cognitive load condition did not have enough spare cognitive capacity to elaborate on the forgone options. By contrast, I posit that the inhibition of comparisons entailed by choice closure is driven by the individuals' internal sense that a decision is complete. Thus, I expect choice closure to operate above and beyond the material, visual or cognitive accessibility of the foregone options. Even when decision-makers are not allowed to change their choice, they may still revisit the choice unless they perceive it as complete. Likewise, even when the options are still visible in front of the participants, or when participants possess enough cognitive resources to ponder forgone options, they may not elaborate on them because they see the decision as resolved. It is the mere perception of completion, rather than the material, visual or cognitive accessibility of options, that prevents consumers from revisiting their decisions.

Need for Closure

Choice closure is also related to the concept of need for closure, which is defined as a decision-maker's desire for a quick and firm answer to a question (Webster & Kruglanski, 1998). Such a desire is one of the epistemic motivations determining an individual's tendency to stop both generating arguments on a topic and searching for information relevant to those arguments (Kruglanski 1990). When cognitive closure is reached, individuals become insensitive to extra information, as they are no longer motivated to obtain additional knowledge.

Need for closure not only represents a stable individual difference but can also be situationally induced (De Grada et al. 1999; Ford and Kruglanski 1995). Because high need for closure (vs. low need for closure) brings with it a lower propensity to process extra information, it leads to less negative judgment on the chosen object and more confidence about these judgements (Mayseless and Kruglanski 1987). For example, Mayseless and Kruglanski (1987; study 1) asked study participants to identify a barely visible digit that was randomly selected from one to nine. Results showed that those who were given instructions stressing the importance of forming unambiguous and clear-cut options (need-for-closure condition) indicated greater confidence in their judgment of the digit's identity than those who were not given the instructions (no-need-for-closure condition).

Choice closure resembles need for closure in that it holds individuals back from processing extra information that might be detrimental to the assessment of their decision or to the creation of arguments supporting this decision. Despite the phenomenological similarity, the concept of choice closure extends need for closure in two directions. First, need for closure refers to the process of constructing knowledge, whereas choice closure related specifically to decision-making process. Second, research on need for closure suggests that individuals with a high need for

closure are prone to stop searching for additional information, whereas individuals reaching choice closure cease to dwell on information that is already known to them.

In summary, the concept of choice closure is similar to but different from the literature on psychological closure (Beike et al. 2007), option accessibility (Gilbert and Elbert 2002; Hafner, White, and Handley 2012; Mischel, Shoda, and Rodriguez 1989; Painter, Wansink, and Hieggelke 2002) and need for closure (Kruglanski 1990). Choice closure—relating specifically to decision-making processes—works through an internal sense of completion that inhibits comparisons between chosen and forgone options and operates beyond the material, visual or cognitive accessibility of options.

Choice Closure Triggers

Literature suggests that there are several potential determinants of psychological closure. These include individual differences (e.g., culture and gender), the passage of time, the positive or negative valence of life events, and the involvement of others in these events (Beike et al. 2007; Beike and Crone 2008). For example, Beike and Wirth-Beaumont (2005) found that psychological closure was greater when male participants recalled past events, when the events were older and more pleasant, and when they entailed interpersonal experiences.

Psychological closure can also be experimentally manipulated. For example, Beike and her colleagues (2007) asked participants to recall a life event and to list reasons why this experience might be considered “unfinished business” rather than a “closed book”. Results showed that justifying the experience as “unfinished business” resulted in more closure than justifying it as a “closed book”. Similarly, Crawley

(2010) made participants describe events either from an objective or from a third-person perspective and found that those taking the third-person perspective experienced a greater sense of closure than those taking the first-person perspective.

Recent studies have shown that psychological closure can also be induced through acts or sensations that embody the concept of psychological closure. For example, Li, Wei and Soman (2010) have demonstrated that psychological closure can be attained by physically placing an emotionally laden item inside an envelope. Participants who put into an envelope a piece of paper on which they had recorded a personal desire that had not been fulfilled felt greater closure over the recalled event than those who did not insert it in an envelope. In the domain of psychomusicology, melodic ending tunes, in which the first and final notes of the melody were both the tonic notes, brought listeners to a sense of closure (Thompson, Russo, and Sinclair 1994). In one study (Thompson et al. 1994; study 1), participants were asked to watch the same movie clip accompanied by two different types of background music. Participants exposed to music with stronger melodic ending tunes reported a greater sense of closure that those who were exposed to weaker melodic endings.

In line with these findings, I argue that choice closure too can be externally triggered by certain sensory-motor experiences. The rationale for this prediction is based on literature showing that people grasp and experience abstract concepts through sensory-motor experiences. In doing so, they rely on what they know about a familiar bodily and sensory domain to reason about, interpret, and evaluate a less familiar immaterial domain (Johnson 2007; Lakoff and Johnson 1980). Early associations between social experiences and ordinary interactions with the physical world provide individuals with a "cognitive scaffolding" (Bargh 2006; Landau, Meier, and Keefer 2010). At a later stage of development, this physical-to-mental

scaffolding forms a concrete-to-abstract link that associates sensory-motor experiences with a superficially dissimilar domain—the abstract concept (Barsalou et al. 2003; Lakoff 1993).

In some cases, this concrete-to-abstract link is expressed through metaphors (Landau et al. 2010; Zhang and Li 2012). For example, love may be understood in terms of eating (e.g., "being consumed by a lover"; Barsalou 2008) and negative affective states in terms of carrying weights or sinking (e.g., "get bogged down"; Taylor, Lord, and Bond 2009). In other cases, however, the concrete-to-abstract link is present even without the existence of a metaphor. For example, willpower can be comprehended in terms of tensing the muscles and clenching the fists (Hung and Labroo 2011), and positive emotional responses in terms of vertical head movements (Wells and Petty 1980; Niedenthal 2007).

As the concrete-to-abstract associations represent fixed correspondences between everyday motor-sensory states and higher-order cognitions, the experience of actions and sensations can unconsciously activate the associated cognitions (Barsalou et al. 2003; Boroditsky and Ramscar 2002; Lakoff 1993). For instance, people tend to approach things they like physically, and because of this association the act of pulling something towards oneself (as opposed to pushing it away) can trigger liking (Cacioppo, Priester, and Bernston 1993). The act of looking up or down influences perception of social power because people metaphorically conceptualize power in terms of vertical position (e.g., "reach the top of the corporate ladder"; Landau et al. 2010). Similarly, the work of Li and her colleagues described above (Li, Wei, and Soman 2010) revealed how the existence of metaphors linking actions of containing objects to emotion regulation (e.g., "bottled

up anger") accounts for the possibility that the act of physically enclosing emotionally laden stimuli triggers psychological closure.

In summary, the mere simulation of sensory-motor experiences that are linked to abstract concepts can facilitate the activation of those concepts, which in turn affect judgments and experiences. In this manner, I argue, sensory-motor experiences related to the concept of closure can trigger choice closure.

Chapter 2: The Positive Effect of Choice Closure on Outcome Satisfaction

In the previous chapter I have theorized that sensory-motor experiences of closure can activate choice closure. In this chapter, I examine one type of trigger—physical acts. More important, in this chapter I investigate the positive effect of choice closure on satisfaction with a decision outcome by identifying the conditions in which this effect is more likely to occur. I posit that choice closure is likely to benefit satisfaction in situations where consumers normally have difficulty experiencing choice closure, for example when they choose from large sets. By facilitating choice closure, physical acts of closure may increase satisfaction with difficult choices because they prevent consumers from engaging in unfavorable comparisons between the selected and the rejected alternatives.

Difficult Decisions

Research has shown that choices involving simultaneous opposing tendencies within the individual to accept or reject a given option are often cognitively and emotionally difficult (Janis and Mann 1977). For example, consumers find decisions difficult when they do not know how to trade off risks against values, costs against benefits, and immediate satisfaction against future discomfort (Bettman et al. 1993; Botti, Orfali, and Iyengar 2009; Greenleaf and Lehmann 1995; Iyengar and Lepper 2000; Luce, Bettman, and Payne 2001; Payne, Bettman, and Johnson 1993; Simon 1987; Tversky and Shafir 1992).

The extent of decision difficulty is dependent on the size of the choice set (Iyengar and Lepper 2000), the structure of the choice set (Diehl 2005; Diehl,

Kornish, and Lynch 2003), the attributes of the choice options (Bettman et al. 1993; Chernev 2005; Gouville and Soman 2005), the time spent making the decision (Wright 1975), and the personality traits and end goals of the decision-makers (Chernev 2003b; Iyengar, Wells and Schwartz 2006). For example, decisions are more difficult when the features of the choice options are non-complementary (Chernev 2005) or non-alignable (Gouville and Soman 2005), when there is conflict between attributes linked to highly valued goals (Luce 1998), or when options included in the choice set are numerous (Iyengar and Lepper 2000). Conversely, decisions are relatively less challenging when one option dominates another in all essential aspects (Tversky and Shafir 1992; Tversky and Simonson 1993), when personal preferences are well known (Chernev 2003a; Chernev 2003b), or when decision-makers have ample time to choose (Inbar, Botti and Hanko 2011). Difficult choices have been shown to lead to negative consequences, such as hesitation and choice deferral, negative affect, decreased decision confidence, and reduced satisfaction with the choice outcome (Botti and Iyengar 2004; Chernev 2003b; Dhar 1997; Garbarino and Edell 1997; Iyengar et al. 2006; Janis and Mann 1977; Luce 1998).

One of the most examined types of difficult decisions is that involving the consideration of extensive options. Contrary to previous tenets in economics and psychology (Brynjolfsson, Hu and Smith 2003; Payne, Bettman and Johnson 1993), as well as to conventional wisdom, according to which the provision of large assortments offers greater psychological benefits than the provision of smaller assortments (Lancaster 1990; Kahneman, Wakker and Sarin 1997), a voluminous body of research has demonstrated that large assortments can overwhelm consumers (Iyengar et al. 2006; Schwartz et al. 2002). For example, in a classic field study

conducted at a grocery store (Iyengar and Lepper 2000; study 1), the researchers found that 30% of consumers who sampled from a small selection of six exotic jams made a purchase, while only 3% of consumers sampling from a large assortment of 24 such jams bought a jar. Choosing from larger versus smaller assortments has been shown to lead not only to choice deferral (Iyengar, Jiang, and Huberman 2004), but also to higher dissatisfaction (Chernev 2003a; Dhar 1997; Iyengar and Lepper 2000; Schwartz et al. 2002), enhanced regret (Sagi and Friedland 2007), and lower decision confidence (Carmon et al. 2003; Chernev 2003a; Inbar et al. 2011; Iyengar et al. 2006) once the choice has been made

One of the psychological mechanisms accounting for this so-called "choice overload" effect is that choosing from larger (versus smaller) assortments increases the level of complexity involved in the decision-making process, since decision-makers need to ponder and compare a greater number of options (Fasolo et al. 2009; Timmermans 1993). Given consumers' limited mental capacity, this cognitive effort confuses and frustrates them, and consequently undermines whatever pleasure they get from their actual choice (Dhar 1997; Greenleaf and Lehmann 1995; Iyengar and Lepper 2000; Malhotra 1982).

This stream of literature suggests that after a difficult decision has been made, post-choice regret and qualms about the quality of the decision outcome may cause consumers to keep thinking about the forgone options (Iyengar and Lepper 2000; Malhotra 1982; Tversky and Shafir 1992). I therefore argue that following a difficult decision, such as a decision involving a large number of options, consumers show a greater propensity to engage in further comparisons between the chosen and the forgone alternatives, and accordingly experience lower choice closure. Conversely, when making a relatively easier choice, such as when the choice is made from

among a limited number of options, consumers are more confident that they have selected the option that best matches their preferences and less inclined to revisit their decision. Therefore, the extent to which consumers experience choice closure may depend on the difficulty of the decision.

In those cases in which consumers frequently struggle with sealing off their decisions, external interventions may be more likely to facilitate choice closure. I therefore propose that external triggers of choice closure are especially effective in the context of choices made from a large number of options. In such contexts, choice closure triggers signal to consumers that the decision phase preceding the choice is complete, and signal to them that they have moved on to the consumption phase in which decision outcome is evaluated (Hsee et al. 1999).

Negative Consequences of Comparisons

According to my theory, choice closure signals to consumers a sense of task completion and helps them move on from the decision phase to the evaluation phase. These different phases involve different outcome-evaluation modes: a comparative-evaluation mode before the choice is made, and an isolated-evaluation mode after the choice is made (Bettman et al. 1998).

Research has shown that the comparative-evaluation may lead to lower enjoyment of the selected option (Hsee et al 1999; Hsee 2000). When deciding about an option, individuals often assess their preferences by comparing multiple options. By contrast, the decision outcome is assessed in isolation (Hsee and Zhang 2004). Since individuals focus too much on subtle quantitative differences when comparing options in the joint-evaluation mode but pay little attention to them when

experiencing the chosen option alone in the single-evaluation mode, they may make a choice that undermines their consumption experience.

Closer to my work, the literature on loss aversion suggests that when one alternative does not dominate the other, relative advantages and disadvantages of each individual option are revealed (Tversky and Kahneman 1991; Tversky and Simonson 1993; Tversky and Shafir 1992; Shafir, Simonson, and Tversky 1993). Consequently, an appealing option is likely to suffer when that option is compared with others (Brenner et al. 1999). For example, Brenner and his colleagues (study1; 1999) questioned participants about their willingness to pay for four round-trip flights. The participants were presented with either just one of four possible items or with all four items. The results showed that participants were willing to pay for a destination more when it was evaluated in isolation than they were when it was evaluated as a part of a group.

The psychological mechanism of loss aversion also leads to increasing the attractiveness of the foregone options (Carmon et al. 2003). Before consumers make a choice, close consideration among options induces attachment to these options, especially when the options are numerous. The act of making a choice simultaneously involves giving up the alternatives that could have been chosen and induces a sense of loss, which heightens the attractiveness of the foregone alternatives and causes a feeling of discomfort (Carmon et al. 2003; Kahneman and Tversky 1979). For example, Carmon and his colleagues (2003; study 3) made participants choose three coupons out of a selection of six different coupons. Results showed that participants who elaborated more on the forgone options felt a greater sense of loss and found these forgone options more attractive after the choice than before it.

Consistent with these findings, the literature on regret shows that ruminating about foregone options has negative consequences for individuals' subjective wellbeing. Regret is proportional to the difference between the value of the alternative chosen and the value of the alternatives rejected (Bell 1982; Sagi and Friedland 2007; Gilovich and Medvec 1995), and is generated when individuals realize that the chosen option is worse than the foregone ones (Tsiros 1998). Accordingly, post-choice comparison between a chosen option and the forgone ones may lead to regret, which in turn decreases satisfaction with the option selected.

To summarize, the literature on comparisons (Brenner et al. 1999; Carmon et al. 2003; Hsee et al. 1999), loss aversion (Kahneman and Tversky 1979), and regret (Zeelenberg 1999) suggests that pondering foregone options after a decision has been made may be detrimental to whatever satisfaction consumers may gain from their decisions.

Physical Acts that Trigger Choice Closure

As mentioned in the previous chapter, the literature shows that people come to grasp some abstract concepts through bodily actions and sensations, which form the basis of a physical-to-abstract link (Barsalou et al. 2003; Lakoff 1993). This link is often made apparent through metaphors (Hung and Labroo 2011; Taylor et al. 2009). Specifically, in this chapter, I focus on motor experiences that trigger metaphorically associated cognition. I hypothesize that physical acts that are metaphorically related to the concept of closure enable consumers to experience choice closure.

This prediction is not only based on past work, but also on the prevalence of existing metaphorical expressions involving acts, such as "turning one's back on," "closing the door on," or "putting a lid on," that indicate people's resolve to settle a decision and focus on the next stage. Because the bodily states on which these metaphors are grounded can help access the underlying concept of closure and reenact the subjective experiences felt in prior related circumstances (Barsalou et al. 2003), they may not only reflect consumers' intentions to close a decision process but may also enable them to perceive a decision as complete.

As discussed earlier, a sense of completion limits consumers' tendencies to engage in unfavorable comparisons between the selected and the rejected options. Also as discussed earlier, physical acts of closure facilitating choice closure are especially effective in the context of choices made from a large number of options. I therefore hypothesize that acts of closure that inhibit unfavorable comparisons will increase the satisfaction of consumers who have chosen from larger sets. Formally:

H1: Performing, versus not performing, a physical act of closure is more likely to result in greater satisfaction with a choice when the choice is made from a large rather than a small choice set.

H2: The effect of the physical acts of closure on satisfaction with a choice made from a large set is driven by the choice-closure process.

Types of Physical Acts that Influence Satisfaction

According to my hypotheses, performing an act of closure after making a choice leads to greater satisfaction, and this is more likely to occur after choosing from an extensive rather than a limited set. However, I argue that not all acts of

closure can be equally effective in facilitating choice closure and improving satisfaction. In particular, the extent to which physical acts facilitate choice closure depends on how similar the characteristics of the physical acts of closure are to the characteristics of the metaphorically associated choice-closure concept.

To explicate, as metaphors associate dissimilar domains through a fixed system of corresponding elements, a sensory-motor experience activates an abstract concept only if the structure of the experience maps onto the structure of the concept in the metaphoric relation (Lakoff 1993; Landau et al. 2010). Thus, the ability of physical acts of closure to facilitate choice closure depends on the degree to which these acts map conceptually onto the choice-closure process. I have conceptualized choice closure as an intra-personal psychological process, which takes place after making a choice, through which a consumer feels a sense of decision completion and limits comparisons between an outcome chosen and the alternatives rejected. Based on this, I examine four ways in which the individual's conceptual mapping may be manipulated.

