THE EFFECT OF NONCONSCIOUS GOALS ON CONSCIOUS GOAL-BASED PREFERENCES

by

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Abstract

This dissertation examines whether a nonconscious goal can change preferences between binary options, one favoring a conscious goal (e.g., undiluted but non-healthy iced tea) and the other a nonconscious goal (e.g., diluted but healthy iced tea). Across four laboratory experiments, we demonstrate that when participants are only given a conscious goal (e.g., to choose the tastier drink), the majority of them seek the alternative that is more instrumental to this goal. However, when a nonconscious goal is also primed (e.g., to be healthy), their preferences can shift to the alternative that is perceived to be instrumental to this goal but is inferior from the conscious goal standpoint.

We propose a two-stage model to explain these findings. In the first stage, when a nonconscious goal is primed, individuals attend to goal-relevant cues (e.g., health-signaling label) and automatically form a positive evaluation toward the option that facilitates the nonconscious goal relative to the option that does not satisfy the goal. In the second stage, the positive automatic evaluation is then used to distort perceptions of the option’s conscious goal instrumentality such that the option is perceived as having a more favorable taste compared to
when the goal is not primed. While the positive automatic evaluation influences the option’s
taste, it does not affect the evaluation of the option’s other attributes (e.g., scent, color). By
manipulating the timing of nonconscious goal activation and by adopting an evaluative
conditioning task, we find support for our conceptual model while ruling out alternative
explanations and identifying a boundary condition of task difficulty. The findings of the
experiments contribute to the literature on nonconscious goals 1) by showing that these goals can
play a central role in decision making when choice options pit them against conscious goals, and
2) by identifying a mechanism (i.e., attribute distortion) that can resolve goal competition in
choice.
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Chapter 1 – Introduction

Consider a shopper who visits her local grocery store and finds that two equally reputable beverage manufacturers are offering samples of their new products. Both products belong to the soft drink category and appear similar in quality, yet one hints as being health-oriented (Drink A) while the other does not (Drink B). Her explicit goal is to choose the tastier drink of the two alternatives, which after sampling is confirmed as Drink B. Now assume prior to sampling, the same individual passes the produce corner where she spots several displays (e.g., organic, fresh) that activate a nonconscious goal of being healthy. All else equal, would incidental exposure to these health-related cues affect the consumer’s subsequent drink choice any differently? Specifically, would the activation of a nonconscious health goal increase the likelihood of her choosing Drink A? In this dissertation, we attempt to address this important question.

It is now well established from previous research that consumer behavior is largely goal-driven. Goals guide consumers in forming consideration sets (Ratneshwar, Pechmann, and Shocker 1996), weighing specific attributes (Chernev 2004), determining the value of products (Brendl, Markman, and Messner 2003), and making choices (Chartrand et al. 2008). It is also widely recognized that a significant portion of these goals that play a role in consumer decision making are activated and operate outside of awareness (Bargh 2002; Chartrand 2005; Chartrand et al. 2008; Dijksterhuis et al. 2005). In fact, a major stream of goal research has focused on replicating the cognitive and behavioral effects conscious goals produce with nonconsciously activated goals (e.g., Bargh et al. 2001; Chartrand and Bargh 1996; Williams et al. 2009). In this body of work, goals are activated outside of individuals’ awareness through subtle priming.
techniques, producing effects that are accompanied by classic motivational properties observed in conscious goal pursuit—e.g., resistance to obstacles (Bargh et al. 2001), post-attainment goal inhibition (Chartrand et al. 2008), and escalations of striving over time (Bargh et al. 2001; Chartrand et al. 2008). Yet despite the presence of convergent evidence showing that the effects of nonconscious goals are qualitatively equivalent to those of their conscious counterparts, there has been little empirical research which examines the interaction between these two types of goals.

Previous research that has examined multiple goals generally belongs to the domain of self-control or self-regulation where goals are in conflict (e.g., work vs. leisure, indulging vs. dieting, frugality vs. prestige). Researchers have shown that a goal an individual is currently pursuing can inhibit or shield alternative goals given prior associations in memory of intergoal conflict (Fishbach, Friedman, and Kruglanski 2003) or substitution (Shah, Friedman, and Kruglanski 2002). In these studies, the emphasis has largely been placed on demonstrating the automaticity of the inhibitory or shielding process regardless of the type of goal activation involved; hence, it is unclear whether the goals in operation are conscious or nonconscious.\(^1\)

Another vein of research in this domain explores multiple goals in sequential decision making where the perceived progress or achievement of a current goal may result in its disengagement and subsequent pursuit of alternative goals (Fishbach and Dhar 2005; Khan and Dhar 2006). In this research, an initial goal is active and pursued (supposedly, while an alternative goal is

\(^1\) In Fishbach et al. (2003), both short-term goal activation and opposing long-term goal activation are assessed through implicit measures. Thus, the goals involved in this research can be seen as competing nonconscious goals. Conversely, in Shah et al. (2002), both the focal goal and the alternative goals are made aware to participants by either asking them to self-report current goals or giving them explicit task instructions. Hence, the goals involved in this research can be viewed as competing conscious goals.
shielded or inhibited), but following its attainment or sufficient progress (e.g., goal-consistent choice, attainment of subgoals) the goal is no longer pursued as reflected in a subsequent decision inconsistent with the initial goal but consistent with the alternative goal. The focus in this line of work is the inconsistency between sequential decisions due to multiple goal pursuit rather than how the interaction of multiple goals can jointly affect a single decision.

Perhaps the most relevant to the topic of this dissertation is recent research on multifinality which examines different, yet not necessarily conflicting, multiple goals in a consumer choice setting (Chun and Kruglanski 2005; Kruglanski et al. 2002). In this research, participants are asked to choose between binary choice options that are equally instrumental to a conscious goal while one of the options additionally satisfies a nonconscious goal. Analogous to the old proverb, “killing two birds with one stone,” the findings indicate that under these circumstances a nonconscious goal can act as a tiebreaker; when both the conscious and nonconscious goals were active, a greater number of individuals chose the option that satisfied both goals (i.e., “multifinal” pursuit) as opposed to the option that satisfied only the conscious goal (Chun and Kruglanski 2005). This result was in contrast to the “tie” between choice options found when only the conscious goal was active. While these findings suggest that a nonconscious goal can influence preference when a conscious goal is also active, the question remains as to whether a nonconscious will exert influence in decision making when its means undermines the attainment of a conscious goal.

The main objective of this dissertation is to demonstrate that when consumers consciously intend to pursue a specific goal, their behavior can be guided by another goal that they are unaware of pursuing, consequently leading to an “inferior” choice from the conscious goal standpoint. Four laboratory experiments were conducted to test this possibility and how it
may occur. Experiment 1 presents initial evidence that a nonconscious goal can determine preference when choice options present tradeoffs between conscious and nonconscious goals. Based on previous research, we develop a two-stage conceptual model that can explain the obtained effect. Experiment 2 and Experiment 3 provide a test of this model while ruling out alternative explanations. Experiment 4 provides further support for our conceptual model and additionally investigates a boundary condition of the effect (i.e., task difficulty).

Together, the results of the experiments indicate that a nonconscious goal can override a conscious goal and determine preference when choice options pit the two goals against each other. These findings imply that nonconscious goals can operate beyond its previously suggested role as a decision tiebreaker. The findings further contribute to the goal literature by identifying an overlooked mechanism (i.e., attribute distortion) which can resolve goal competition in choice. In addition, they have practical implications for marketers in developing effective communication strategies.

The dissertation is organized as follows. In Chapter 2, we review the related literature in psychology and consumer behavior and present our conceptual model. The following four chapters (Chapters 3, 4, 5, and 6) discuss the design and results of four experiments. Finally, Chapter 7 discusses an overview of key findings, contributions, and avenues for future research.
Chapter 2 – Conceptual Background

2.1 Goals and their Cognitive and Affective Consequences

Goals are desired end-states that guide our behavior (Carlson et al. 2008; Chartrand et al. 2008; Custers and Aarts 2005; Fishbach and Ferguson 2007; Laran 2010). In consumer behavior, researchers have examined goals that broadly fall under two categories, information processing goals and behavioral goals (Carlson et al. 2008; Laran 2010; van Osselaer et al. 2005). Information processing goals refer to goals that shape the way consumers process information to reach a decision. They include maximizing accuracy, minimizing effort, maximizing cognitive consistency, and maximizing ease of decision justification (Bettman, Luce, and Payne 1998; Russo et al. 2008). Behavioral goals are more action-oriented goals (e.g., consumption goals, personal goals) that are attained through specific means (Ratneshwar et al. 2001; van Osselaer et al. 2005). For example, when choosing a beverage one might seek good taste, health, or social goals. These goals can be attained by consuming a drink (i.e., the means) that has sweetness, nutrients, or attractive packaging. This dissertation focuses on the latter type of goals.

While researchers have traditionally treated motivation separately from cognition, there has been recent movement to adopt a new perspective of goals as knowledge structures (Bargh 1990; Kruglanski et al. 2002). According to goal systems theory (Kruglanski et al. 2002), goals are mental representations embedded in cognitive networks that connect them with their means of attainment, other goals, and contexts. Consequently, the activation of any concept within a goal network can spread activation to other concepts in the same network. For example, when a
goal is activated (e.g., staying fit) the means that help achieve the goal are likely to come to mind (e.g., biking), and vice versa (e.g., bike on the street reminds one to stay fit). The associative strength between a goal and a means, which determines activation potential between the two concepts, can be molded by several factors. One of these factors is the structure (i.e., the number of connected goals and means) of the goal network itself. For example, when multiple goals are connected to a single means ("multifinality") or when multiple means are connected to a single goal ("equifinality"), the strength between a goal and a means can weaken due to the interference of alternative goal-means links (Kruglanski et al. 2002). In fact, research shows that a means connected to multiple goals (vs. a single goal) is less likely to be chosen when only one of the goals it serves is activated (Zhang, Fishbach, and Kruglanski 2007). This is because the multiple goal representations (e.g., scanning, copying) associated with the means (e.g., all-in-one printer) dilute the perception of its instrumentality to the goal that is active (e.g., printing). According to goal systems theory, other determinants of goal-means connections include repeated pairings of a goal and a means (e.g., frequent choice of "water" when "thirsty") or reinforcements made by a trusted epistemic authority (e.g., nutritionist recommends drinking "water" when "thirsty").