First, to serve as an effective trigger of closure, the act of closure has to be performed by the decision-maker personally, rather than by someone else. Indeed, research has shown that physical acts elicit the associated abstract concepts only if they are self-made (Taylor et al. 2009). For example, the act of pulling something toward the body, as opposed pushing something away, triggered participants' liking only if the act was performed by the participants themselves, not when it was done by a third party (Cacioppo et al. 1993).

Second, for the decision-maker to interpret the act of closure as a signal of completion, the act should not be imbued with an alternative meaning. Research demonstrates that a physical experience does not cue an abstract concept if it carries

a meaning different from the one suggested by the metaphorical association (Li et al. 2010). For example, Zhang and Li (2012; study 2) have found that participants who were made to think about light objects while carrying a heavy shopping bag rated subsequent judgments as being less important than did those who were made to think about neutral objects while carrying the same bag.

Third, in order to signal to oneself the completion of a decision, the physical act made by an individual has to follow the choice rather than precede it. Prior literature has found that the timing of the sensory-motor experience matters in the activation of the corresponding higher-order cognition. For example, study participants who firmed their muscles during a self-control task resisted temptation more than those who did it before the task (Hung and Labroo 2011).

Finally, a physical act can trigger choice closure only if it is related to a personally chosen outcome. The literature has shown that choosing influences satisfaction only when the decision-makers perceive a causal connection between the act of choice and the outcome of this choice (Botti and McGill 2006). Thus, to trigger choice closure, the act of closure has to involve an outcome that has been chosen and consumed by the decision-maker personally rather than by a third person.

To summarize, I argue that not any kinds of closing acts can facilitate choice closure. Some of these acts are more effective than others at signaling to decision makers that their decision is final and the selected outcome should no longer be compared with the rejected ones. For example, acts performed by the decision-maker rather than someone else, acts that follow the choice rather than precede it, acts that are embodied in the decision making process rather than being unrelated to the process, and acts related to a personally chosen outcome can be stronger triggers of choice closure.

I predict that when these conditions are absent, the conceptual mapping between the elements of the act of closure and those of the choice-closure process is weaker. As a result, choice closure is less likely to be facilitated and its positive effect on satisfaction will be mitigated:

H3: The positive effect of physical acts of closure on satisfaction depends on the degree of mapping between the elements of the acts and those of the choice-closure process. Specifically, this effect is weakened when the acts of closure are: (a) performed by someone other than the decision maker; (b) attributed to a reason unrelated to the choice; (c) precede the choice, or (d) relate to an outcome that is chosen by someone other than the decision maker.

Empirical Evidence

I tested these hypotheses in five studies, in which choice closure was facilitated by a variety of physical acts of closure. Studies 1 and 2 compared choices made from small and large sets and showed that choice closure influences satisfaction more when consumers choose from a large set than from a small set. The rest of the studies focused on large assortments. Study 3 tested the choice-closure process by manipulating the degree to which consumers engage in comparisons between the chosen and the forgone options. Studies 4a and 4b tested the extent to which a closure act facilitates choice closure and influences satisfaction by manipulating the mapping of the act onto the concept.

Study 1

In the first study, I facilitated choice closure by asking participants to physically turn their backs on the choice alternatives after selecting one option from either a smaller or a larger choice set. I predicted that in the large-set condition, relative to the small-set condition, participants who turned their backs would be more satisfied than those who did not. I also predicted that this increase in satisfaction would mitigate the choice overload effect, such that the greater satisfaction of participants choosing from a small, relative to a large, set would be reduced among those who turned their backs on the choice set.

Method

The study used a 2 (choice size: small vs. large) × 2 (physical act: turn vs. no-turn) between-subjects design. Ninety-six students from different universities in the UK participated in this 25 minute study in exchange for £10.

Upon entering the lab, participants were directed by the experimenter to a table displaying a set of chocolates. Following prior research (Chernev 2003a; Chernev 2003b; Iyengar and Lepper 2000), there were 24 different chocolates in the large-set condition, and six different chocolates in the small-set condition. In the large-set condition, the chocolates were arranged in four rows of six chocolates each, whereas in the small-set condition the chocolates were arranged in one row of six chocolates. The individual rows of chocolates used in the large-set condition were rotated across participants in the small-set condition. In both conditions, each chocolate was described by a label placed next to it (e.g., Marzipan Orange Dark Chocolate).

The experimenter told participants that the study was part of a marketing research study examining chocolate consumption, which involved choosing and tasting a chocolate. All participants were told to take their time before choosing a chocolate because they would not be allowed to change their selection. After participants had chosen a chocolate from either the large or the small choice set, they were administered the physical-act manipulation. In the no-turn condition, participants stayed at the table where they had made their selection, performing the tasting task in front of the original chocolate assortment. In the turn condition, participants turned their back on the assortment, tasting the chosen chocolate from a table placed opposite the selection table.

After tasting the selected chocolate, participants used seven-point scales (1 = not at all / 7 = completely) to answer two questions about their satisfaction, which

were based on prior research (Iyengar and Lepper 2000): "How confident are you that the chocolate you selected was the most enjoyable one among the chocolates on the table?" and "Do you think that there were other chocolates on the table that tasted much better than the one you chose?" (reverse scored).

Results

To test the extent to which participants were satisfied with their choice, the two satisfaction questions were averaged into an overall satisfaction score ($r = .65$) and submitted to a 2 (choice size: small vs. large) × 2 (physical act: turn vs. no-turn) ANOVA (results are shown in figure 1).

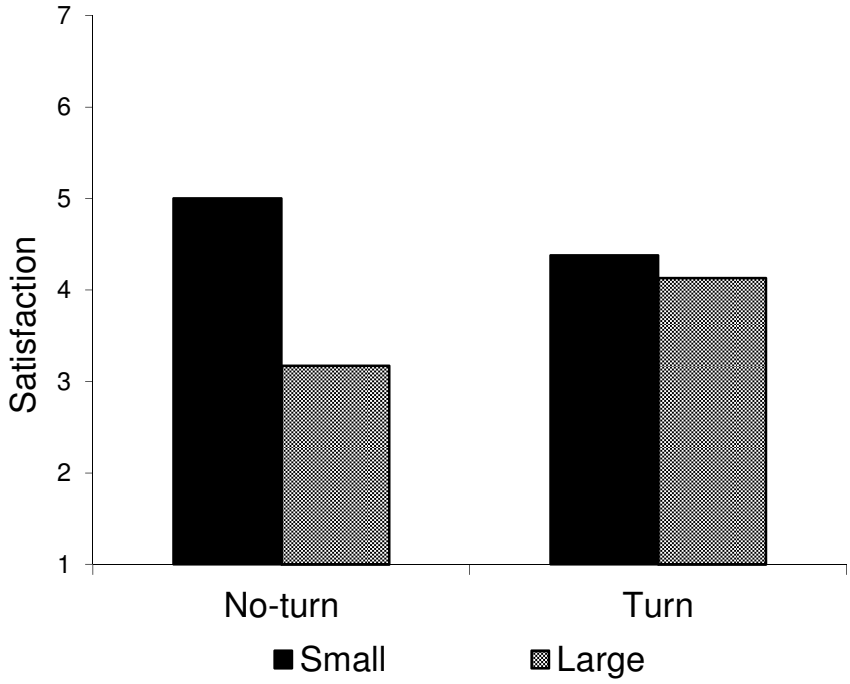
The ANOVA revealed a main effect of choice-set size, which replicated prior findings in the choice overload literature: participants in the large-set condition (M = 3.65, SD = 1.65) were less satisfied with their choices than those in the small-set condition (M = 4.67, SD = 1.55; $F(1, 92) = 10.20$, $p < .005$). The main effect of physical act was not significant, as participants in the turn condition (M = 4.26, SD = 1.52) were as satisfied as those in the no-turn condition (M = 4.07, SD = 1.83; $F(1, 92) < 1$, NS).

The interaction effect across choice-set size and physical act was significant ($F(1, 92) = 5.88$, $p < .05$). Contrast analyses revealed that, as predicted in hypothesis 1, when confronted with a large set, participants in the turn condition indicated greater satisfaction than those in the no-turn condition (M_{turn} = 4.13, SD = 1.59; $M_{no\text{-}turn}$ = 3.17, SD = 1.60; $F(1, 92) = 4.29$, $p < .05$), but that when confronted with a small set, participants in the turn condition were only as satisfied as those in the no-turn condition (M_{turn} = 4.38, SD = 1.47; $M_{no\text{-}turn}$ = 5.00, SD = 1.60; $F(1, 92) = 1.84$, NS). This difference in satisfaction across the two physical-act conditions

determined a mitigation of the choice overload effect: participants choosing from a large set were less satisfied (M = 3.17) than those choosing from a small set (M = 5.00; $F(1, 92) = 15.30$, $p < .001$) when facing the chocolates, but not when turning their backs on them ($M_{large} = 4.13$; $M_{small} = 4.38$; $F(1, 92) < 1$, NS).

FIGURE 1

INTERACTIVE EFFECT OF CHOICE-SET SIZE AND PHYSICAL ACT ON SATISFACTION IN STUDY 1



Discussion

In study 1, I facilitated choice closure by asking participants to physically turn their backs on the forgone options after deciding which chocolate to taste. Consistent with hypothesis 1, results showed that this physical act increased satisfaction when the choice was made from a large number of options but not when it was made from a small number of options. Given that prior research showed that a choice is less difficult when made from a limited than from an extensive assortment

(Malhotra 1982; Tversky and Shafir 1992), consumers choosing from small sets should be less likely to revisit their choice by reconsidering the forgone options after they have made a decision. In line with this reasoning, the trigger of choice closure—turning one's back on the choice alternatives during tasting—was less effective in the small- than in the large-set condition.

Note that performing or not performing the physical act of closure had an effect on satisfaction despite participants being explicitly told that their decision was not reversible. This result suggests that, according to my expectations, choice closure operated above and beyond decision irreversibility, because of the different psychological mechanisms underlying these two processes.

However, study 1 did not provide any evidence to support the process underlying choice closure, which, according to hypothesis 2, is based on inhibiting unfavorable comparisons between the chosen and forgone options. In addition, it is possible that participants who turned their backs on the chocolate assortment during the tasting task may have forgotten the other options. According to this memory-based alternative explanation, participants who turned their backs on the forgone options during consumption may have been more satisfied not because that act prevented comparisons to forgone options but because they simply could not remember these forgone options. Another limitation of this study consists in the type of questions employed to measure satisfaction, which were more consistent with a comparative evaluation of the selected outcome rather than with an isolated evaluation. To control for this potential confound between process and outcome measures, in the next studies I provided a pure measure of satisfaction.

Study 2

In this study, I facilitated choice closure by asking participants to place a transparent lid over a chocolate assortment after they selected one option from either a smaller or a larger version of this assortment. This study tested hypothesis 1, which predicts that physical acts of closure facilitate choice closure more effectively in the context of large assortments, but that this effect is less pronounced in the context of small assortments. To test hypothesis 2, which predicts that choice closure explains differences in satisfaction, I measured the extent to which acts of closure activate a sense of decision completion and the associated inhibition of comparison engagement.

Method

Study 2 used a 2 (choice size: small vs. large) × 2 (physical act: close vs. no-close) between-subjects design. One hundred fifty-nine students from different universities in the UK participated in this 25 minute study in exchange for £10.

Participants were seated in front of a table and shown the same chocolate sets (24 versus six) and descriptive labels used in study 1. The chocolates were arranged inside a cake dome composed of a tray and a transparent lid, which allowed participants to see the chocolates inside the dome. The procedure of study 2 was the same as that for study 1, except for the manipulation of the physical act. The experimenter instructed participants across both close and no-close conditions to lift the transparent lid off the tray displaying the chocolate assortment and to place it on the table. The experimenter then asked participants to choose a chocolate to taste and

to put it on a small plate that was positioned next to the cake dome. After participants had placed the chosen chocolate on the plate, the physical-act manipulation was conducted: In the no-close condition, the experimenter simply told participants to taste the chocolate; in the close condition, the experimenter told them to put the transparent lid back on the tray before tasting the chocolate. This manipulation allowed me to control for potential memory effects because participants could see the forgone chocolates while tasting the selected one in both the close and the no-close condition.

After tasting the selected chocolate, participants answered one question about their satisfaction: "How satisfied are you with the chocolate that you chose?" In order to test my prediction that the physical act of covering the forgone chocolates with the lid would facilitate choice closure, participants also answered questions tapping into the two interrelated elements of the choice-closure process: a sense of decision completion and the associated reduced tendency to engage in comparisons between the chosen and the forgone options. To measure decision completion, I created four items ("To what extent do you feel you have reached closure about your choice of the chocolate to taste?"; "To what extent you are still thinking about your decision of what chocolate to taste? (reverse coded)"; "After choosing your chocolate, to what extent did you perceive that decision as settled?"; "People sometimes use expressions such as 'I have turned my back on' or 'I have closed the door on' something. To what extent do you think such expressions describe how you feel about your decision of what chocolate to taste?") and borrowed three items from research on psychological closure (Beike and Wirth-Beaumont 2005), which I adapted to my decision-making context ("After choosing your chocolate, to what extent did you perceive that decision as 'unfinished business'? (reverse coded)";

"After choosing your chocolate, to what extent did you perceive that decision as a 'closed book'?"; "After choosing your chocolate, to what extent did you think of that decision as behind you?"). To measure the extent to which participants engaged in comparisons I asked two questions: "While you were eating the chocolate, to what extent did you keep thinking about the other chocolates on the table?" and "While you were eating the chocolate, to what extent did you try to compare it with other chocolates on the table?" All questions were answered on seven-point scales (1 = not at all / 7 = completely). An exploratory factor analysis using a varimax rotation confirmed that two orthogonal factors explained 61.54% of the variance. The first factor (34.14% of variance explained) consisted of the two comparison-engagement items and the second factor (27.40% of variance explained) consisted of the remaining seven items measuring decision completion. Extracting a third factor added little variance to the solution and reduced the interpretability of the factor loadings.

Results

Seventeen participants (12 in the no-close condition and five in the close condition), who did not follow the instructions to leave the lid open or to close it, were eliminated from the following analyses, which left me with 142 participants. Including these participants did not significantly change the following results.

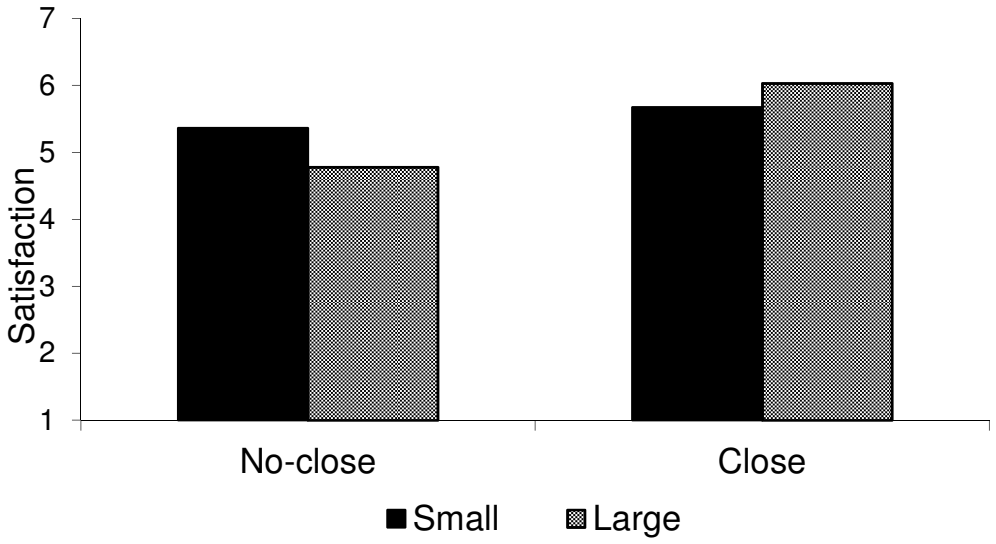
Choice satisfaction. To test participants' satisfaction with their choice, I conducted a 2 (choice-set size: small vs. large) × 2 (physical act: close vs. no-close) ANOVA on the one-item satisfaction measure (results are shown in figure 2a). This analysis yielded a main effect of physical act: participants in the close condition (M = 5.87, SD = 1.04) were more satisfied than those in the no-close condition (M =

5.04, SD = 1.38; $F(1, 138) = 14.41$, $p < .001$). There was no main effect of choice-set size on satisfaction, as participants in the large-set condition ($M = 5.39$, SD = 1.36) were as satisfied as those in the small-set condition ($M = 5.51$, SD = 1.20; $F(1, 138) < 1$, NS). The interaction between choice-set size and physical act was significant ($F(1, 138) = 5.36$, $p < .05$). Contrast analyses further showed that, as predicted in hypothesis 1, when faced with a large set participants who put the lid back on the tray were more satisfied than those who did not ($M_{close} = 6.03$, SD = 0.74, $M_{no\text{-}close} = 4.78$, SD = 1.54; $F(1,138) = 21.07$, $p < .0001$). However, when faced with a small set, participants across the close and no-close conditions were equally satisfied ($M_{close} = 5.67$, SD = 1.32; $M_{no\text{-}close} = 5.36$, SD = 1.08; $F(1, 138) < 1$, NS).

Consistent with my theorizing that in the context of choices made from small sets consumers naturally experience choice closure even in the absence of an external intervention, when the act of closure was not performed participants in the small-set condition were more satisfied than those in the large-set condition ($F(1, 138) = 4.27$, $p < .05$). However, when the act of closure was performed, the difference in satisfaction between the two choice-set size conditions was not significant ($F(1, 138) = 1.49$, NS).

FIGURE 2a

INTERACTIVE EFFECT OF CHOICE-SET SIZE AND PHYSICAL ACT ON SATISFACTION IN STUDY 2

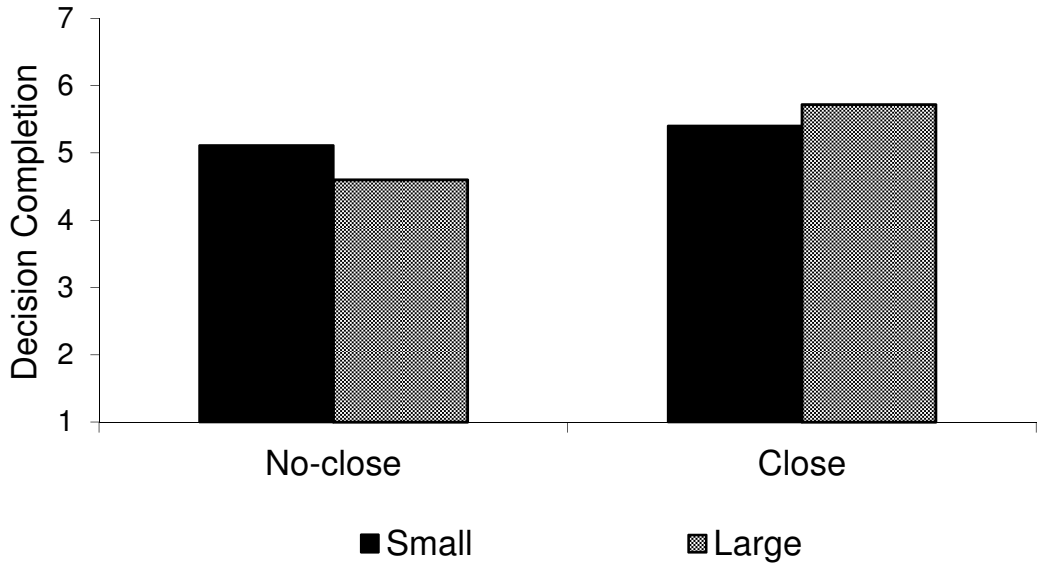


Choice-closure process. The seven items measuring the decision-completion element of the choice-closure process were averaged into a single score ($\alpha = 0.82$), which was submitted to a 2 (choice-set size: small vs. large) × 2 (physical act: close vs. no-close) ANOVA. The ANOVA revealed a significant main effect of physical act: participants who put the lid back on the tray ($M = 5.58$, SD = 1.07) perceived their decision to be more complete than those who did not ($M = 4.83$, SD = 1.56; $F(1, 138) = 14.19$, $p < .001$). There was no main effect of choice-set size on completion ($M_{large} = 5.16$, SD = 1.11; $M_{small} = 5.24$, SD = 1.25; $F(1, 138) < 1$, NS). The ANOVA also yielded a significant interaction between size and physical act ($F(1, 138) = 4.96$, $p < .05$; see figure 2b). Supporting my hypotheses, participants in the close condition ($M = 5.72$, SD = 0.82) experienced a greater sense of decision completion than those in the no-close condition when facing a large set ($M = 4.60$, SD = 1.08; $F(1, 138) = 20.28$, $p < .0001$), but not when facing a small set ($M_{close} = 5.40$, SD = 1.32; $M_{no\text{-}close} = 5.11$, SD = 1.19; $F(1, 138) = 1.06$, NS). In line with my theory, in the no-close condition, participants choosing from a small set experienced a greater sense of completion than those choosing from a large set ($F(1, 138) = 3.78$,

$p = .05$). In the close condition, however, this difference was not significant ($F(1, 138) = 1.48$, NS).

FIGURE 2b

INTERACTIVE EFFECT OF CHOICE-SET SIZE AND PHYSICAL ACT ON DECISION COMPLETION IN STUDY 2

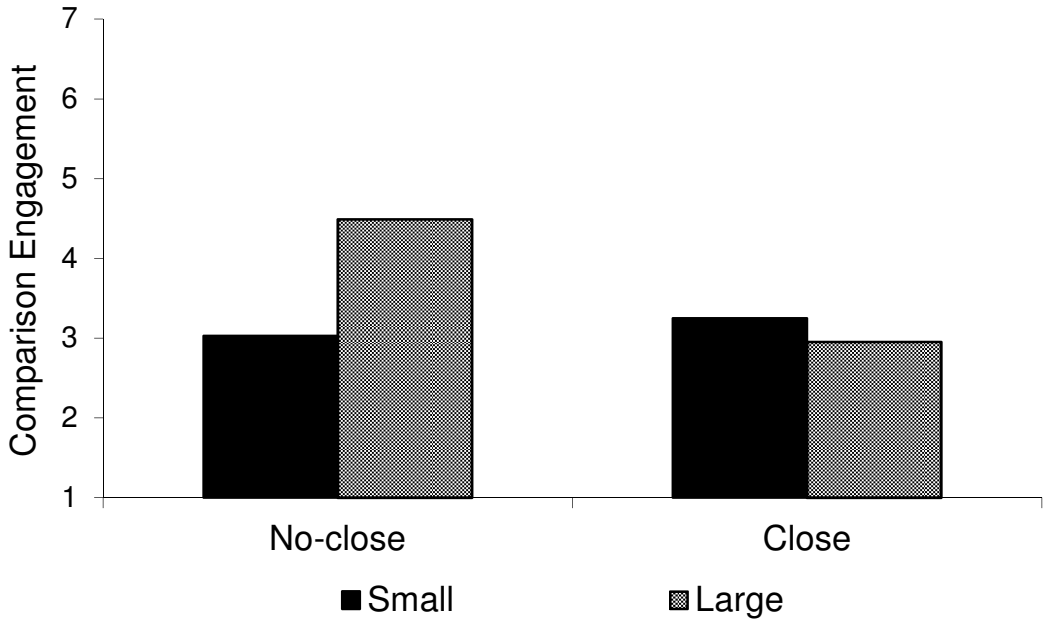


The two items measuring the comparison-engagement element of the choice-closure process were also averaged into a single score ($r = 0.77$, $p < .0001$), with lower engagement in comparisons indicating greater choice closure. A 2 (choice-set size: small vs. large) × 2 (physical act: close vs. no-close) ANOVA conducted on this score revealed a main effect of choice size: consistent with my theorizing, participants who chose from a large set ($M = 3.73$, SD = 1.90) had a greater tendency to compare than those who chose from a small set ($M = 3.13$, SD = 1.75; $F(1, 138) = 3.81$, $p = .05$). The main effect of physical act was also significant, as participants who closed the lid ($M = 3.08$, SD = 1.69) engaged in comparisons less than those who did not ($M = 3.83$, SD = 1.94; $F(1, 138) = 4.96$, $p < .05$). In addition, there was a significant interaction between size and physical act ($F(1, 138) = 8.82$, $p < .005$),

which is illustrated in figure 2c. Contrast analyses supported my predictions by showing that participants in the close condition (M = 2.95, SD = 1.60) compared less than those in the no-close condition (M = 4.49, SD = 1.87; $F(1, 138) = 15.24$, p = .0001) when confronted with a large set, but not when confronted with a small set (M_{close} = 3.25, SD = 1.81; $M_{no\text{-}close}$ = 3.03, SD = 1.72; $F(1, 138) < 1$, NS). Again consistent with my premise, in the no-close condition participants faced with a small set reported a lower tendency to compare than those faced with a large set ($F(1, 138) = 12.51$, $p < .001$). This difference was, however, not significant in the close condition ($F(1, 138) < 1$, NS).

FIGURE 2c

INTERACTIVE EFFECT OF CHOICE-SET SIZE AND PHYSICAL ACT ON COMPARISON ENGAGEMENT IN STUDY 2



Mediation. Hypothesis 2 predicts that the choice-closure process explains the effect of acts of closure on choice satisfaction. Note that my theorizing entails a correlation between the two elements of the choice-closure-process: decision

completion and comparison engagement. However, based on past literature (Brenner et al. 1999), the comparison-engagement element is more directly link to satisfaction, with fewer comparisons resulting in more positive evaluation of the selected outcome. Therefore, I first examined the association between the two choice-closure-process elements by regressing comparison engagement on decision completion. This regression showed that decision completion predicts comparison engagement (B = -0.70, SE = 0.12; $t(140) = -5.83$, $p < .0001$).

Then, I performed a mediation using a mediated moderation model (Model 2, Preacher, Rucker, and Hayes 2007) in which choice-set size moderated the effect of physical act (the independent variable) on comparison engagement (the mediator), and comparison engagement exerted a direct influence on satisfaction (the dependent variable). I used dummy variables to account for the two levels of the independent and moderator variables. I coded physical act as 1, 0 to indicate the close and no-close conditions, respectively, and choice-set size as 1, 0 to indicate the small and large conditions, respectively. I tested the mediated moderation model with three equations (Muller, Judd, and Yzerbyt 2005; Preacher et al. 2007). The first equation regressed satisfaction on physical act, choice-set size, and their interaction. This regression yielded a significant interaction (B = -0.95, SE = 0.41; $t(138) = -2.32$, $p < .05$). The second equation regressed comparison engagement on physical act, choice-set size, and their interaction. The equation yielded a significant interaction (B = 1.76, SE = 0.59; $t(138) = 2.97$, $p < .01$). Finally, I added comparison engagement and choice-set size × comparison engagement to the first equation. Results showed that comparison engagement marginally predicted satisfaction (B = -0.12, SE = 0.08; $t(136) = -1.47$, $p = .1$). However, the interaction between physical act and choice-set size became marginally significant (B = -0.76, SE = 0.43; $t(136) = -1.77$, $p = .08$),

and the interaction between choice-set size and comparison engagement was not significant (B = 0.06, SE = 0.12; $t(136) = 0.47$, NS). In order to test whether the indirect effects of comparison engagement was significant, I conducted a bias-corrected (BC) bootstrapping analysis (Hayes 2013). The indirect effect (based on 5,000 bootstraps) conducted at both levels of choice-set size (large vs. small) revealed that comparison engagement mediated the relationship between physical act and satisfaction in the large-set condition (95% BC bootstrap CI of 0.0137 to 0.4792, with an estimate of 0.1852) but not in the small-set condition (`95% BC bootstrap CI of -0.2133 to 0.0615, with an estimate of -0.0264).

Discussion

In study 2, I facilitated choice closure by asking participants to place a transparent lid over the forgone options after making their choice. Consistent with hypothesis 1, results showed that performing the physical act of closure increased satisfaction when the choice was made from a large number of options but not when it was made from a small number of options. Note that performing the physical act of closure had an effect on satisfaction even though participants in the close condition were as able as those in the no-close condition to elaborate on the rejected chocolates, and even though both sets of participants were explicitly told that their decision was not reversible. This suggests that choice closure operated above and beyond participants' cognitive ability to access the forgone options (Hafner et al. 2012) and these options' material accessibility (Gilbert and Ebert 2002).

Also supporting the theorizing, I found that the act of covering the forgone options was more effective in inducing choice closure in the large- than in the small-set condition. Large-set participants who close the lid experienced higher decision

completion and lower comparison engagement than small-set participants, and the effect of the act of closure on satisfaction was mediated by comparison engagement in the large-set condition.

Studies 1 and 2 demonstrated the positive effect of performing physical acts of closure on satisfaction in the context of choices made from large versus small choice sets (hypothesis 1). Study 2 also tested the underlying mechanism of the observed effect. Consistent with hypothesis 2, the effect of the physical act of closure on satisfaction is mediated by choice closure in the large-set condition.

As predicted, in both studies 1 and 2 there was no effect of physical act on satisfaction in the small-set conditions. In the next three studies, I am going to focus on large-set condition only. Study 3 addresses two limitations of the previous studies. First, in study2 the evidence supporting the choice-closure process is only correlational. Therefore, in study 3 I manipulated the comparison-engagement element of this process orthogonally to the physical act. To do so, I explicitly instructed participants to evaluate the decision outcome either in isolation or in comparison with the forgone options after closing (or not) a menu listing the choice alternatives. I then compared these two conditions with a conceptual replication of the large-set condition from study 2, in which no explicit evaluation instructions were given.

Second, results of studies 1 and 2 could be explained by a potential alternative account based on affect. Literature has shown that consumers comparing a large number of options suffer from negative affect (Carmon et al. 2003; Iyengar and Lepper 2000). Thus, the act of closing the lid on the rejected chocolates may have not only triggered choice closure but also encapsulated this negative affect. Just as the act of inserting an emotionally painful narrative into an envelope cues

psychological closure (Li et al. 2010), the act of turning one's back, or covering the assortment of forgone chocolates could have insulated participants from the negative emotions felt during the decision process and improved their eventual satisfaction. I collected measures of affect in study 3 to examine this alternative explanation.

Study 3

Method

This study used a 2 (physical act: close vs. no-close) × 3 (evaluation mode: replication vs. isolated vs. comparative) between-subjects design. One hundred fifty-four students from different universities in the UK participated in this 30 minute study in exchange for £10.

To keep the replication condition as similar as possible to that in the previous study, I gave participants in this condition the same cover story as in study 1, namely that the study was part of a marketing research project examining tea consumption and that it involved choosing and consuming one tea. As I explain below, the isolated- and comparative-evaluation conditions involved additional tasks that enabled these evaluation modes. As part of my effort to make the cover story more credible, participants in these conditions read that the study was part of a marketing research project aimed at collecting feedback about a series of workshops on concentration, and that the concentration tasks involved choosing and consuming tea.

Participants were guided to a table on which was displayed a menu listing a selection of 24 teas, each described with a picture, a name (e.g., Genmaicha Green Tea), and a brief text (e.g., vibrant green Sencha blended with rice kernels). The menu was close, so that participants could only see its cover, which was labeled "Tea

Menu." Participants across all conditions were asked to open the menu and to carefully examine the descriptions before choosing a tea to taste because, as in study 1, they would not be able to change their selection. In the no-close condition, participants simply chose one tea, whereas in the close condition participants were asked to close the menu after making their choice. In both conditions, the menu was then moved out of participants' sight.

After the physical-act manipulation was administered to all participants, those in the replication condition tasted a freshly brewed tea, which unbeknown to them was the same for everyone. Participants in the isolated- and comparative-evaluation conditions were instead asked, while tasting the tea, to perform a five-minute task involving the tea they had selected. In the isolated-evaluation condition, participants were made to evaluate the decision outcome in isolation. They were told that concentration could be improved by both meditation and consumption of specific food and drinks, such as tea, and that they would therefore practice a meditation technique purportedly based on focusing one's attention on a fixed object, the tea they had previously chosen. After listening to instructions recorded by a professional voice coach pretending to be a meditation expert, participants were asked to take three sips of their freshly brewed tea. While taking each sip, they were asked to concentrate their attention on specific aspects of the tea, such as its color, smell, and taste.

In the comparative-evaluation condition, participants were made to evaluate the decision outcome in comparison with the forgone options. They were told that concentration could be improved by both strengthening the memory and consuming food and drinks with specific ingredients, such as tea. They would therefore sip the freshly brewed tea that they chose while practicing an alleged memory technique

based on recalling autobiographical events. Following instructions recorded by the same voice coach described above, participants took three sips and after each sip recalled details about the decision process they had just experienced, such as the names of the teas they did not choose, their characteristics, and how they compared with the chosen tea. Participants then answered one question about their satisfaction: "How satisfied are you with the tea that you chose?" (1 = not at all / 7 = completely).

According to my theorizing, acts of closure facilitate the perception of a decision as settled, causing the adoption of a more isolated, rather than comparative, evaluation mode. I predicted that the physical act would have little or no effect when participants were already made to be in a specific evaluation mode. In particular, I expected that, whether or not they engaged in the act of closure, participants who were instructed to adopt an isolated-evaluation mode would be as satisfied as those who performed that act without receiving any further instructions. Likewise, whether or not they engaged in the act of closure, participants who were instructed to adopt a comparative-evaluation mode would be as satisfied as those who did not perform the act without further instructions.

Finally, to rule out the alternative affect-based explanation, I had participants fill out five items capturing their current affect on seven-point bipolar scales (1= cheerful / 7 = depressed; 1 = relaxed / 7 = stressed; 1 = pleased / 7 = annoyed; 1 = happy / 7 = unhappy, 1 = in a good mood / 7 = in a bad mood), which were adapted from Pham (1998).