Once associations between goals and means have been established, an active goal guides behavior by directing one’s attention to goal-relevant objects as opposed to goal-irrelevant objects. For example, Aarts, Dijksterhuis, and De Vries (2001) find that when individuals have a goal of quenching thirst, they respond quicker to words that facilitate the goal such as "water" or "juice" relative to goal-irrelevant words such as "chair" or "lamp." In addition, Balcetis and Dunning (2006) show that participants will interpret the same abstract visual stimulus differently (e.g., number "13" vs. letter "B") depending on the task-specific goal they are given (e.g., finding numbers vs. letters). Together, these findings suggest that when individuals are pursuing
a goal, they become perceptually ready to respond to goal-related cues in their environment.

The consequences of goal activation are not only limited to attention. Goal activation also has affective consequences. When individuals are engaged in goal pursuit compared to when they are not, they automatically form more positive evaluations toward objects related to the goal than objects unrelated to the goal (Ferguson 2008; Ferguson and Bargh 2004). In more concrete terms, this means that when an individual is thirsty compared to when she is not, not only will she search her environment for objects that facilitate goal attainment (e.g., water, juice), but she will also automatically evaluate these objects more favorably. The reason for this positive automatic evaluation can be traced back to the interconnectedness between goals and their means. As individuals, we strive to accomplish goals because the success (failure) in attaining them produces positive (negative) affect. In fact, the greater the positive affect associated with a goal, the more committed individuals are in pursuing it (Custers and Aarts 2005). Since goal representations are connected to their means in memory, the positive affect associated with attaining a goal in turn can transfer to its means (Fishbach, Shah, and Kruglanski 2004). As the goal-means connection strengthens over time, the activation of the goal may automatically elicit a positive evaluation toward its means without one having to actually attain the goal and experience positive affect. Past research shows that positive automatic evaluations formed toward goal-relevant objects can serve as a predictor of behavioral intentions to engage in goal-consistent activities (Ferguson and Bargh 2004).

2.2 **Conscious vs. Nonconscious Goals**

Traditionally, a goal is considered to be activated upon an individual’s conscious and
deliberate intent to adopt and pursue it. In most research on goal-directed behavior, this notion has been experimentally translated into giving participants explicit instructions to perform a specific behavior (Carver and Scheier 1998; Gollwitzer 1999; Locke and Latham 1990). However, the aforementioned perspective of goals-as-knowledge structures implies that the mere exposure to environmental cues closely related to a goal can also be sufficient to activate the goal. According to the auto-motive model proposed by Bargh and colleagues, conscious intentions and choices are initially needed to perform a desired behavior but they no longer become necessary to the extent that the same goal is chosen in a given situation and the same behavior is enacted multiple times (Bargh 1990; Bargh and Chartrand 1999). For example, consider a student’s goal of regularly attending classes on time. Initially, he wakes up to the sound of his alarm clock only to consciously adopt and execute his goal by keeping close attention to the order and time spent on morning activities (e.g., grooming, eating, bag packing, and commuting). Without his conscious intent, he is likely to experience failure in reaching his goal (i.e., arrives late). However, by mid-semester, at which point he has deliberately activated and successfully pursued his goal a number of times, his conscious intent and choices are no longer required. Upon the trigger of environmental influences (e.g., morning sunlight, alarm clock, traffic noises), he automatically performs the activities necessary for goal attainment (e.g., adequate sequence and timing of events) and at no point is he aware of the goal that is guiding his behavior.

Prior research confirms that goals can be activated through the exposure of a number of different environmental cues that include their attainment means (Shah and Kruglanski 2003), relationship partners (Fitzsimons and Bargh 2003), or even temptations or obstacles associated with the goal (Fishbach, Friedman, and Kruglanski 2003). While the cues themselves may be perceived consciously (e.g., books, mother, partying), oftentimes an individual is unaware that
they have activated a goal (e.g., academic achievement) or have caused any behavioral consequences (e.g., studying hard). Taking these incidents into account, the definition of nonconscious goals adopted in this dissertation entails one’s unawareness of the activation and the operation of the goal regardless of whether the goal-activating cues themselves pass a conscious threshold (for similar definitions, see Chartrand 2005; Fishbach and Ferguson 2007).

In addition, the terms, conscious and nonconscious goals, used throughout the dissertation reflect the distinction between focal goals as “goals a person is consciously and deliberately pursuing” and background goals as those of which “he or she may not be consciously aware (Chun and Kruglanski 2005, 203).”

Once activated, nonconscious goals produce effects that are comparable to those produced by conscious goals. For example, when participants are primed with a cooperation goal, they exhibit cooperative behavior in a resource management game to the same degree participants who are given written instructions to cooperate do (Bargh et al. 2001). Furthermore, the behavioral consequences of these nonconscious goals are distinct from those generated by non-goal constructs in that they display motivational features similar to their conscious counterparts (Förster, Liberman, and Friedman 2007). For instance, goal priming has been shown to generate inhibitory behavioral effects immediately following the successful attainment of the goal (Chartrand et al. 2008). On the other hand, when a primed goal has yet to be attained and is in progress, behavioral effects consistent with priming remain constant or grow even stronger

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2 Experimental researchers have used both superliminal and subliminal priming techniques to nonconsciously activate a goal (Bargh et al. 2001; Chartrand and Bargh 1996; Chartrand et al. 2008). Common across these methods, participants are typically presented with a disguised task where they are presented with a series of exposures to goal-related constructs (e.g., end-states, means, contexts, relationship partners) that spark the activation of the goal.
until the goal has been attained. The escalation of goal priming effects is different from the behavioral priming effects of semantic concepts or traits which rapidly decay following the activation of these constructs (Bargh et al. 2001).