Results

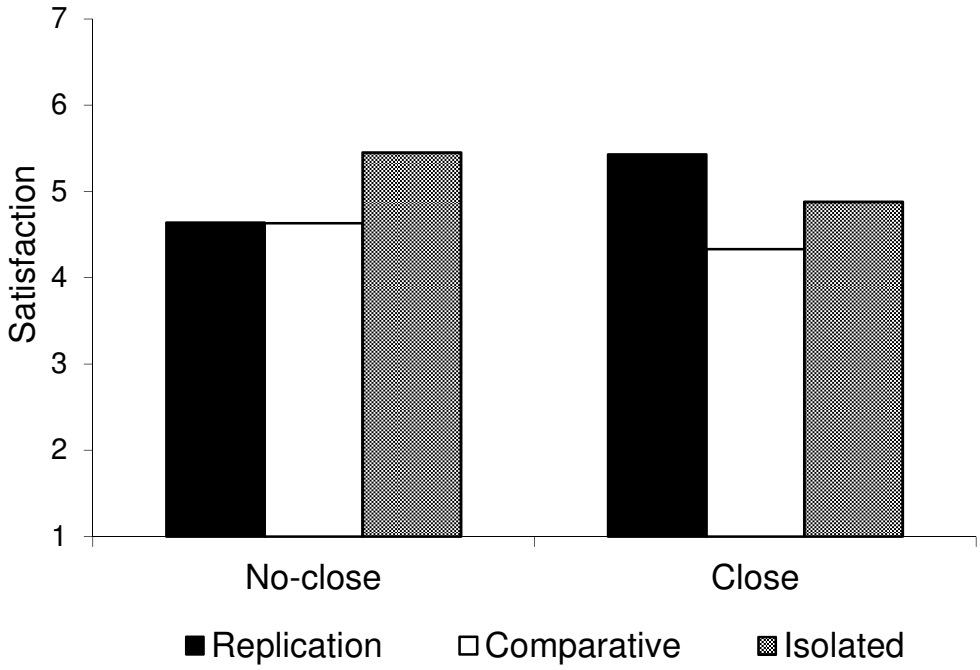
Six participants (three in the memory condition and three in the replication condition), who were instructed to leave the menu open but nonetheless closed it,

were eliminated from the following analyses, leaving me with 148 participants. Including these participants in the following analyses did not significantly change the results.

Choice Satisfaction. A 2 (physical act: close vs. no-close) × 3 (evaluation mode: replication vs. isolated vs. comparative) ANOVA conducted on the one-item satisfaction measure revealed that the main effect of physical act was not significant (M_{close} = 4.91, SD = 1.59; $M_{no\text{-}close}$ = 4.86, SD = 1.19; $F(1, 142) < 1$, NS) but that of evaluation mode was significant ($M_{replication}$ = 5.04, SD = 1.24; $M_{isolated}$ = 5.14, SD = 1.32; $M_{comparative}$ = 4.48, SD = 1.60; $F(2, 142) = 3.35$, $p < .05$): participants in the comparative-evaluation conditions were less satisfied than those in both the isolated-evaluation ($F(1, 142) = 5.70$, $p < .05$) and the replication ($F(1, 142) = 4.28$, $p < .05$) conditions, and the difference in the last two groups was not significant ($F(1, 142) < 1$, NS). The interaction between physical act and evaluation mode was significant ($F(2, 142) = 3.53$, $p < .05$). Contrast analyses showed that, in line with the findings of study 1, in the replication condition participants who closed the menu before consuming the tea (M = 5.43, SD = 1.29) were more satisfied than those who left the menu open before consuming the tea (M = 4.64, SD = 1.06; $F(1, 142) = 4.62$, $p < .05$; see figure 3).

FIGURE 3

INTERACTIVE EFFECT OF PHYSICAL ACT AND EVALUATION MODE ON SATISFACTION IN STUDY 3



More important for this study, and consistent with my predictions, contrast analyses revealed that participants in the isolated-evaluation conditions experienced the same level of satisfaction regardless of whether they closed the menu ($M = 4.88$, SD = 1.54) or left it open ($M = 5.45$, SD = 0.94; $F(1, 142) = 1.93$, NS), and that their average satisfaction ($M = 5.14$, SD = 1.32) was also not significantly different from that of participants in the replication condition who closed the menu ($F(1, 142) < 1$, NS). Similarly, the satisfaction of participants in the close and no-close comparative-evaluation conditions was the same ($M_{close} = 4.33$, SD = 1.81; $M_{no\text{-}close} = 4.63$, SD = 1.38; $F(1, 142) < 1$, NS), and the average satisfaction of these two groups ($M = 4.48$, SD = 1.60) was not significantly different from that of participants in the replication condition who left the menu open ($F(1, 142) < 1$, NS).

Contrast analyses also revealed that, consistent with my theory, the isolated-evaluation mode generated greater satisfaction than the comparative-evaluation mode, regardless of whether these evaluation modes were facilitated by instructions or by physical act. Specifically, in the close conditions, participants who were made

to evaluate in isolation by practicing meditation while drinking the tea were as satisfied as those who simply drank the tea ($F(1, 142) = 2.12$, NS). The average satisfaction of these two groups ($M = 5.17$, SD = 1.42) was greater than that of participants who were made to evaluate through comparisons by performing the memory exercise after closing the menu ($F(1, 142) = 5.87$, $p < .05$). In the no-close conditions, participants who completed the memory exercise while drinking the tea were as satisfied as those who only drank the tea ($F(1, 142) < 1$, NS), and both groups ($M = 4.63$, SD = 1.21) were less satisfied than those who practiced meditation ($F(1, 142) = 5.13$, $p < .05$).

Affect. A 2 (physical act: close vs. no-close) × 3 (evaluation mode: replication vs. isolated vs. comparative) ANOVA was conducted on the five-item affect measures ($\alpha = 0.89$), with lower scores indicating more positive affect. There was a significant effect of evaluation mode ($F(2, 142) = 6.91$, $p < .005$): positive affect of participants in the replication condition ($M = 2.34$, SD = 0.98) was marginally higher than that of participants in the comparative ($M = 3.05$, SD = 0.98; $F(1, 142) = 13.82$, $p < .0005$) and isolated ($M = 2.66$, SD = 0.95; $F(1, 142) = 2.95$, $p = .09$) evaluation-mode conditions. Participants' positive affect in the isolated-evaluation-mode condition was marginally higher than that in the comparative-evaluation-mode condition ($F(2, 142) = 3.38$, $p = .07$). No other effects were significant (ps > .56). The lack of a significant interaction between acts of closure and evaluation modes suggests that affect cannot explain the observed pattern of results. Indeed, the interactive effect held even after controlling for participants' affective responses ($F(2, 141) = 4.33$, $p < .05$).

Discussion

The replication conditions of study 3 mirrored the findings of the large-choice-set conditions of study 2. That is, participants whose choice closure was facilitated by closing the menu were more satisfied with the option selected from a large set than those for whom choice closure was not facilitated because the menu was left open. More important, study 3 added support to hypothesis 2 by manipulating the comparison-engagement element of the choice-closure process. Results indicated that simulating (or not) the psychological process associated with comparison engagement had the same effect on satisfaction as performing (or not) a physical act of closure. The results also ruled out the possibility that acts of closure improved satisfaction because they allowed decision makers to seal off the negative affect felt during the decision process.

The next two studies tested hypothesis 3. This hypothesis predicts that the likelihood that physical acts of closure will result in choice closure depends on the degree to which the elements of these two domains—sensory-motor and conceptual—map onto each other. Studies 4a and 4b manipulated the degree of mapping between physical and conceptual closure to show that a weaker mapping reduces the potential of the act to signal choice closure, and that its subsequent effect on satisfaction is mitigated. In study 4a I manipulated the agent of the closure act and the reason for performing that act. In study 4b I manipulated the timing of the closure act and whether the consumed outcome was personally chosen or randomly assigned.

Study 4a

Method

This study employed a 2 (physical act: close vs. no-close) × 3 (attribution: replication vs. external agent vs. external reason) between-subjects design. One hundred sixty students from different universities in the UK participated in this 25 minute study in exchange for £10.

Participants sat at a table on which there were a menu listing a selection of 24 biscuits—each described by a picture, a name (e.g., Sultan), and a brief text (e.g., Belgian Milk Chocolate Coated Biscuit Decorated with Dark Chocolate)—and 24 nontransparent plastic bowls, each containing one of the biscuits. The menu, which was labeled "Biscuit Menu," was closed, and the bowls were covered with lids to prevent participants from seeing the biscuits placed inside.

As before, participants were told that the study was part of a marketing research project examining biscuit consumption and that it involved a tasting task. In the replication condition, the experimenter asked participants to open the menu and to carefully examine the descriptions before choosing a biscuit to taste. Next, the physical-act manipulation was conducted: in the no-close condition participants simply chose one biscuit, whereas in the close condition they were asked to close the menu after making their choice.

The external-agent and external-reason conditions manipulated the extent to which the act of closure mapped onto the choice-closure process. The external-agent condition manipulated the mapping by having the experimenter perform the closure act on behalf of the participants. Given that physical acts are more likely to trigger the associated abstract concepts when they are self-made (Taylor et al. 2009), I predicted that the physical-to-mental mapping would be weaker when the physical acts were performed by the experimenter rather than the decision maker. The procedure in the external-agent condition was the same as in the replication

condition, except that in the no-close condition the experimenter opened the menu from which participants made their choice, and in the close condition, after participants decided which biscuit to taste, the experimenter closed the menu. In both the replication and the external-agent conditions, the experimenter used a chart placed next to the bowls indicating which biscuit was in each bowl to verify the location of the selected biscuit.

In the external-reason condition I manipulated the physical-to-mental mapping by providing a reason to perform an act of closure that was unrelated to the decision process. I did this because a physical experience is less likely to cue an abstract concept if it is imbued with a meaning that is different from the one suggested by the metaphorical association (Li et al. 2010). The procedure in the external-reason condition was similar to that in the replication condition, except that in the no-close condition, after participants made their choice, the experimenter asked them to leave the menu open because she needed to check a chart that was printed inside the menu in order to locate the chosen biscuit; in the close condition, the experimenter asked participants to close the menu because the chart was printed on its back. As before, across all conditions participants were informed that they could not change their biscuit selection, and the menus were moved out of their sight.

After eating a biscuit, participants answered the same question about satisfaction that was asked in study 3. I predicted that in those conditions in which the physical-to-mental mapping was reduced, the potential of the act of closure to signal choice closure would also be weakened. As a result, the positive effect of acts of closure on satisfaction would be mitigated in the external-agent and external-reason conditions.

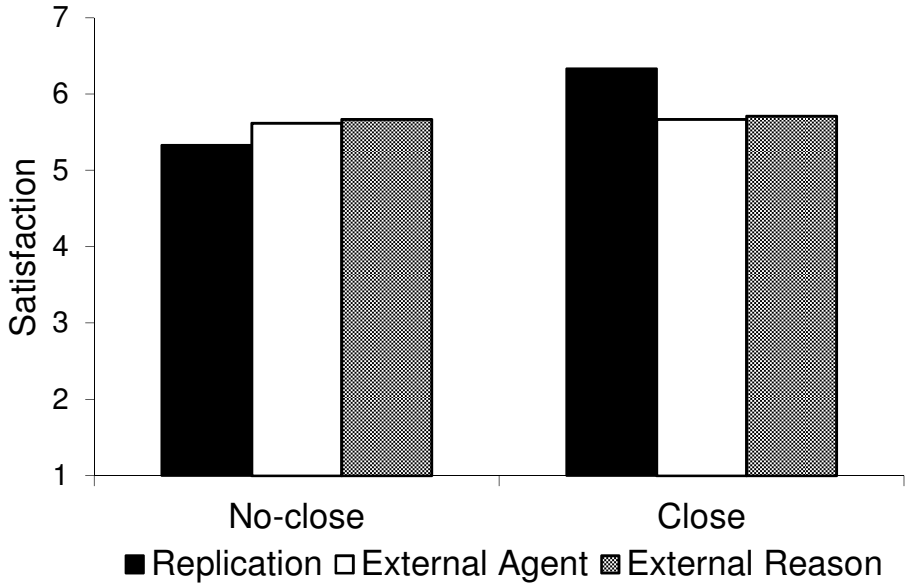
Results

Six participants (all in the replication condition) did not follow the instructions to leave the menu open after choosing and were therefore removed from the following analyses, leaving me with 154 participants. Including these participants did not significantly change the results reported below. A 2 (physical act: close vs. no-close) × 3 (attribution: replication vs. external agent vs. external reason) ANOVA was conducted on the one-item satisfaction measure. The main effect of attribution was not significant ($M_{replication}$ = 5.80, SD = 1.23; M_{agent} = 5.64, SD = 0.96; M_{reason} = 5.69, SD = 1.20; $F(2, 148) < 1$, NS), but the main effect of physical act was: participants who closed the biscuit menu (M = 5.90, SD = 0.99) were more satisfied with their choice than those who left the menu open (M = 5.54, SD = 1.26; $F(1, 148) = 3.94$, $p < .05$). There was also a significant interaction between attribution and physical act ($F(2, 148) = 3.03$, $p < .05$; see figure 4).

Contrast analyses showed that in the replication condition, participants who closed the menu (M = 6.33, SD = 0.48) were more satisfied with their choice than those who kept the menu open (M = 5.33, SD = 1.49; $F(1, 148) = 10.00$, $p < .005$), replicating the results in the large-choice-set condition obtained in prior studies. However, as predicted, this difference in satisfaction was not significant both in the external-agent (M_{close} = 5.67, SD = 0.97; $M_{no\text{-}close}$ = 5.62, SD = 0.97; $F(1, 148) < 1$, NS) and in the external-reason (M_{close} = 5.71, SD = 1.21; $M_{no\text{-}close}$ = 5.67, SD = 1.22; $F(1, 148) < 1$, NS) conditions.

FIGURE 4

INTERACTIVE EFFECT OF PHYSICAL ACT AND ATTRIBUTION ON SATISFACTION IN STUDY 4A



Consistent with my theory, contrast analyses also showed that among participants who closed the menu, those in the replication condition were more satisfied than those in the external-agent ($F(1, 148) = 3.92$, $p < .05$) and external-reason ($F(1, 148) = 3.90$, $p = .05$) conditions, but the difference in satisfaction between the last two groups was not significant ($F(1, 148) < 1$, NS). However, among participants who kept the menu open, the differences in replication, external-agent, and external-reason conditions were all not significant (Fs < 1.31, ps > .25).

Study 4b

Study 4b used a 3 (physical act: post-choice close vs. no-close vs. pre-choice close) × 2 (choice: self vs. random) between-subjects design. One hundred sixty-two university students from the UK received £10 to participate in this 30 minute study.

As in study 2, the biscuits were displayed inside a cake dome composed of a tray and a transparent lid and were identified by a name (e.g., Cocoline) and a brief description (e.g., double biscuit filled with coconut cream). Participants were seated at a table in front of the cake dome and were told that the study was part of a marketing research project examining people's consumption of biscuits. No mention was made that the study required them to make a choice. To give participants in all conditions the opportunity to examine the choice alternatives, I asked them to open the lid and inspect the biscuits and their descriptions to form a clear impression of the selection. After 30 seconds, the physical-act manipulation was administered.

Recall that in my earlier studies, participants in the close condition made a choice, performed the act of closure, and then consumed the chosen alternative. I theorized that the act of closure following the choice would signal to the decision makers that their decision was complete. In this study I manipulated the extent to which the physical and mental processes of closure mapped onto each other by varying the timing of the act of closure to take place either after the choice or before it, as the timing of the acts has been shown to matter in cueing the associated higher-level cognitions (Hung and Labroo 2011). Specifically, the post-choice-close and no-close conditions were the same as the close and no-close conditions in study 2: participants first chose one biscuit to taste from the selection and then put the lid back on the tray or did not, respectively, before eating the biscuit. In the pre-choice-close condition the act of closure was performed before making the choice: participants first put the transparent lid back on the tray and only then chose one biscuit to taste. As before, all participants were told that they would not be able to change their selection. I expected to replicate the focal effect of the act of closure on

satisfaction in the post-choice-close condition and to mitigate this effect in the pre-choice-close condition.

After the biscuit selection, the choice manipulation was conducted. Participants consumed either the option they personally chose or one chosen for them at random. Specifically, in the self-choice condition, participants were informed that, in addition to tasting the biscuit they selected, they would be given a randomly chosen biscuit from the same selection to take home. In the random-choice condition, participants were told that they would get the biscuit they selected to take home, but before that they would taste another biscuit, one randomly chosen from the same selection. The experimenter then proceeded to randomly select a biscuit by pulling one of 24 slips of paper indicating the biscuit names from a glass bowl. Participants in all conditions thus each received two biscuits. Those in the self-choice condition tasted and evaluated the biscuit they chose (and took home a randomly chosen additional biscuit). In contrast, those in the random-choice condition tasted and evaluated a randomly chosen biscuit (and took home the one they chose). Because the random assignment of the biscuit reduces participants' perception of having experienced a decision process (Botti and McGill 2006), I expected a reduced mapping and lower satisfaction in this condition.

After eating either the self-chosen or the randomly assigned biscuit, participants answered the same question about satisfaction that was asked in the previous studies. I also gathered additional process evidence by analyzing participants' considerations during consumption. To do so, I asked participants an open-ended question: "Can you please list the thoughts you had while you were tasting the biscuit?" I coded this question based on the number of times participants spontaneously mentioned comparisons between the biscuit they had eaten and those

that had been forgone. I predicted that fewer comparisons would be mentioned in the post-choice-close/self-choice condition than in all the other conditions, and that this number of comparisons would mediate the effect of the act of closure on satisfaction in the self-choice conditions.

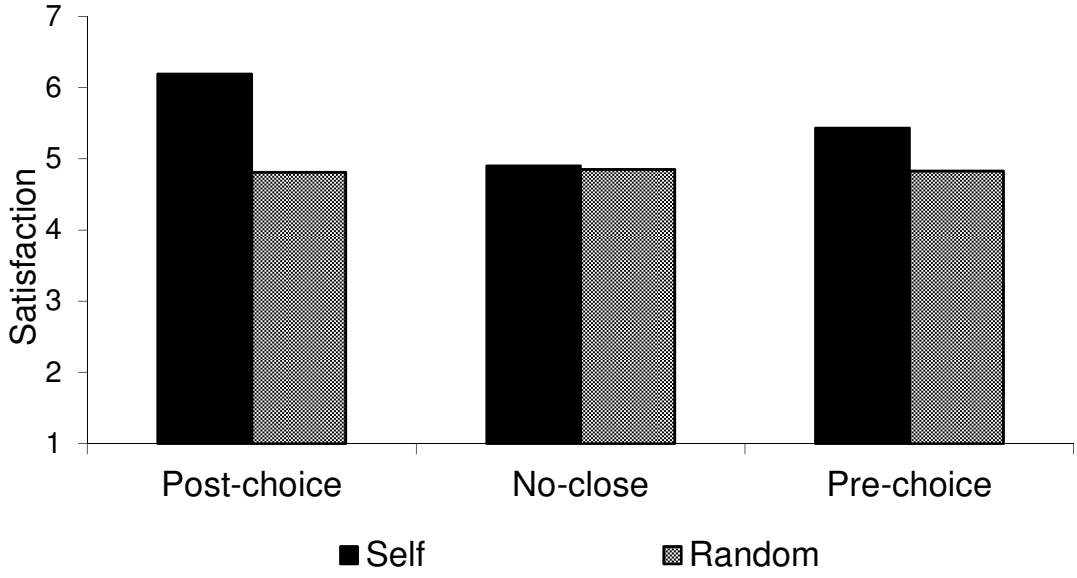
Results

Sixteen participants (11 in the pre-choice-close condition and five in the no-close condition), who did not follow the experimental instructions, were eliminated from the following analyses. The final participants' count was therefore 146. Including these participants did not significantly change the results reported below.

Choice satisfaction. To test the extent to which participants were satisfied with their choice, the satisfaction item was submitted to a 3 (physical act: post-choice close vs. no-close vs. pre-choice close) × 2 (choice: self vs. random) ANOVA, which revealed a main effect of choice, such that participants in the self-choice condition (M = 5.56, SD = 1.28) were more satisfied than those in the random-choice condition (M = 4.83, SD = 1.43; $F(1, 140) = 9.58$, $p < .005$). The main effect of physical act was marginally significant ($F(2, 140) = 2.77$, $p = .07$): participants in the post-choice-close condition (M = 5.50, SD = 1.32) were as satisfied as those in the pre-choice-close condition (M = 5.13, SD = 1.15; $F(1, 140) = 1.90$, NS) and more satisfied than those in the no-close condition (M = 4.88, SD = 1.65; $F(1, 140) = 5.44$, $p < .05$). These last two groups experienced the same level of satisfaction ($F(1, 140) < 1$, NS). More important, the interaction between physical act and choice was significant ($F(2, 140) = 3.16$, $p < .05$; see figure 5a).

FIGURE 5a

INTERACTIVE EFFECT OF PHYSICAL ACT AND CHOICE ON SATISFACTION IN STUDY 4B



Contrast analyses further showed that among the self-choice participants, those in the post-choice-close condition who performed the act of closing the lid after making the choice (M = 6.19, SD = 0.69) were more satisfied than those in the no-close condition who did not close the lid (M = 4.90, SD = 1.73; $F(1, 140)$ = 10.95, $p < .005$). These results replicated my previous findings. However, consistent with my predictions, the act of closing did not boost satisfaction of participants in the pre-choice-close condition, as these participants (M = 5.43, SD = 0.99) were less satisfied than those in the post-choice-close condition ($F(1, 140) = 3.98$, $p < .05$) and as satisfied as those in the no-close conditions ($F(1, 140) = 1.75$, NS).

Also in line with my predictions, among participants in the random-choice conditions, who ate a biscuit selected for them at random by the experimenter, the differences in satisfaction among post-choice-close, no-close, and pre-choice-close conditions were all not significant ($M_{\text{post-choice}}$ = 4.81, SD = 1.44; $M_{\text{no-close}}$ = 4.85, SD = 1.61; $M_{\text{pre-choice}}$ = 4.83, SD = 1.23; Fs < 1, NS).

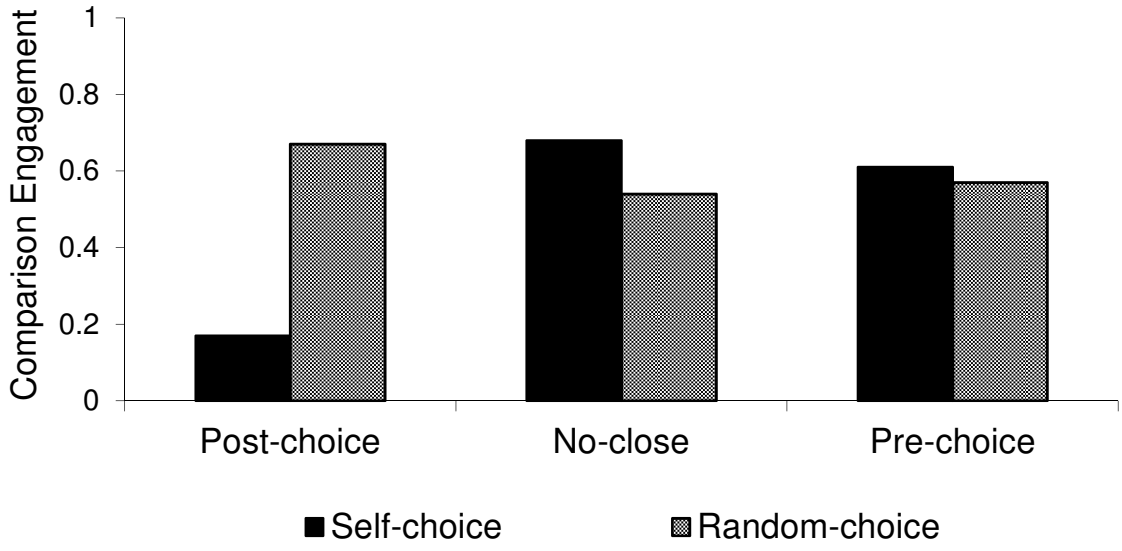
Engagement in comparisons. To test the comparison-engagement element of the choice-closure process, two raters who were blind to the hypotheses coded participants' responses to the open-ended question about their thoughts while eating the biscuits by counting the number of times these thoughts involved a comparison between the biscuit they ate and the other biscuits in the selection they did not eat. For example, the thought "thinking will it be better than the biscuit I have selected" was counted as one comparison. As a high inter-rater reliability was observed (Kappa = 0.89, $p < .001$), I averaged the two raters' codings to form one score of number of comparisons per participant. A lower number of comparisons indicated a higher degree of choice closure.

I conducted a 3 (physical act: post-choice close vs. no-close vs. pre-choice close) × 2 (choice: self vs. random) ANOVA on number of mentioned comparisons. Two observations were missing in this opened-ended question, which left me with 144 participants in total. The ANOVA revealed that the main effects of physical act ($M_{\text{post-choice}} = 0.42$, SD = 0.60; $M_{\text{no-close}} = 0.60$, SD = 0.71; $M_{\text{pre-choice}} = 0.59$, SD = 0.75) and choice on satisfaction ($M_{\text{self}} = 0.46$, SD = 0.64; $M_{\text{random}} = 0.59$, SD = 0.72) were both not significant (Fs < 1.12, ps > .33), but the interaction between physical act and choice was significant ($F(2, 138) = 3.23$, $p < .05$). Contrast analyses showed that among participants who ate the biscuits they had chosen, those in the post-choice-close condition ($M = 0.17$, SD = 0.37) engaged in fewer comparisons than those in the no-close ($M = 0.68$, SD = 0.78; $F(1, 138) = 6.27$, $p < .05$) and pre-choice-close ($M = 0.61$, SD = 0.66; $F(1, 138) = 5.10$, $p < .05$) conditions. There was no difference in number of comparisons between the no-close and the pre-choice-close groups ($F(1, 138) < 1$, NS). For participants who ate randomly assigned biscuits, however, the differences across post-choice-close, no-close, and pre-choice-

close conditions were all not significant ($M_{post\text{-}choice}$ = 0.67, SD = 0.68; $M_{no\text{-}close}$ = 0.54, SD = 0.66; $M_{pre\text{-}choice}$ = 0.57, SD = 0.85; Fs < 1, NS; see figure 5b).

FIGURE 5b

INTERACTIVE EFFECT OF PHYSICAL ACT AND CHOICE ON COMPARISON ENGAGEMENT IN STUDY 4B



Mediation. I tested the mediating role of comparison engagement in the relationship between physical act and outcome satisfaction with a mediated moderation model (Model 2, Preacher et al. 2007; see also Muller et al. 2005) in which choice moderated the effect of the physical act (the independent variable) on comparison engagement (the mediator), and comparison engagement had a direct influence on satisfaction (the dependent variable).

Given that the analyses of variance on comparison engagement and choice satisfaction revealed no differences between the no-close and the pre-choice-close conditions, but significant differences between these two conditions and the post-choice-close condition, I used two orthogonal contrasts. The first contrast compared the average of the no-close and pre-choice-close conditions with the post-choice-

close condition, whereas the second contrast compared the no-close condition with the pre-choice-close condition. I used dummy variables to code these two contrasts. The dummy codes (close-dummy-1) for the first contrast were -1, -1, and 2 to indicate the no-close, pre-choice-close, and post-choice-close conditions, respectively. The dummy codes (close-dummy-2) for the second contrast were -1, 1 and 0 to indicate the no-close, pre-choice-close, and post-choice-close conditions, respectively. I predicted that comparison engagement would act as a mediator only when the post-choice-close condition was compared with the combined no-close and pre-choice-close conditions, but not when the no-close condition was compared with the pre-choice-close condition. To account for the two levels of the choice-set size manipulation, I coded the choice-set size as 1, 0 to indicate the self-choice and random-choice conditions, respectively.

To test the mediated moderation model (Muller, Judd, and Yzerbyt 2005; Preacher et al. 2007), I conducted two separate regression analyses for two close dummies (i.e. close-dummy-1, close-dummy-2). In the first mediation, the first equation regressed satisfaction on choice, close-dummy-1, and their interaction, which yielded a significant interaction (B = 0.52, SE = 0.23; $t(142) = 2.28$, $p < .05$). The second equation regressed the comparison engagement on choice, close-dummy-1, and their interaction, and also revealed a significant interaction (B = -0.29, SE = 0.12; $t(140) = -2.53$, $p < .05$). Finally, I added comparison engagement and the choice × comparison-engagement interaction to the first equation. Consistent with the hypothesis, the effect of comparison engagement was significant (B = -0.53, SE = 0.21; $t(138) = -2.52$, $p < .05$), but the choice × close-dummy-1 interaction was only marginally significant (B = 0.43, SE = 0.23; $t(138) = 1.82$, $p = .07$), and the choice × comparison-engagement interaction was not significant (B = 0.38, SE = 0.34; $t(138)$

= 1.13, NS). The second mediation analysis revealed that the close-dummy-2 × choice interaction on satisfaction was not significant in the first regression (B = 0.26, SE = 0.28; $t(142) = 0.93$, NS). In order to test the significance of the indirect effects of the comparison-engagement mediator, I conducted two separate BC bootstrapping analyses (Hayes 2013) for the two orthogonal contrasts. In the first contrast (with close-dummy-1), the indirect effects (based on 5,000 bootstraps) tested at both levels of choice (self vs. random) revealed that comparison engagement mediated the relationship between the physical act and satisfaction either in the self-choice (95% BC bootstrap CI of 0.0327 to 0.2389, with an estimate of 0.1135) but not in the random-choice condition (95% BC bootstrap CI of -0.1519 to 0.0401, with an estimate of -0.0297). The second BC bootstrap analysis (with close-dummy-2) based on 5,000 samples showed that the indirect effect was not significant either in the self-choice (95% BC bootstrap CI of -0.1071 to 0.1539, with an estimate of 0.0108) or in the random-choice (95% BC bootstrap CI of -0.1458 to 0.0983, with an estimate of -0.0103) conditions. These results show that comparison engagement mediated the effect of physical act on satisfaction only when the act of closing was performed after, rather than before, making a choice and when the choice was self-made, rather than made at random by another.

Discussion

Studies 4a and 4b showed that in order for the act of closing to affect satisfaction with a decision outcome, it must map onto the concept of choice-closure process. This choice-closure process refers to a decision-making context in which one perceives a decision to be complete and overcomes the tendency to compare an outcome that has been personally chosen with alternatives that have been personally

rejected. Thus, if the act of closing is not performed by the decision maker, or is attributed to a reason unrelated to the decision, its effect on satisfaction is mitigated. Similarly, when the act is performed before the choice or when it does not concern an alternative that was personally chosen, its positive effect on satisfaction is weakened. In study 4a, closing the menu did not yield an increase in satisfaction relative to keeping the menu open when the act of closing was performed by the experimenter or when participants were given a decision-unrelated reason for that act. In study 4b, closing the menu did not increase satisfaction when participants put the lid back on the tray before making their choice or when the consumed biscuit was not the one they had personally chosen.

Study 4b also provided additional empirical evidence for the choice-closure process by showing that the effect of the physical acts of closure on satisfaction was mediated by the number of comparisons that were spontaneously mentioned by the participants.

Chapter 3: The Moderating Role of Decision Valence on Outcome Satisfaction

Positive Consequences of Comparisons

In previous chapters I proposed that choice closure, facilitated by sensory-motor experiences of closure, may result in greater satisfaction with the outcome of a difficult decision, such as choosing an option from an extensive choice set. I explained this positive effect as resulting from the fact that the sense of completion associated with choice closure inhibits comparisons between the chosen and the forgone options after a consumer's decision has been made. This positive impact of choice closure on satisfaction is based on prior findings showing that comparisons tend to reduce an option's attractiveness (Brenner et al 1999; Carmon et al. 2003; Hsee 1996; Kahneman and Tversky 1979; Zeelenberg 1999). Thus, the inhibition of comparisons associated with choice closure makes that option more satisfying.

Despite this, literature has also suggested that in some circumstances comparisons increase the attractiveness of an option to be compared and have therefore a favourable, rather than unfavourable, effect on satisfaction (Hsee and Leclerc 1998; Simonson 1989). For example, when one option dominates another, joint evaluations enable people to discover mainly that option's relative advantages (Huber, Payne and Puto 1982; Simonson 1989). In one of Simonson and Tversky's studies (1992), half of the participants were asked to choose between $6 cash and a cross pen, whereas the other half were given an additional option to go with the existing two options—a pen with a lesser known brand name that was inferior to the cross pen. Results showed that adding an inferior alternative to the consideration set

enhanced the attractiveness of the superior one and the percentage of participants choosing the cross pen increased after the inclusion of the less attractive pen.

Similarly, when each of two options is unattractive relative to an external reference point (for example, the average product in a category) comparisons of these two options will enhance their attractiveness (Hsee and Leclerc 1998). In one study, Hsee and Leclerc (1998; study 1) asked participants to evaluate two cordless phones that were clearly not as good as a friend's phone. These two phones varied in two of their attributes, operative distance and battery life. Whereas the operative distance of phone A was superior to that of phone B, the battery life of phone B was longer than that of phone A. Results showed that participants were willing to pay for both phone A and phone B more when these phones were evaluated in comparison to each other than when they were evaluated separately from each other.

Another instance in which comparisons have a positive effect on satisfaction is investigated through the literature on counterfactual thinking that suggests that downward comparisons—thoughts that conceive alternative circumstances to be worse than a person's reality—enhance positive affective responses (Abelson 1981; Landman 1987; Roese 1997) and satisfaction with a task outcome (Markman et al. 1993). For example, Roese (1994; study 1) made participants recall a single past life event that was especially negative or disappointing. Results showed that generating downward counterfactuals, in which participants imagined alternative situations that could be worse than the outcome recalled, boosted their relief. In the same vein, research on social comparisons illustrates the positive consequences of downward comparisons. For example, comparing oneself with specific less fortunate others can reduce anxiety (Amoroso and Walters 1969) and enhance one's subjective well-being, affective responses, confidence, self-esteem and other favourable self-

evaluation (Festinger 1954; Suls and Miller 1977; Taylor and Lobel 1989; Wills 1981).

The findings above suggest that comparisons are not always damaging to the evaluation of an option that is being compared. Consequently, I hypothesize that under those circumstances in which comparisons are favourable to options because these comparisons have a positive effect on the evaluation of the chosen option, choice closure may be detrimental to outcome satisfaction because it hinders these favourable comparisons.

Outcome Valence and Favourability of Comparisons

In the following section, I discuss how the positive or negative valence of the decision outcome can elicit comparisons that are either favourable because they improve consumers' satisfaction, or unfavourable because they impair consumers' satisfaction.

The research on regret and counterfactual thinking shows that one of the determinants of the effect of comparisons on satisfaction is the valence of the decision outcome (Gilovich and Medvec 1995; Markman et al. 1993). An outcome that is perceived as a loss (i.e. as having a negative outcome) causes individuals to elaborate on circumstances that are better than actuality and engage in upward counterfactuals, amplifying negative affective reactions such as regret (Kahneman and Miller 1986) and dissatisfaction (Davis et al. 1995; Markman et al. 1993). By contrast, an outcome that is perceived as a gain (i.e. as having a positive outcome), elicits downward counterfactuals about worse alternative circumstances, enhancing positive affective responses such as rejoice (Abelson 1981; Roese 1997) and

satisfaction with the task outcome (Roese 1994). For example, in one study (Markman et al. 1993; study 1), participants played a computerized blackjack game for real money and received outcome feedback that was framed either as a loss or as a win. Results showed that participants who received the loss-framed feedback generated more upward than downward counterfactual thoughts and felt more dissatisfied than participants who received the win-framed feedback and therefore generated more downward than upward counterfactuals.

Similarly, Medvec, Madey and Gilovich (1995) have demonstrated that silver medalists felt worse than bronze medalists, even though the former were objectively better off than the latter. This result is attributed to the silver medalists being more likely to engage in upward counterfactuals—thinking of the gold medal they nearly won—which lowers their satisfaction. Conversely, bronze medalists tended to concentrate on downward counterfactuals and found contentment in thinking "at least I won a medal."