While the quality of outcomes is similar whether the goal is activated consciously or nonconsciously, an important assumption made in this dissertation regarding the difference between conscious and nonconscious goals is the degree to which their operation (i.e., processes leading up to the outcome) is automatic. In our earlier example, the student’s goal to be punctual for school can eventually become nonconsciously activated through environmental influences (e.g., morning sunlight, alarm clock, traffic noises). The activation of the goal then automatically sets in motion his morning activities in a time span familiarized through prior experiences. The entire sequence of goal activation-operation is automatic unlike the earlier stages of his goal pursuit when both activation (by deliberate intent) and operation (e.g., frequent time checks) of the goal were consciously controlled. To reiterate, we assume that nonconscious goal pursuit is based on low-level automatic processes that operate more efficiently than the deliberate and effortful processes that underlie conscious goal pursuit (for a similar view, see Williams et al. 2009).

While conscious goals require the deliberate assessment of available means, the difficulty of this process can vary across decisions. For example, among several unfamiliar ice cream flavors, suppose the appropriate means for a consumer with a goal to buy the tastiest ice cream is choosing one that is sweetest. If there is a small divergence in sweetness across the flavors, she has to assess each flavor carefully before she can successfully choose the option that satisfies her goal. In other words, it is difficult (yet possible) for the consumer to readily identify her goal-relevant means amongst competing options. On the other hand, if the instrumentality of the
means was made more salient (e.g., all but one is not sweet), the process of choosing the appropriate option becomes easier. Thus, the difficulty of a choice task can be an important factor in predicting whether one will succeed in attaining a conscious goal. In fact, previous research indicates that task difficulty along with other contextual factors (e.g., cognitive load, time pressure, stress) can hinder the operation of conscious processes (Bargh and Thein 1985; Dijksterhuis and Nordgren 2006; Hasher and Zacks 1979; Spencer, Fein, Wolfe, Fong and Dunn 1998). Consequently, judgments and decisions made under these situational constraints are often subject to the bias of alternative inputs accessible in memory (Bodenhausen and Lichenstein 1987; Nisbett and Ross 1980; van Knippenberg, Dijksterhuis, and Vermeulen 1999). For example, when asked to determine the severity of a punishment for a criminal act based on factual information, individuals are more likely to incorporate stereotypes about the suspect (e.g., social category) in their decision when under a high cognitive load, which is in contrast to the absence of stereotype use under a low cognitive load (van Knippenberg et al.1999). Similarly, the use of one’s preexisting mood state in subsequent evaluative judgments (i.e., feeling heuristic) is intensified when individuals are under time pressure or when task demands reduce processing capacity (Siemer and Reisenzein 1998).

In a later discussion of our conceptual model, we propose that preferences which are supposedly based on a conscious goal can be biased by a choice option’s instrumentality in attaining a nonconscious goal. Specifically, we argue that when a nonconscious goal is activated, participants will form a more positive automatic evaluation to an option that satisfies this goal compared to an option that does not satisfy the goal. The options’ positive automatic evaluations (strong vs. weak) are then used to assess the options’ instrumentality (i.e., taste) for fulfilling the conscious goal as reflected in participants’ preferences. Of importance, we expect preferences to
be biased by the nonconscious goal only when the choice task is difficult but not when it is relatively easy – i.e., when the option that facilitates the conscious goal is more salient.

2.3 Effects of Multiple Goals

Extant research that examines multiple goals has primarily focused on the interaction between conflicting self-regulatory goals. In one branch of this research, it has been shown that when a goal is activated it can automatically inhibit conflicting goals from operating. In one study, Fishbach et al. (2003) show that when a long-term goal is activated (e.g., religion), it can suppress reaction times to words related to short-term motives that conflict with the goal (e.g., sin) compared to words that do not conflict with the goal (e.g., basketball). Similar to this inhibitory process, Shah, Friedman, and Kruglanski (2002) find that when one is currently pursuing a goal, either self-reported or situationally given through task instructions, the activation of the goal will shield other conflicting goals (which participants are also aware of) from undermining its commitment by lowering their accessibility. It is important to note that the inhibitory or shielding mechanism examined in these studies apply to goals that are perceived as conflicting – in fact, when the relationship between active goals is viewed as facilitative, these inhibitory effects are attenuated (Shah et al. 2002).