This asymmetry in the direction of the counterfactual comparisons, which led to the opposite impact on satisfaction, has been shown to be driven by different functional purposes, and specifically by preparative versus affective functions (Roese 1994). The preparative function—when individuals generate counterfactuals to help themselves to improve in the future—is probable to be served by upward counterfactuals, as conceiving alternative circumstances that are better than reality enables the individuals to learn from their mistakes. Such comparisons facilitate future success but, in the short term, induce dissatisfaction. By contrast, the affective function—when individuals generate counterfactuals in an attempt to enhance their current affect— is likely to be served by downward counterfactuals, because imagining alternatives that could have been worse makes the individuals feel better.

Making the comparison between their actual reality and worse alternatives allows the individuals to experience positive emotional consequences and boosts their satisfaction.

In line with this theory, the literature on social comparisons suggests that a negative affect activates upward social comparisons, which are unfavorable to an individual's happiness, while positive affect triggers downward social comparisons, which are favorable to subjective well-being (Wheeler and Miyake 1992). As negative decision outcomes elicit undesirable emotional responses (Ratner and Herbst 2005), these outcomes may also elicit upward comparisons that decrease satisfaction. Conversely, positive outcomes, which are usually associated with desirable emotional responses, may induce downward comparisons that boost the decision-maker's satisfaction.

In the decision-making setting, Botti and Iyengar (2004) suggest that the valence of a decision outcome, which is manipulated through the desirability of the options included in a choice-set, induces either a negative or a positive effect on how comparisons affect satisfaction. Consumers who chose from all undesirable alternatives (i.e. avoidance-avoidance choices; Lewin 1951) engaged in aversive thoughts about the disadvantage of each choice alternative. Consequently, they were less satisfied with their chosen option than those who made choices from all desirable alternatives (i.e. approach-approach choices; Lewin 1951) and engaged in positive thoughts about the advantages of each option (Botti and Iyengar 2004).

The research mentioned above suggests that the favourable or unfavourable effect of comparisons between the selected and the foregone options on satisfaction may depend on the valence of the decision outcome. A negative outcome is likely to induce unfavourable comparisons, such as upward counterfactuals, upward social

relative assessments and aversive thoughts about choice alternatives, which decrease outcome satisfaction. However, a positive outcome is likely to induce favourable comparisons, such as downward counterfactuals, downward social relative assessments and desirable thoughts about options, which increase outcome. As choice closure works through the inhibition of these comparisons, I predict that consumers who experience choice closure will be more satisfied than those who do not experience choice closure when the outcome is negative, but less satisfied when the outcome is positive.

Visual Acts that Trigger Choice Closure

In the previous chapter, I demonstrated that choice closure can be triggered through physical acts that are metaphorically associated with the concept of closure, such as turning one's back on, covering or turning a page on the rejected alternatives. In this chapter I investigate a different type of trigger: visual cues related to the concept of closure.

The literature shows that people use both the motor and the sensory system (vision, touch, smell) to interact with the physical world (Johnson 2007; Lakoff and Johnson 1980). As for the sensory system, the simulation of sensations that are linked to abstract concepts has been shown to activate those concepts (Barsalou et al. 2003; Lakoff 1993). For instance, Holland, Hendriks and Aarts (2005) have shown that scents influence related cognition and behavior. In one of their studies (2005; study 2), participants were unobtrusively exposed to citrus scent (or not) and were asked to write down some activities that they planned to do in the rest of the day. Results showed that citrus scent enhanced the accessibility of the cleaning concept,

and therefore participants in the scent condition mentioned more cleaning activities in plans for future action than those in the control condition.

Incidental haptic sensations have also been shown to activate abstract concepts through metaphorical associations. In one of study, Ackerman, Nocera and Bargh (2010; study 1) asked participants to rate how serious a set of job candidates were while carrying a clipboard. Results showed that the weight of the clipboard signalled touch-related conceptual knowledge. Specifically, because weight is connected with the concept of seriousness, rating the same job candidate's profile while holding a heavier clipboard automatically cued the perception of a more serious candidate. Similarly, physical warmth is metaphorically associated with friendliness, such that people holding a warm cup of coffee judge a target person as having a warmer personality (Williams and Bargh 2008).

These studies suggest that sensations can trigger related abstract concepts. I therefore propose the existence of a concrete-to-abstract link between visual cues and choice closure. This link is suggested by the presence of metaphors such as "drawing a line on" or "stamping out" something. Therefore, I hypothesize that being exposed to visual cues such as lines separating the chosen from the forgone options or "rejected" stamps on the forgone options induces a sense of completion and inhibits a consumer's propensity to compare these options.

I also hypothesize that when the valence of the decision outcome is negative, visual cues of closure inhibit unfavorable comparisons and increase satisfaction. By contrast, when the valence of the decision outcome is positive, visual cues of closure inhibit favorable comparisons and decrease satisfaction with a positive outcome. Formally:

H4a: Being exposed to a visual cue of closure, versus not, is more likely to result in greater satisfaction with a decision outcome when the decision outcome valence is negative.

H4b: Being exposed to a visual cue of closure, versus not, is more likely to result in lower satisfaction with a decision outcome when the decision outcome valence is positive.

H5a: The positive effect of the visual cue of closure on satisfaction is driven by inhibiting unfavorable comparisons induced by the negative decision outcome.

H5b: The negative effect of the visual cue of closure on satisfaction is driven by inhibiting favorable comparisons induced by the positive decision outcome.

Consumers' Insights into Choice Closure Triggers

Past research has investigated how people make predictions about their future. Specifically, the literature has studied the influence of uncertainty on future decisions (Kahneman and Tversky 2000; Gilovich Griffin and Kahneman 2002), the effects of different temporal perspective on predictions (Trope and Liberman 2003), the accuracy of people's predictions about their future behaviors (Osberg and Shrauger 1986; Wilson and LaFleur 1995), and optimistic biases in self-prediction (Armor and Taylor 1998; Taylor and Brown, 1988).

More recently, researchers have examined *affective forecasting*—how people predict their future feelings (Linville and Fischer 1991; Loewenstein and Frederick 1997; Loewenstein and Prelec 1993). This literature suggests that people are not

always able to accurately predict how they are going to feel in the future. For example, people often overestimate the affective impact of an event both in its intensity and in its duration (Gilbert et al. 1998; Wilson et al. 2000), mistake the valence of future events (Wilson et al. 2005); and mispredict the specific emotions they will experience (e.g., anger, disgust or fear) (Robinson and Clore 2001).

More relevant to my work, literature suggests that people tend to make choices based on lay theories that do not necessarily maximize their happiness (Kahneman and Snell 1992; Robinson and Clore 2002; for a review, see Hsee and Hastie 2003). For example, consumers who make several choices simultaneously for sequential consumption occasions tend to overestimate their desire for variety and underestimate the enjoyment they can experience from repeating the same choices. This estimation error is partially explained by the fact that consumers misjudge the extent to which they will get tired of their favourites, as seeking variety is considered a social norm (Read and Loewenstein 1995; Simonson 1990). For the same reason, in a different study participants predicted that daily experiences of listening to short musical pieces would become less enjoyable over time when, in fact, they became more enjoyable (Kahneman and Snell 1992).

What are consumers' lay theories about choice closure? Are consumers correct in their intuitions about when to use choice closure triggers in order to maximize their subjective well-being? According to my theory, consumers should actively avoid choice-closure triggers when the outcome is positive, whereas they should actively use choice-closure triggers when the outcome is negative. However, I posit that consumers do exactly the opposite, namely they avoid closure and engage in more comparisons when the outcome is negative, and they seek closure and engage in fewer comparisons when the decision outcome is positive.

This prediction is based on prior literature that demonstrates asymmetrical cognitive consequences of negative versus positive outcomes. For example, negative outcomes have been shown to yield more complex information processing (Schwarz 1990) and more intense attributional thinking (Bohner et al.1988) compared to positive outcomes. More relevant to my prediction, the research on counterfactual thinking shows that a negative outcome, as opposed to a positive outcome, activates more counterfactual thoughts (Gleicher et al. 1990; Kahneman and Miller 1986; Sanna and Turley 1996; for a review, see Roese and Olson 1995). For example, in one of Sanna and Turley's studies (study 2; 1996), participants were asked to describe their performance in an exam immediately after they had viewed their exam scores. Regression analyses showed that as the outcomes became more positive, the number of total spontaneous counterfactuals decreased.

This stream of literature suggests that consumers have a tendency to engage in more comparative thoughts when the decision outcome is negative relative to when this outcome is positive. Thus, in those situations in which consumers are given the opportunity to utilize choice-closure triggers, versus not use these triggers, they will follow this tendency. As a result, they will choose to use choice-closure triggers, such as visual cues of closure, in the contexts of a positive outcome and they will choose not to use choice-closure triggers in the context of a negative outcome. Formally:

H6: Visual cues of closure are more likely to be chosen when the valence of the decision outcome is positive and less likely to be chosen when the valence of the decision outcome is negative.

This hypothesis predicts that consumers act in ways that are contrary to what may enhance their satisfaction: if they decide not to use the choice-closure triggers

after experiencing a negative outcome, they may suffer from the decrease in satisfaction induced by unfavorable comparisons; conversely, if they decide to use choice-closure trigger after experiencing a positive outcome, they may miss out the increase in satisfaction determined by favorable comparisons. Therefore, when given the opportunity to strategically use choice closure triggers, consumers will choose to use the trigger when they would be better off not choosing it and they will choose not to use the trigger when they would be better off choosing it.

Empirical Evidence

I tested these hypotheses in four studies. As discussed earlier, outcome valence has been manipulated in different ways in the literature, for example by framing the decision outcome as a loss or a gain (Markman et al. 1993), by varying the valence of affective responses (Wheeler and Miyake 1992), as well as by varying the desirability of the choice options (Botti and Iyengar 2004). I manipulated the valence of the decision outcome by providing participants with feedback about the option that they had chosen according to which this option was better than the average of all the options they had chosen from or worse than the average of these options.

In study 5, I manipulated choice closure by varying the degree to which consumers were made to engage in comparisons between the selected and the forgone options. Specifically, similar to study 2, I forced participants to evaluate a decision outcome either in an isolated or in a comparative mode and examined how outcome valence influenced satisfaction with the decision outcome across the different evaluation-mode conditions. Studies 6 and 7 replicated the findings in study 5, this time with the manipulation of choice closure via visual cues of closure. Study 7 also tested the process underlying the effect of visual cues of closure on outcome satisfaction. Finally, study 8 examined whether consumers implicitly understand when a choice closure trigger could help their satisfaction.

Study 5

In this study, I manipulated the outcome valence through feedback about the quality of the selected option relative to the average quality of the assortment. In

addition, I directly manipulated the comparison-engagement element of the choice-closure process by forcing participants to engage in an isolated, versus comparative, evaluation mode, similar to what I have done in study 2. I predicted that engagement in isolated evaluation, relative to comparative evaluation, would increase satisfaction in the context of negative feedback, because it would prevent consumers from engaging in unfavourable comparisons. Conversely, engaging in isolated evaluation, relative to comparative evaluation, would decrease satisfaction in the context of positive feedback, because it would prevent consumers from engaging in favourable comparisons.

Method

This study employed a 2 (evaluation mode: isolated vs. comparative) × 2 (feedback: negative vs. positive) between-subjects design. One hundred and eighteen students from different universities in the UK participated in the 30-minute study in exchange for £10. As in study 2, upon entering the lab, the participants read that the study was part of a marketing research about a series of workshops aimed at improving individual concentration, and that the concentration tasks involved choosing and consuming tea. Participants were guided to a table displaying the same menu used in study 2, this time listing a selection of only 12 teas. I opted for a mid-sized assortment because I intended to control for any effect of choice overload on the favorability of the comparisons.

Participants across all conditions were asked to look carefully at the tea descriptions before choosing a tea to taste, as were warned that, as in previous studies, they would not be able to change their selection. After participants had chosen their tea to taste, the feedback manipulation was administered. Participants

were told that in order for them to know better about their choice, they would be provided with some feedback about their selected tea. In the negative feedback condition, participants read that a survey had been conducted about the teas in the assortment and results from this feedback revealed that the tea they had chosen was below average amongst the teas in quality. In the positive feedback condition, the tea they had chosen was said to be better than average amongst the teas. The feedback was presented in the form of qualitative reviews and quantitative ratings of three different attributes such as flavour, aroma and colour.

After participants had finished reading the feedback, the evaluation-process manipulation was conducted following the same procedures as in study 2: in the isolated-mode condition, participants practised an alleged "meditation task" in which they were asked to concentrate their attention on specific aspects of the tea, whereas in the comparative-mode condition participants performed a purported "memory training exercise" in which they were instructed to recall details about the decision process they had just experienced.

Finally, participants answered three questions about their satisfaction with the selected tea: "How satisfied are you with the tea that you chose?" "How much did you enjoy the tea that you chose?" and "How tasty was the tea you chose?" (1 = not at all / 9 = completely).

Results

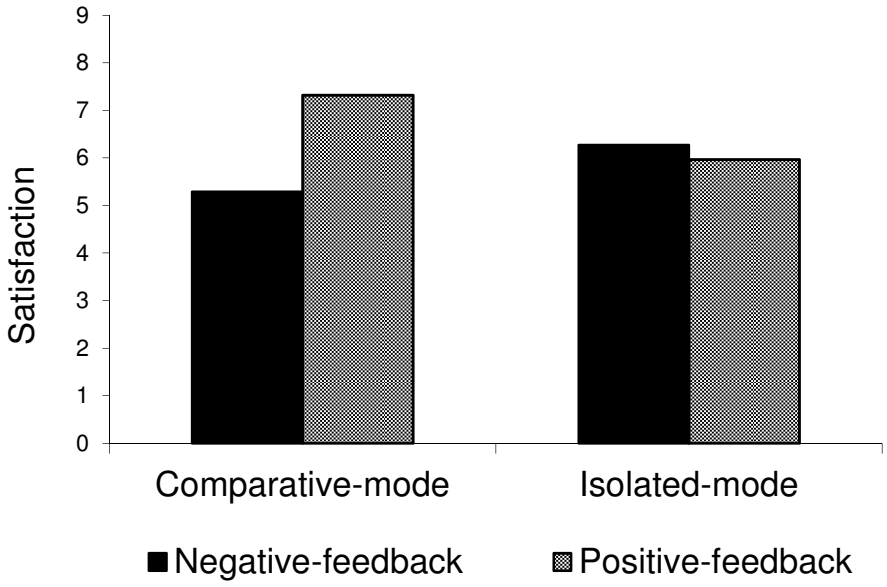
To test the extent to which participants were satisfied with their choice, the three satisfaction questions were averaged into an overall satisfaction score ($\alpha = .96$) and submitted to a 2 (evaluation process: isolated-mode vs. comparative-mode) $\times$ 2 (feedback: negative vs. positive) ANOVA. The ANOVA revealed a main effect of

feedback, such that participants in the negative-feedback condition (M = 5.73, SD = 1.90) were less satisfied than those in the positive-feedback condition (M = 6.57, SD = 2.12; $F(1, 114) = 5.73$, $p < .05$). The main effect of the evaluation process was not significant ($F(1, 114) < 1$, NS). More important, the interaction between the evaluation process and the feedback was significant ($F(1, 114) = 10.53$, $p < .005$; see figure 6).

Contrast analyses showed that in the negative-feedback condition, participants who practiced meditation (M = 6.27, SD = 1.70) were more satisfied than those who performed the memory training exercise (M = 5.29, SD = 1.98; $F(1, 114) = 3.92$, $p = .05$). However, in the positive-feedback condition, participants who practiced meditation (M = 5.97, SD = 2.44) were less satisfied than those who undertook the memory training exercise (M = 7.32, SD = 1.34; $F(1, 114) = 6.73$, $p < .05$). Contrast analyses further indicated that in the comparative-mode condition, participants who received positive feedback were more satisfied than those who received negative feedback ($F(1, 114) = 15.73$, NS). However, this difference was not significant in the isolated-mode condition ($F(1, 114) = 0.37$, NS).

FIGURE 6

INTERACTIVE EFFECT OF EVALUATION PROCESS AND FEEDBACK ON SATISFACTION IN STUDY 5



Discussion

In study 5, I directly manipulated the comparison-engagement element of the choice-closure process. To do so, I instructed participants to evaluate the decision outcome either in isolation or in comparisons with the rejected options. In this study, I also manipulated the valence of the decision outcome through providing either negative or positive feedback. I found that when receiving negative feedback, participants in the isolated-evaluation mode—who were made to be in the same evaluation mode as decision-makers who experience choice closure—were more satisfied than those in the comparative-evaluation mode—who were made to be in the same evaluation mode of decision makers who do not experience choice closure. However, when given positive feedback, participants in the isolated-evaluation mode were less satisfied than those in the comparative-evaluation mode.

These results provide preliminary support for my propositions. When participants received negative feedback, focusing on the outcome of their decision helped improve their satisfaction. This suggests that isolated evaluation, which is associated with a greater degree of choice closure, hinders comparisons that harm the

evaluation of a chosen option. Conversely, when receiving positive feedback, isolated evaluation inhibits comparisons that enhance the evaluation of the chosen option, and result in lower satisfaction.

While the current study demonstrated that participants could be made to engage in either an isolated-evaluation mode or a comparative-evaluation mode through instructions, the next study showed that the same evaluation mode could be induced through a sensorial experience that signals (or not) the presence of closure. To do so, in study 6 I triggered choice closure by attaching a "rejected" stamp to each of the options that had not been selected by the participants, a concrete visual cue that I argue can activate the abstract concept of closure.