Another branch of research in the self-control domain examines the effects of multiple goals on sequential decisions. As mentioned earlier, one of the motivational properties of goals is their post-attainment inhibition. Specifically, when a goal an individual is pursuing is perceived to have been sufficiently achieved either through progress or completion, it becomes deactivated to the extent that it is suppressed (Fürster et al. 2007). As a result, when multiple goals are active
in a given situation, researchers find that once individuals perceive to have made satisfactory progress in attaining one goal, they discontinue pursuit of this goal and pursue alternative goals (e.g., Laran and Janiszewski 2009). In sequential decision making contexts, once an individual makes progress on a goal through goal-consistent behavior or attaining a series of subgoals, subsequent decisions result in incongruent behavior that favors alternative goals (Fishbach and Dhar 2005; Khan and Dhar 2006). The relationship between active goals is also important in this line of work as the effect of initial goal progress on future actions will depend on whether the subsequently pursued goal is perceived as a complement or substitute to the initial goal (Fishbach, Dhar, and Zhang 2006). In addition, research indicates that merely signaling goal progress through the framing of information (e.g., to-date vs. to-go, mandatory vs. optional) can have similar effects to actual goal progress and affect one’s motivation to adhere to a goal (Finkelstein and Fishbach 2010; Koo and Fishbach 2008). Once goal progress has been made, the proximity to reaching the goal (close vs. far) combined with the emotional feedback from initial goal progress (positive vs. negative) can signal the extent to which the goal is attainable, and in turn, whether one should invest more effort to the goal or divert resources to other goals (Louro, Pieters, and Zeelenberg 2007).

This dissertation is different from extant research on multiple goals in the following ways. First, we explore how multiple goals jointly affect a single decision. Second, we strictly examine the competition between conscious and nonconscious goals. Third, while the goals examined here are different from one another, we assume that they are not necessarily conflicting. Although the goals “compete” with each other due to the choice context (i.e., binary options satisfy one goal but not the other), this does not necessitate that participants have conflicting associations in memory about these goals which would cause one of them to inhibit the other. In
fact, a key finding of our research is that a nonconscious goal can actually *distort* attribute information with respect to the conscious goal as shown in participants’ reasons for choice and increased ratings of the inferior option’s conscious goal instrumentality (Experiment 3 and Experiment 4). This distortion mechanism is different from intergoal inhibition in that the activation of one goal (i.e., nonconscious goal) leads to the belief that another goal (i.e., conscious goal) has been attained as opposed to blocked.

In this regard, our research is closely related to recent research on multifinality which examines different, yet not conflicting, multiple goals in a consumer choice setting (Chun and Kruglanski 2005; Kruglanski et al. 2002). As mentioned earlier, multifinality refers to when a network of goals and means is represented such that a single means has facilitative connections to multiple goals. Oftentimes, a multifinal means (e.g., tasteful and atmospheric restaurant) is preferred over a unifinal means (e.g., tasteful restaurant) since the individual is able to obtain more subjective utility from attaining multiple goals than a single goal (Chun and Kruglanski 2005; Kruglanski et al. 2002). The notion of multifinality can be applied to the attainment of multiple conscious goals, nonconscious goals, or a combination of both. For example, Chun and Kruglanski (2005) discuss a study where the researchers nonconsciously activate school identification or disidentification goals by asking participants to recall either a proud or shameful school event. In a disguised choice task that followed afterwards, participants were presented with two pieces of fabric that differed only with respect to color. They were explicitly given a conscious goal to choose the more durable fabric after inspecting both of them, even though the two alternatives were made of identical material. Participants’ choices revealed that their preferences were guided by their nonconscious goals; those who had previously recalled the proud event chose the fabric that represented their school color, while those that had recalled the
shameful event chose the fabric of the alternative color.

Although the above findings provide support that preferences can be affected by nonconscious goals, the choice options were equally instrumental to the conscious goal (i.e., equally durable). In other words, the nonconscious goal acted as a mere tiebreaker. In this dissertation, we present participants with binary options that contain tradeoffs in their instrumentality to satisfy conscious and nonconscious goals, respectively. Under these circumstances, we investigate and later find that a nonconscious goal can lead to the choice of an option that undermines the attainment of the conscious goal.

2.4 Conceptual Model

When a conscious goal and a nonconscious goal are in competition for participants’ choice, how might the latter goal determine preference? Based on our earlier discussion of the affective consequences of goal activation and the susceptibility of conscious processes to alternative input under task difficulty, we propose a two-stage model which can conceptually account for the proposed effect in a taste test context (see Figure 1). The basic setup of the experiments in this dissertation is as follows. Participants are presented with a choice between two iced tea samples, one that favors a nonconscious goal of being healthy (diluted but healthy sample) and another that favors a conscious goal of choosing a tastier drink (undiluted but non-healthy sample).

We selected beverages as the product category of interest for several reasons. First, they are associated with a wide range of goals from quenching thirst to more personal goals. In fact, drinks are often used in social psychology to explore basic affective and motivational processes
because as a stimulus they possess some initial value for participants to perform related behavior whether it is the pleasure of reducing thirst or tasting something for free (Aarts et al. 2001; Strahan, Spencer, and Zanna 2002; Winkielman, Berridge, and Wilbarger 2005). Second, it is important to explore whether goal-directed processes can go beyond hypothetical choice and impact consequential behavior. Third, documenting a possible influence of nonconscious goals on drink choice is particularly informative since beverage preference is intrinsically predetermined by its taste and other sensory properties. Thus, the taste test context itself places the conscious goal of taste at an advantage over the nonconscious goal of health. If a nonconscious goal can overcome such predetermination and influence preference, it would suggest a robust override of a conscious goal. Finally, by increasing the dilution level of a drink, which is later shown to be less tasty to participants, we can systematically manipulate the salience of an undiluted beverage’s taste, and in turn, the difficulty level of the choice task.

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Insert Figure 1 about here
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In the first stage of our proposed model, individuals form a more positive automatic evaluation toward the option that satisfies the nonconscious goal compared to the option that does not satisfy the goal. As described earlier, once a goal is activated, individuals attend to goal-relevant cues in their environment and form positive automatic evaluations toward objects that facilitate the goal. Using implicit measures such as eye-tracking and response latencies, past research attests that the perceptual and evaluative readiness to respond to goal-related cues occur
pre-consciously (Balcetis and Dunning 2006; Ferguson 2008; Moskowitz 2002). In other words, attention and affective tags assigned to goal-related objects occur before the conscious processing of the objects themselves. Taken together, we argue that when a choice option contains goal-related cues (e.g., health-signaling label) that convey it satisfies a nonconscious goal (e.g., being healthy), individuals will automatically direct their attention to these cues and form a more positive evaluation to the option upon goal activation. In comparison, a choice option that does not possess goal-facilitating cues (e.g., health-neutral label) will not acquire any positivity from nonconscious goal activation.

In the second stage, individuals will then use the difference in these automatic evaluations (i.e., positive vs. less positive or neutral) to assess the degree to which choice options satisfy the conscious goal. As a result, the option that satisfies the nonconscious goal (diluted but healthy tea) is favored over one that does not satisfy the nonconscious goal (undiluted but non-healthy tea) despite the former option’s lack of instrumentality to the conscious goal. The distortion of conscious goal instrumentality (i.e., perceived taste) based on automatic evaluations formed in the first stage of the model is similar to findings in previous research which suggest individuals often use incidental feelings or affective states as a basis for subsequent judgment and behavior (Pham 1998; Schwarz and Clore 1983) – e.g., the use of one’s happy mood on a sunny day in subsequent ratings of life satisfaction. Researchers have shown that individuals will especially rely on preexisting mood states (Siemer and Reisenzein 1998) or even affect generated without

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3 Because we assume that conscious goals are based on more deliberate and effortful processes, we do not expect participants to form a positive automatic evaluation to the option that satisfies this goal. Instead, individuals are expected to thoroughly assess each option before drawing an explicit preference between the two options. Had participants been able to readily identify the tastier option (e.g., juice > vinegar), an active conscious goal may have produced a more positive automatic evaluation to the option identified as goal-relevant.
conscious awareness (Dempsey and Mitchell 2010) when making decisions if conscious processing of decision-relevant information is distracted from task constraints. The second stage of our model is also in line with research on pre-decisional distortion which shows that once an initial preference is developed for an alternative, subsequent attribute information presented to individuals is distorted outside awareness to support the leading alternative (Russo, Carlson, and Meloy 2006; Russo, Meloy and Medvec 1998).

In sum, we expect that following nonconscious goal activation, automatic evaluations formed toward the choice options (strongly vs. weakly positive) will be used to assess their instrumentality in attaining the conscious goal. Of importance, this prediction is considered to only hold when the undiluted (non-healthy) option’s instrumentality in attaining the conscious goal (i.e., perceived taste) is low in salience by pairing it with a moderately diluted beverage. The pairing of these two options makes the choice task difficult (yet still reachable) with respect to the conscious goal. Under a difficult choice task, we predict that participants’ conscious goal-based preferences will be more prone to the influence of alternative input, namely, the automatic evaluations of the options formed by the nonconscious goal. When the choice task becomes easier by pairing the undiluted option with a heavily diluted option, and thus, making its favorable taste more salient, we expect preferences to be less distorted by the nonconscious goal.

2.5 Overview of Experiments

In this dissertation, we explore whether a nonconscious goal can determine preference in the face of a competing conscious goal. After demonstrating the effect in a taste test context, we provide evidence for our two-stage conceptual model. Furthermore, we attempt to establish task
difficulty as a boundary condition of the obtained effect. Participants are presented with two choice options, one that favors a nonconscious goal of being healthy (diluted but healthy sample) and another that favors a conscious goal of choosing a tastier drink (undiluted but non-healthy sample). While both options are unfamiliar to participants, one of them contains cues on its label that signal it is more instrumental than the other option in attaining the nonconscious health goal. Meanwhile, the options also vary with respect to their instrumentality in satisfying a conscious goal of taste. While participants are capable of successfully identifying the means that satisfy their conscious goal (i.e., undiluted option) as reflected in a blind taste test, the salience of this option’s taste is relatively low (i.e., just-noticeable-difference from the diluted option), making the choice task difficult.

In Experiment 1, we establish the basic effect that a nonconscious goal can influence preference when choice options pit it against a conscious goal. When participants are only given the conscious goal to choose the tastier option, participants favor the undiluted (non-healthy) tea to a similar degree as a group of blind taste test participants. When additionally activating a nonconscious goal of being healthy through a priming task, however, we find that relatively more participants favor the diluted (healthy) tea. In Experiment 2, we manipulate the timing of nonconscious goal activation and find supporting evidence for the distortion-based mechanism proposed in our conceptual model, while ruling out alternative explanations of post-choice justification and goal primacy. Experiment 3 provides additional support for the first stage of our conceptual model which depicts that the instrumentality of a means in attaining the conscious goal is distorted by a positive automatic evaluation acquired from the nonconscious goal. In this experiment, we create a difference in choice options’ automatic evaluations through an evaluation conditioning procedure and find evidence which corroborates that a difference in
automatic evaluations (i.e., first stage) is indeed responsible for subsequent attribute distortion that occurs in the second stage of the model. Experiment 4 confirms task difficulty as a boundary condition of the obtained effect. As in the earlier experiments, half of the participants received choice options of a just-noticeable-difference in taste. For the remaining half of the participants, the choice task was made easier by making the superior taste of the undiluted option more salient – the dilution level of the option it was paired with was significantly increased. For this latter group of participants whose choice task was easier due to the larger taste difference, we find that the effect of the nonconscious goal on conscious goal-based preferences is attenuated.