Study 6

Method

Study 6 used a 2 (visual cue: closure vs. no-closure) × 2 (feedback: negative vs. positive) between-subjects design. One hundred and forty-two students recruited through Amazon Mechanical Turk participated in this ten-minute online study in exchange for $1.

Participants read that the study was designed to examine people's preference for chocolate. On the first screen, participants were asked to choose one piece of chocolate from a selection of 12 different kinds, all accompanied by the names and their descriptions (e.g., Exotique: Passion fruit jam and caramel encased in dark chocolate). They were also instructed that they would not be able to change the chocolate they had chosen. After choosing, participants moved onto the next screen where they encountered both the visual cue and the feedback manipulations. In the

closure condition, the chosen chocolate was accompanied by the forgone 11 chocolates, each one stamped with a "rejected" tag; in the no-closure condition, all the 12 chocolates were presented as in the initial screen, without any "rejected" tags on the forgone options. Note that, as in studies 2-4, this manipulation did not affect the actual accessibility of the forgone options.

The feedback manipulation was similar to that employed in study 5: it was composed of quantitative ratings and qualitative reviews of the selected chocolate relative to the average of the other chocolates in the assortment. Specifically, in the negative feedback condition, participants read that a survey among lab participants had indicated that the chocolate they had chosen was below average amongst the chocolates, whereas in the positive feedback condition, this chocolate was better than average.

At the end of the study, participants answered two questions about their hypothetical satisfaction with the decision outcome: "How satisfied do you think you would be with the chocolate that you chose?" and "How much do you think you would enjoy the chocolate that you chose?" (1 = not at all / 9 = completely). I predicted that the "rejected" tags attached to the foregone options would facilitate choice closure, whereas the absence of these "rejected" tags would not prevent participants from engaging in further comparisons between the options. Consequently, I hypothesized that in the negative-feedback condition, the visual cue of closure would increase satisfaction by preventing unfavourable comparisons, whereas in the positive-feedback condition the visual cue of closure would decrease satisfaction by preventing favourable comparisons.

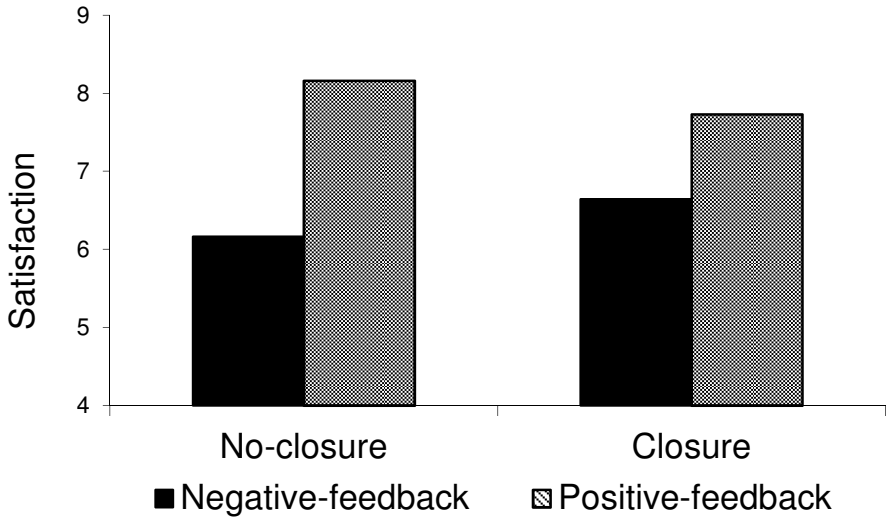
Results

A 2 (visual cue: closure vs. no-closure) × 2 (feedback: negative vs. positive) ANOVA was conducted on the average of the two-item satisfaction measure (r = .86). The main effect of the visual cue was not significant (M_{closure} = 7.16, SD = 0.95; $M_{\text{no-closure}}$ = 7.32, SD = 1.48; $F(1, 138) < 1$, NS). However, the main effect of feedback was significant, as participants who received negative feedback (M = 6.43, SD = 1.16) were less satisfied than those who received positive feedback (M = 7.96, SD = 0.76; $F(1, 138) = 92.70$, $p < .0001$). The ANOVA also revealed a significant interaction between visual cue and feedback ($F(1, 138) = 8.27$, $p < .005$; see figure 7).

Contrast analyses showed that, in the negative-feedback condition, participants who saw the "rejected" stamps on the foregone options (M = 6.64, SD = 0.79) were more satisfied than those who did not see these labels (M = 6.16, SD = 1.49; $F(1, 138) = 4.37$, $p < .05$), consistent with hypothesis 4a. However, in the positive-feedback condition, participants who saw the "rejected" labels (M = 7.73, SD = 0.78) were less satisfied than those who did not see them (M = 8.16, SD = 0.68; $F(1, 138) = 3.90$, $p = .05$), supporting hypothesis 4b. Further contrast analyses showed that participants who received the negative feedback were less satisfied than those who read the positive feedback, both in the closure ($F(1, 138) = 23.75$, $p < .0001$) and no-closure condition ($F(1, 138) = 75.16$, $p < .0001$). These results replicated the findings of study 5.

FIGURE 7

INTERACTIVE EFFECT OF VISUAL CUE AND FEEDBACK ON SATISFACTION IN STUDY 6



Discussion

Study 6 showed that displaying, or not, a visual cue of closure had the same effect on satisfaction as the direct manipulation of the evaluation mode underlying the choice-closure process, replicating study 5 results. More important, study 6 tested hypotheses 4a and 4b: displaying a visual cue of closure increased participants' satisfaction in the negative feedback condition because it inhibited comparisons that would harm satisfaction. By contrast, presenting participants with a visual cue that signalled closure decreased satisfaction in the positive feedback condition, because it hindered comparisons that would boost satisfaction.

The next study aimed to test hypotheses 5a and 5b: the process underlying the effect of the visual cues on satisfaction, with its positive and negative outcomes. To do so, I manipulated the favorable and unfavorable comparisons orthogonally to the visual cues of closure. According to my theorizing, visual cues of closure, facilitating a sense of completion, inhibit the unfavorable comparisons that accompany negative outcomes and would therefore enhance satisfaction. Furthermore, visual cues of closure also inhibit favorable comparisons that accompany positive outcomes, decreasing satisfaction. I therefore explicitly

instructed participants who had already been administered the feedback and visual-cue manipulations to generate either favorable (or unfavorable) comparative thoughts about the advantages (or disadvantages) of their chosen item relative to the rejected options. I then compared these four conditions with a replication of the four conditions in study 6, in which no explicit instructions on comparison generation were given.

Another important purpose of study 7 is to explore the issue relating to the ecological validity of the findings in study 6. Note that in study 6, the results were derived from a hypothetical scenario. Study 7 tested whether the results still held when participants performed a decision task with real consequences. Again in study 7, I manipulated the valence of the decision outcome through providing either positive or negative feedback on the chosen option.

Study 7

Method

Study 7 used a 2 (visual cue: closure vs. no-closure) × 2 (feedback: negative vs. positive) × 2 (comparisons: replication vs. comparison) between-subjects design. Two hundred and forty-nine students recruited from different universities in the UK participated in this 30-minute study in exchange for £10.

The study procedure and the manipulation of the visual cue and the feedback in study 7 were similar to that in study 6. Participants were first asked to make a choice of chocolate from a selection of 12 different kinds, which were briefly described with a name and a list of ingredients. After making their choice, they moved onto the next screen where the visual cue and the feedback manipulations

were conducted. Unlike study 6, this study involved real consumption: after reading the review, participants received from the experimenter the chocolate they had chosen and were able to taste it.

While participants were tasting the chosen chocolate, the comparisons manipulation was administered. Participants in the negative feedback/comparison condition were instructed to describe how the selected chocolate might have been inferior to the other chocolates in the assortment. By contrast, participants in the positive feedback/comparison condition were instructed to describe how the selected chocolate might have been better than the other chocolates in the assortment. In the replication condition, participants across the two feedback conditions were made to write down anything that came into their mind about the chocolates.

At the end of study, participants answered two questions about their satisfaction with the decision outcome: "How satisfied are you with the chocolate that you chose?" and "How much did you enjoy the chocolate that you chose?" Both questions were to be rated on nine-point scales (1 = not at all / 9 = completely).

According to my theory, when the outcome valence is negative, visual cues of closure increase outcome satisfaction by inhibiting unfavorable comparisons. Therefore, I predicted that participants in the closure/negative-feedback condition would be less satisfied than those in the closure/replication condition because forcing participants to generate negative comparisons would undermine the comparison-inhibition signaled by the visual cue of closure, and undermine the consequent beneficial effect on satisfaction. Conversely, participants in the no-closure/negative-feedback condition and those in the no-closure/replication condition would not experience differences in satisfaction because in both cases participants generate unfavorable comparisons. Similarly, my theory posits that when the decision

outcome is positive, visual cues of closure decrease outcome satisfaction by inhibiting favorable comparisons. Therefore, I predicted satisfaction to be higher in the closure/positive-feedback condition than in the closure/replication condition because forcing participants to generate positive comparative thoughts would undermine the comparison-inhibition signaled by the visual cue of closure, and undermine the consequent detrimental effect on satisfaction. However, I predicted satisfaction to be the same in the no-closure/positive-feedback and the no-closure/replication conditions because in both cases participants generate favorable comparisons.

Results

A 2 (visual cue: closure vs. no-closure) × 2 (feedback: negative vs. positive) × 2 (comparisons: replication vs. comparison) ANOVA was conducted on the average of the two-item satisfaction measure (r = .90). The main effect of visual cue (M_{closure} = 6.91, SD = 1.54; $M_{\text{no-closure}}$ = 6.89, SD = 1.60; $F(1, 241) < 1$, NS) and comparison ($M_{\text{comparison}}$ = 6.81, SD = 1.65; $M_{\text{replication}}$ = 6.98, SD = 1.50; $F(1, 241) < 1$, NS) were not significant. However, the main effect of feedback was significant, as participants who received negative feedback (M = 6.44, SD = 1.70) were less satisfied than those who received positive feedback (M = 7.43, SD = 1.21; $F(1, 241) = 30.06$, $p < .0001$). The ANOVA also revealed a significant interaction between comparison and feedback ($F(1, 241) = 3.96$, $p < .05$). More important, the three-way interaction between visual cue, feedback and comparison was significant ($F(1, 241) = 8.08$, $p < .005$). No other effects were significant (ps > .36).

The follow-up analysis focuses on the two visual cue × comparisons interactions separately for the positive-feedback and the negative-feedback

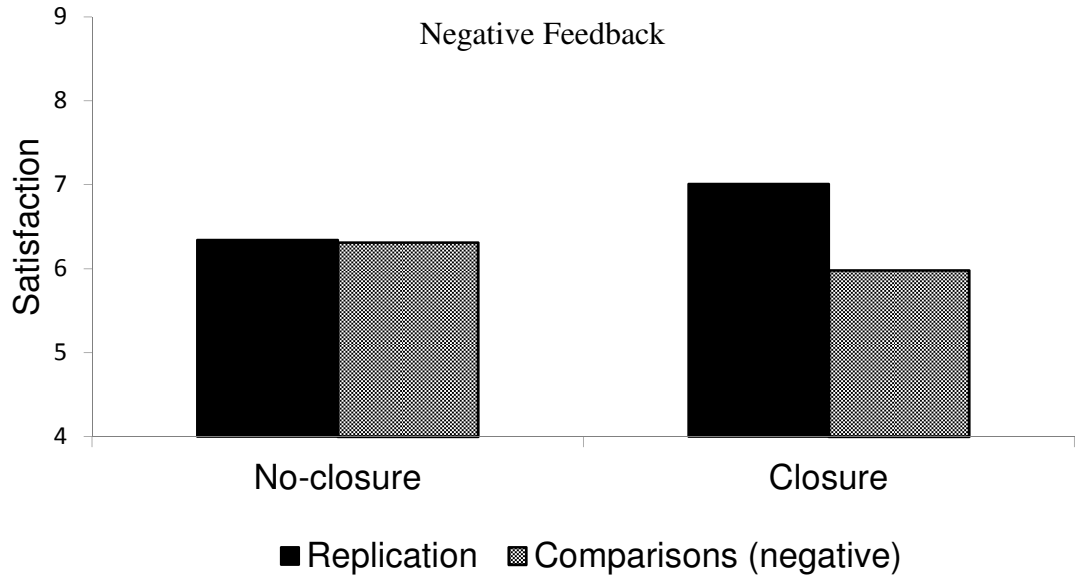
conditions (see figure 8). In the negative-feedback condition, the interaction between visual cue and comparisons was significant ($F(1, 241) = 3.79$, $p = .05$). Specifically, in the replication condition, participants who received negative feedback and were exposed to the "rejected" stamps on the foregone options ($M = 7.01$, SD = 1.20) were more satisfied than those who received the same negative feedback but were not exposed to the "rejected" stamps ($M = 6.34$, SD = 1.83; $F(1, 241) = 3.77$, $p = .05$), consistent with hypothesis 4a and replicating findings in study 6. However, in the comparison condition, participants who were made to generate negative comparisons were equally satisfied regardless of whether they were exposed to the "rejected" labels or not ($M_{closure} = 5.98$, SD = 1.92, $M_{no\text{-}closure} = 6.31$, SD = 1.71, $F(1, 241) < 1$, NS). Further contrast analyses revealed that in the closure condition, participants who were exposed to the "rejected" labels and generated negative comparative thoughts were less satisfied with their chocolate than those who were exposed to the "rejected" labels but did not generate such comparisons ($F(1, 241) = 8.18$, $p < .005$). However, in the no-closure condition, this difference in satisfaction was not significant ($F(1, 241) < 1$, NS).

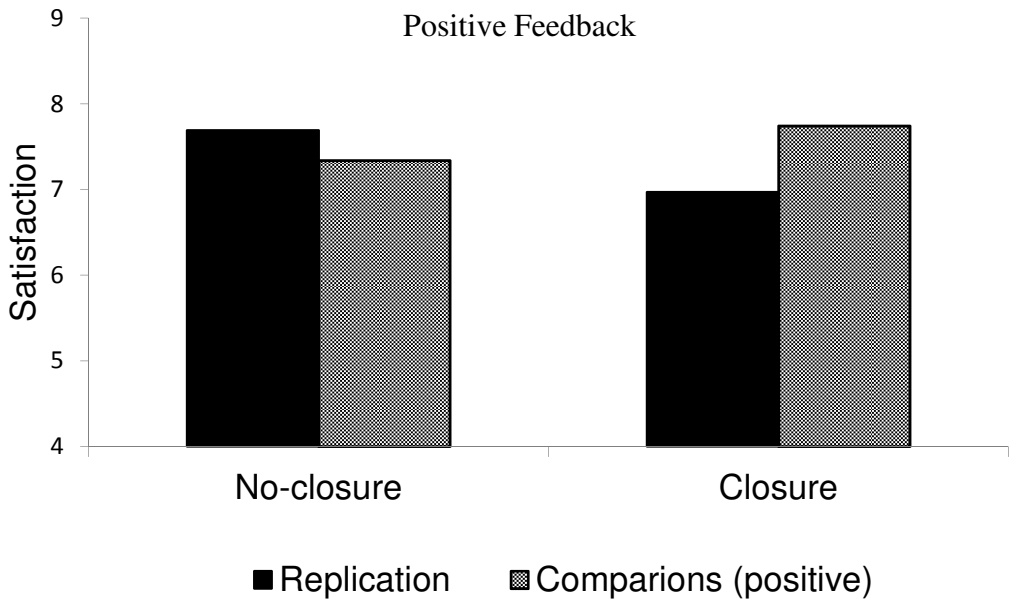
Likewise, in the positive-feedback condition, the interaction between visual cue and comparisons was significant ($F(1, 241) = 4.28$, $p < .05$). Particularly, in the replication condition participants who got positive feedback and were exposed to the "rejected" labels ($M = 6.97$, SD = 1.46) were less satisfied than those who got positive feedback and were not exposed to these labels ($M = 7.69$, SD = 1.12; $F(1, 241) = 3.75$, $p = .05$). These results replicated the findings in study 6, supporting hypothesis 4b. Conversely, in the comparison condition, participants who generated positive comparisons were equally satisfied across the closure and no-closure conditions ($M_{closure} = 7.74$, SD = 1.00, $M_{no\text{-}closure} = 7.34$, SD = 1.06, $F(1, 241) < 1$,

NS). Consistent with my theory, contrast analyses also indicated that in the closure condition, participants who were exposed to the "rejected" stamps and generated positive comparisons were more satisfied with their chocolate than those who were exposed to the "rejected" stamps but did not generate such thoughts ($F(1, 241) = 3.96$, $p < .05$). However, in the no-closure condition, the difference in satisfaction was not significant ($F(1, 241) < 1$, NS).

FIGURE 8

INTERACTIVE EFECT OF VISUAL CUE, FEEDBACK AND COMPARISONS ON SATISFACTION IN STUDY 7





Discussion

The replication condition of Study 7 mirrored the findings of study 6. That is, when receiving negative feedback, participants whose choice closure was facilitated by crossing each forgone option with a "rejected" label were more satisfied with their selected chocolate than those for whom choice closure was not facilitated. However, when getting positive feedback, participants exposed to the "rejected" labels were less satisfied than those who were not. More important, study 7 examined the mechanism underlying the observed effect of the visual cue of closure on satisfaction by manipulating either negative or positive comparisons. The results indicated that when the decision outcome was negative, participants who simulated negative comparisons experienced the same level of satisfaction as participants who were in no-closure condition. This supported the hypothesis 5a: when receiving negative outcomes, participants in the no-closure/replication condition engaged in unfavorable comparisons and those in the closure/replication condition benefited from the inhibition of these unfavorable comparisons by the visual cues of closure.

As a result, satisfaction was greater for participants in the closure/replication condition than for those in the no-closure/replication condition.

Likewise, when the outcome was positive, participants who simulated positive comparisons were as satisfied as those in the no-closure condition. Supporting hypothesis 5b, when the decision outcome was positive, participants in the no-closure/replication condition engaged in favorable comparisons and those in the closure condition failed to benefit from the favorable comparisons facilitated by the visual cues of closure. Thus, satisfaction was lower for participants in the closure/replication condition than for those in the no-closure/replication condition.

The results of study 7 showed that visual cues of closure, such as "rejected" stamps can cause participants to be more satisfied when they receive negative feedback but less satisfied when they received positive feedback about the quality of their selection. The next study aimed to examine whether consumers had the correct insight into when a choice-closure trigger (if available) could help their satisfaction and when they could detract from it. Another goal of study 8 was to activate choice closure through another kind of trigger—a visual cue metaphorically associated with the notion of closure on a decision. To do so, based on the metaphor "drawing a line on something" indicating people's resolve to settle a difficult decision, I presented participants with a line that separated the chosen option from the other options in the assortment, or not, and predicted that consumers who saw the line would experience a greater sense of closure than those who did not see the line.

Study 8

Method

Study 8 was a between-subjects design in which feedback on the chosen alternative was manipulated on three levels: negative vs. positive vs. control. One hundred and eighty-three students recruited through Amazon Mechanical Turk participated in this short online study in exchange for $1.

Participants were asked to imagine buying online one of 12 different flavors of coffees. Participants were then asked to imagine that, after making the purchase, they had found an independent report that rated all the coffees sold on the same website based on their aroma, flavor and acidity. In the negative-feedback condition, the report indicated that the overall rating for their selected coffee was among the last three of the 12 original coffees; while in the positive-feedback condition, the selected coffee came among the top three. In the control condition, no feedback was provided.

Next, participants were told to imagine that they logged in to the same coffee website in order to check the delivery status of the coffee that they had ordered. They were directed to a webpage that displayed their purchase history. The design of the purchase history was shown in two different presentation formats: webpage A showed the chosen coffee on the right along with the rejected coffees on the left, but separated by a solid line, whereas webpage B displayed the chosen and the forgone options without any separation line. Participants were asked to indicate which one of these two webpages might have been more effective in enhancing their satisfaction with the selected coffee. According to my theorizing, the line separating the chosen from the foregone options is more likely to visually signal to decision makers that their choice was final and trigger closure. Consequently, participants' preferences for webpage designs would indicate whether or not they had the right intuition about

how they should use choice closure triggers in order to improve their satisfaction following a positive or a negative decision outcome.

Results

In order to examine whether decision valence influenced the participants' choice of webpage designs, a binary logistic regression was conducted. To account for the three levels of the feedback manipulation, I used three dummy variables that allowed me to compare separately each of the positive-outcome (i.e. positive-outcome dummy), negative-outcome (i.e. negative-outcome dummy), and control (i.e. control dummy) conditions with the other two conditions. Specifically, the positive-outcome dummy was coded as 1, 0, 0 to indicate the positive-outcome, negative-outcome, and control conditions, respectively. For the negative-outcome dummy, the codes were 0, 1, 0, and for the control dummy the codes were 0, 0, 1. To account for the two levels of choice of webpages, I coded the choice of webpage A (closure design) as 1, and the choice of webpage B (no-closure design) as 0.

The binary logistic regression of webpage choice on the positive-outcome dummy and negative-outcome dummy yielded an expected significant effect: Wald $\chi^2(2) = 14.62$, $p < .001$. The probability of participants' choosing the closure-design webpage was higher when they were given positive feedback on their decision outcome (86.44%) than when no feedback was provided (control condition) (70.97%; Wald $\chi^2(1) = 4.12$, $p < .05$). However, the likelihood of their selecting the closure-design webpage was lower when they had received negative decision feedback (53.23%) than when no feedback was received (70.97%; Wald $\chi^2(1) = 4.09$, $p < .05$). These results support hypothesis 6.

Discussion

The results of study 8 showed that, when participants were given the opportunity to choose between a visual cue that would trigger choice closure and another that would keep the choice process open, they may act in a way contrary to their best interest, supporting hypothesis 6.

Recall hypotheses 4a and 4b, which were supported by studies 5, 6 and 7, according to which when the decision outcome is negative, choice closure inhibits unfavourable comparisons and increases outcome satisfaction, whereas when the decision outcome is positive, choice closure hinders favourable comparisons and decreases outcome satisfaction. However, results in study 8 suggest that consumers do not seem to have a correct intuition about when they should, or should not, use cues that may result in closure: when given the opportunity to experience choice closure, they rejected the choice-closure trigger after experiencing a negative outcome, thereby at risk to suffering from the detriments induced by unfavourable comparisons. Conversely, they selected the choice-closure trigger after experiencing a positive outcome, thereby missing the benefits of favourable comparisons. These results suggest that when given the opportunity to strategically use choice closure triggers, consumers might choose to use the triggers when they would be better off not choosing it, and they might choose not to use the triggers when they would be better off choosing it.

Chapter 4: General Discussion

In my dissertation, I have investigated the psychological process called *choice closure* by which consumers come to perceive a decision as complete and limit comparisons between the item they have chosen and the options forgone. In the first part of dissertation, I showed that choice closure enables consumers to experience greater satisfaction with the outcome of a difficult choice. Five studies demonstrated that acts of closure—such as turning one's back on the rejected alternative, covering them with a transparent lid or closing a menu describing them—facilitate choice closure in the context of choices made from extensive choice sets. Study 1 showed that an act of closure increased satisfaction with a choice made from a larger, versus a smaller, set. Study 2 replicated the findings in study 1 and further showed that this effect could be explained by the choice-closure process, which entails two interrelated elements: a sense that a decision is complete, and an associated inhibition from re-engaging in the comparisons that were involved in this decision. Study 3 demonstrated that simulating the comparison-engagement element of the choice-closure process by encouraging an isolated (versus comparative) evaluation mode had the same effect as performing the act of closure. Studies 4a and 4b revealed that not all acts of closure facilitate choice closure: a positive effect on satisfaction requires a direct mapping between the elements of the physical act and those of the mental process of closure.

In the second part of my dissertation, I demonstrated that choice closure can have either a positive or a negative impact on the outcome satisfaction, depending on the valence of the decision outcome. The results of studies 5, 6 and 7 showed that choice closure, triggered by visual cues of closure, increased satisfaction with a

negative decision outcome, as visual cues inhibited comparisons that would have been detrimental to the attractiveness of the selected option. By contrast, visual cues of closure decreased satisfaction with a positive outcome, because the visual cues hindered the comparisons that could have helped consumers bolster the attractiveness of the selected option. Finally, I examined consumers' intuitions about when they should and should not seek closure. Preliminary evidence from study 8 showed that participants might have tendencies to act contrary to what should enhance their satisfaction. Specifically, they avoided closure and engaged in more comparisons when the outcome was negative, and looked for closure and fewer comparisons when the decision outcome was positive.

The concept of choice closure introduced in my dissertation builds on, and contributes to, several streams of research. First, the initial studies (studies 1 and 2) add to the growing body of literature on the psychological process underlying choice overload (for a review, see Broniarczyk 2008). Based on my findings, choice overload is more likely to occur in the absence of an external intervention that makes the forgone options mentally unavailable. Such an intervention, even in the form of cues that do not alter the choice setting, could mitigate the choice overload effect. Secondly, in my dissertation, I show that the participants' satisfaction was affected by the sensory-motor experiences associated with the notion of closure while controlling for material and cognitive accessibility to the forgone options. By demonstrating this, I extend the research on decision irreversibility and the effect of counterfactual thinking on choice overload (Gilbert and Ebert 2002; Hafner et al. 20120). Finally, I contribute to the research on psychological closure (Beike et al. 2007; Li et al. 2010), as I suggest that a sense of closure can be reached not only by inhibiting direct access to the negative emotions associated with past experiences but

also by avoiding processes (i.e., unfavorable comparisons) that may lead to such negative emotions.

Future research could be directed at investigating the relationship between choice closure and need for closure (Kruglanski 1989, 1990), which is a measure of individuals' tendency to generate arguments in favor of or against a topic. As discussed earlier, individuals with a low need for closure have a greater propensity to gather and process information than those with a high need for closure, and are therefore less confident about their judgments (Mayseless and Kruglanski 1987). Thus, future research might examine whether decision-makers with a low, versus high, need for closure are less likely to experience choice closure and, similar to my participants in the large-set condition or negative-feedback condition, are in greater need of some external intervention facilitating closure.

In the first part of the dissertation, I investigated the positive effect of choice closure on satisfaction in a specific context—choosing from extensive assortments. Low satisfaction with a choice made from a large set can be driven either by a general feeling that the selected option may not be the best one or by an analytical comparison process that reveals the presence of similar options in the set (Luce 1998). However, in both cases, consumers' low satisfaction is determined by having lower confidence about having made the best choice, which in turn increases the tendency to revisit the decision. Because acts of closure facilitate choice closure by enabling consumers to overcome this tendency and by inhibiting further comparisons, I believe that choice closure can be beneficial regardless of the specific decision process employed by consumers faced with large sets. For the same reason, I argue that my results can be generalized to other difficult decisions if these are associated with lower confidence. This argument is also consistent with the findings

in the second part of my dissertation, in which I have shown that choice closure may increase satisfaction with the negative decision outcomes usually associated with difficult decisions. Clearly, more research is needed to validate this prediction.

Although in the dissertation I investigated how choice closure influences the satisfaction with an initial choice, it is possible that these results have implication for those consumers who are trying to control what they eat. Because consumers who experience greater choice closure, under certain circumstances, are more satisfied with their choices, they might also be less likely to make another choice and might therefore eat less. Future research could explore this speculation by measuring other consequential variables, such as the amount of food eaten as a result of choice closure.

Finally, future research could examine the durability and resistance of choice closure to subsequent counter information. Litt and Tormala (2010) have shown that the dissonance reduction mechanisms that generally follow difficult decisions are fragile. Thus, post-choice negative information is more likely to undo satisfaction when the choice is difficult than when it is easy. Because this effect is attributed to the greater uncertainty associated with difficult decisions, it is possible that the boost offered by choice closure is also short-lived. I believe, however, that the effect of choice closure may be rather persistent, as it eliminates a key source of consumes' potential dissatisfaction: unfavorable comparisons. In any case, it would be interesting to study what would happen if consumers who have closed a decision were forced to re-open it, as in the case of a restaurant diner who, after closing his menu, is approached by the waiter with a list of the specials. Would the diner resist the re-opening possibility, ignore the specials, and be happy with his choice, or

would he re-open the closed decision and experience even greater dissatisfaction because of the failed closure attempt?

From a managerial perspective, the construct of choice closure may help finalize a sale or increase post-purchase satisfaction. When a consumer has to decide between numerous options, for example, he or she may start to prefer one over the others. Would the sale be facilitated if the salesperson led the consumer into performing a physical act metaphorically associated with closure? The salesperson could, for example, arrange that the customer's back could be turned on the alternative options displayed or could move the preferred item to a separate location. Similarly, in an online setting, would a website, displaying all the choice options together with a solid line that separates chosen from foregone option, trigger a sense of closure? Perhaps this would increase buyers' satisfaction with the chosen option and reduce the likelihood of items being returned. In fact, the concept of closure has already been used strategically in the death care industry and the insurance business to sell products and services (Berns 2011). For example, autopsy providers frame their services through closure by identifying or confirming the cause of the death of client's loved one. Many wrongful death attorneys are really selling themselves as grief counselors when they promise closure.

More generally, the notion that physical acts and visual cues of closure can increase consumers' subjective evaluation of a decision outcome has beneficial practical implications when the difficulty of the choice cannot realistically be reduced. For example, research has shown that, even when having more options affects subjective well-being negatively, consumers desire large choice sets (Botti and Hsee 2010; Iyengar and Lepper 2000). Thus, managers may be reluctant to reduce the size of their assortments for fear of not attracting sufficient customers,

and they may thereby end up dealing with unhappy ones. In other cases, reduction of assortments may be physically impossible or too costly to perform. In all these circumstances, satisfaction with a difficult choice could be improved by simple acts or visual cues that allow consumers to make peace with their choices without changing the actual context in which those choices are made. These ideas may be applied to situations, in which consumers have reached either a positive or a negative decision outcome. Marketers or retailers could strategically nudge consumers into choice closure when consumers are unhappy about their purchase, but encourage consumers to leave their choice options open when they are pleased with their selected product.

As for consumers, do they have capability to strategically reach choice closure in order to improve their post-purchase satisfaction? Although anecdotes suggest that people have an insight into the benefits of closure and may use it strategically as illustrated in my opening examples, the preliminary evidence presented in my dissertation would suggest that consumers may in fact not be aware of the benefit of choice closure and that they often act in ways that are against their best interests. Future research could examine factors that might help consumers correct such erroneous tendency, and enable them to use choice closure triggers strategically to maximize their subjective well-being.

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Appendixes

Appendix A: Choice size manipulation (i.e. 24 versus six different chocolates) in study 1

Appendix B: Physical act manipulation (i.e. turning back vs. not turning back) in study 1

Appendix C: Choice size manipulation (i.e. 24 versus six different chocolates) in study 2

Appendix D: Physical act manipulation (i.e. putting the lid on the tray vs. not putting the lid on the tray) in study 2

Appendix E: Physical act manipulation (i.e. closing the menu vs. not closing the menu) in study 4a

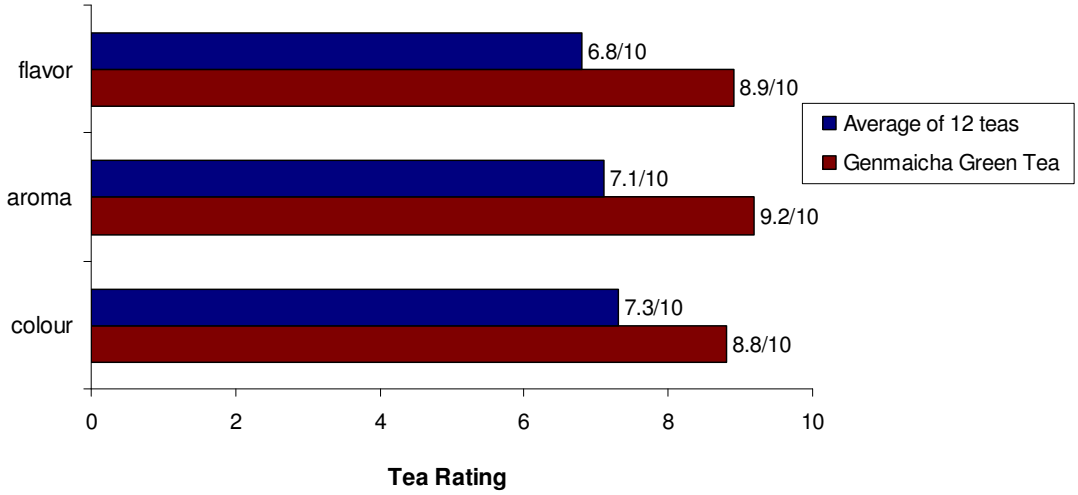
Appendix F: Feedback manipulation (e.g., positive feedback)

Tea #1: Genmaicha Green Tea

Evaluation Summary

- We conducted a survey among participants at the London Business School, asking them to evaluate the 12 different teas listed on the menu in terms of their (1) flavor (2) aroma and (3) color.

The following graph shows the average rating of each attribute across all the participants. Blue bars indicate their average attribute ratings of 12 teas. Red bars show their average attribute ratings of the tea you have chosen-- Genmaicha Green Tea.



- In this survey, we also asked participants to write down a review of their tea consumption experience. Below we have selected some of reviews on Genmaicha Green Tea.

Reviewer_1 ★★★★★

For me this tea has a reliable straightforwardness - a bold but light flavour that is more a kin to mainstream green teas that many people might be more familiar with, yet more refined.

Reviewer_2 ★★★★☆

When served at its best, it has a delightful balance of sweetness, pleasantly light bitterness, freshness and a warming savory taste. Towards the top of this range, bitterness becomes apparent.

Reviewer_3 ★★★★★

I find this tea is wonderfully suited to drinking in the mid to late afternoon, a perfect time to relax and unwind.

Appendix G: Visual cue manipulation (i.e. “rejected” stamps) in studies 6, 7

Cupidon: An intense aromatic white chocolate ganache with roasted arabica coffee

Exotique: Passion fruit jam and caramel encased in dark chocolate

Tresor: A velvety smooth hazelnut praline covered in milk chocolate

Mystere: Coffee flavored mousse filling enrobed in white chocolate & decorated with dark chocolate

Arabia: Smooth milk chocolate with a creamy & rich coffee center

Torte: Chocolate center with a dark, bittersweet chocolate shell

Comtesse: White chocolate with almond cream filling & hazelnut crocante

Mandolina: Milk chocolate with a smooth almond cream & almond crocante

Temptation: Crisp hazelnut praline covered in milk chocolate

Sienna: Almond pistachio filling in rich dark chocolate

Calice: Dark chocolate encasing a rich hazelnut cream with chopped hazelnuts

Noblesse: A dark chocolate square filled with a delicate salted caramel

Appendix H: Visual cue manipulation (i.e. a line separating, versus not, chosen from forgone options) in study 8