Across the four experiments, we consistently provide all participants with a conscious goal (i.e., to choose the tastier drink) through explicit instructions (Bargh et al. 2001; Locke and Latham 1990), while half of them are additionally given a nonconscious goal by priming goal-relevant constructs through an ostensibly unrelated task (Chartrand and Bargh 1996; Chartrand et al. 2008). In all of the experiments, participants are given a 5-minute filler task between the priming task and final choice task. The reason for this delay was to ensure that any priming effects observed were from the activation of a goal since priming effects of perceptual or semantic constructs have been shown to decay after an equal time lapse (Bargh et al. 2001). We find that in accordance to prior research (Bargh et al. 2001; Chartrand and Bargh 1996; Chartrand et al. 2008), participants across the four experiments are completely unaware of the activation and operation of the nonconscious goals as evident in their reasons for choice as well as in funneled debriefing.
Chapter 3 – Experiment 1

3.1 Overview

The purpose of Experiment 1 is to provide an initial demonstration that a nonconscious goal can influence preference when its means potentially lacks instrumentality to a conscious goal. All participants are given a conscious goal to choose the tastier drink from two options, an undiluted but non-healthy iced tea which favors their conscious goal of taste and a diluted but healthy iced tea which favors a nonconscious goal of being healthy. The difference in taste of the two iced tea samples was small, making the choice task difficult but nevertheless reachable. Participants were assigned to a control condition where they received the conscious goal only through explicit instructions or an experimental condition where they received the conscious goal but were additionally primed with the nonconscious goal.

**H1**: When participants are only given the conscious goal to choose the tastier drink in the control condition, they will choose the undiluted (non-healthy) option that satisfies this goal. When a nonconscious goal is additionally activated in the experimental condition, preferences will shift in the direction of the diluted (healthy) option.

3.2 Method

*Pretests*. We conducted a series of pretests to determine if the drinks and accompanying
labels used in the main experiment were perceived as qualitatively different with respect to taste and health. Thirty participants from a large East Asian university participated in a blind taste test where they received two samples of iced tea labeled as either “Tea 1” or “Tea 2” (counterbalanced). One of the samples contained 100% of the contents of a local iced tea brand (i.e., Ceylon Tea) while the other contained 95% of the same iced tea and 5% of drinking water. The numeric order of the drinks did not influence choice and was dropped from further analyses ($p > .70$). When asked to choose the tastier drink, the majority of participants (70.0%) preferred the undiluted iced tea over the diluted one. A binomial test indicated that the proportion of participants that favored the undiluted tea was significantly different from a random choice ($p < .05$). Additionally, each individual evaluated one of two labels with regard to its perceived instrumentality in satisfying a health goal (1 = will not satisfy at all, 9 = will satisfy very well). One label depicted the hypothetical brand, *Dailytea*, as an “iced tea that makes everyday life smooth.” The other depicted another brand, *Nutratea*, as an “iced tea packed with nutrients” (see Appendix A). As intended, Nutratea was perceived as more instrumental to the goal of being healthy than Dailytea ($M_{\text{Nutratea}} = 6.07$ vs. $M_{\text{Dailytea}} = 4.60$; $F(1, 28) = 5.34$, $p < .03$).

We further measured attitudes toward the two labels on a separate group of 50 participants on nine-point scales (1 = very negative, 9 = very positive). Neither label was perceived as more favorable than the other ($M_{\text{Nutratea}} = 5.50$ vs. $M_{\text{Dailytea}} = 5.36$; $t(49) = .43$, $p > .66$). This result eliminates any potential concern of a difference in prior attitudes toward the two options.

*Participants and Design.* Ninety-four undergraduate students at a large East Asian university participated in the experiment as a course requirement. We employed a single factor
(experimental: nonconscious goal priming vs. control: no goal priming) between-subjects design. Participants were randomly assigned to the two conditions.

Procedure. Upon arrival, participants were given three supposedly unrelated tasks. The first two tasks were disguised to assess participants’ linguistic and math abilities. In the first task, participants completed a 15-item version of the scrambled sentence task (Chartrand and Bargh 1996) which was constructed in their native language. They were given strings of five scrambled words and were asked to create a grammatically correct sentence using only four of the words. In the experimental condition, each item contained one health-related word to prime the nonconscious goal of being healthy (e.g., natural, physique, healed). In the control condition, these words were replaced with words unrelated to health (e.g., houses, intellect, faded).

Next, participants were given a 5-minute filler task in which they had to solve three math problems that were selected from an eighth grade textbook. The purpose of this delay was to mask the relationship between the priming and choice tasks while ensuring that participants’ choice in the experimental condition was goal-driven. Previous research has shown that priming effects for perceptual constructs attenuate after 5 minutes, whereas priming effects for goal-related constructs do not decay after an equal amount of time (Bargh et al., 2001). Hence, if a behavioral-priming effect persists after this delay, it indicates that participants’ choice is goal-based.

The third task was described as part of a consulting project for a local beverage company. Participants were instructed to indicate which of the two samples of iced tea they were about to receive tasted better. Thus, the conscious goal of “choosing the option with better taste” was explicitly given. Each participant received a taste test questionnaire, immediately followed by
two iced tea samples prepared in identical disposable paper cups. They were instructed to place each cup under its designated area on the questionnaire. Right below the designated areas were labels of two fictitious iced tea brands. Unbeknownst to participants, one of the cups contained 100mL of the undiluted iced tea sample, while the other contained 100mL of the diluted iced tea sample. The undiluted tea was labeled as Dailytea, whereas the diluted tea was labeled as Nutratea. The experimenter described the presence of the labels as simply a means to discriminate the two different drinks so that participants would not deliberately consider them when making a choice.

Participants were instructed to taste the two samples in any order they preferred. The experimenter explicitly reminded them to choose the drink that tasted better and to record their choice on their questionnaire. They were further instructed to list the reasons for their choice. To back up the cover story, the questionnaire also included general questions concerning factors considered important in beverage purchase. Finally, all participants underwent a funneled debriefing procedure (Chartrand and Bargh 2002) which revealed no suspicion of the priming task or awareness of the relationship across tasks.

3.3 Results

Choice. When only given the conscious goal of taste (control), 59.1% of the participants chose the undiluted iced tea (Dailytea) over the diluted iced tea (Nutratea). This result replicated the choice pattern of the participants in the blind taste test mentioned earlier ($\chi^2 (1, N = 74) = .92, p > .33$). In the experimental condition where a nonconscious goal of being healthy was primed, the choice pattern reversed: 62% of the participants chose the diluted iced tea despite explicit
instructions to choose the tastier drink (see Figure 2). Choice was significantly different between the two conditions ($\chi^2 (1, N = 94) = 4.17, p < .05$), supporting H1.

To ensure that the drink labels did not explicitly influence choice, we invited a third group of 45 participants to undergo the exact same procedures as the control condition in the main experiment with one exception; they received the undiluted iced tea paired with the Nutratea label and the diluted iced tea with the Dailytea label (note these pairings were reversed in the main experiment). Participants were given the same priming task and filler task used in the control condition, after which they were given the taste test with the conscious goal of choosing the tastier drink. The majority of participants chose the undiluted iced tea (68.9%) over the diluted one (31.1%), replicating the results of the blind taste test ($\chi^2 (1, N = 75) = .01, p > .91$).

We further compared choice patterns between these participants and the control condition. Since these two conditions were essentially identical except for the opposite labeling of the two drinks, any difference in choice would be attributed to the labels; however, we find no difference in their choices ($\chi^2 (1, N = 89) = .93, p > .33$). Instead, both groups indicated the same preference for the undiluted tea confirming that the labels did not explicitly affect choice.

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Insert Figure 2 about here
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Reasons for Choice. Virtually all of the participants in both the experimental condition (95.5%) and the control condition (100%) reported “taste” as the reason for their choice. Two participants in the experimental condition indicated that they simply felt more inclined to choose
the diluted tea. For those who chose the diluted tea, responses included it as having a “milder taste,” “smoother texture,” “sweeter flavor,” or “refreshing finish.”

Perceived Importance of Attributes. Participants were asked to rate on nine-point scales how important they found the following factors when purchasing beverages in general: brand, taste, package, health, and manufacturer. No significant differences between the conditions emerged, suggesting no prior differences between the two groups (brand: $M_{\text{Control}} = 4.73$, $M_{\text{Experimental}} = 4.98$; taste: $M_{\text{Control}} = 8.20$, $M_{\text{Experimental}} = 8.50$; package: $M_{\text{Control}} = 5.82$, $M_{\text{Experimental}} = 5.90$; health: $M_{\text{Control}} = 7.02$, $M_{\text{Experimental}} = 7.24$; manufacturer: $M_{\text{Control}} = 4.82$, $M_{\text{Experimental}} = 5.50$; all $ps > .1$). Notably, the null difference between conditions regarding health supports our argument that the health goal activated in the experimental condition was indeed nonconscious in nature; had the goal been conscious, one would reasonably expect a higher importance rating for this factor in the experimental condition. In addition, the taste factor was considered more important than the health factor ($t(93) = 6.147$, $p < .001$), suggesting that the obtained effect is not necessarily contingent on a greater importance for the nonconscious goal.

3.4 Discussion

The results of Experiment 1 show that a nonconscious goal can determine preference when choice options present tradeoffs between conscious and nonconscious goals. Participants’ reasons for choice indicated that those who chose the diluted (healthy) option in the experimental condition were unaware that the nonconscious goal influenced their choice. Rather, they believed that they had made a choice based on their conscious goal to choose the tastier drink. If the
nonconscious goal had inhibited the conscious goal in the experimental condition, participants’ reasons should not have indicated that their choice was only based on taste.

In the next experiment, we examine a potential explanation for the obtained effect based on our conceptual model. Specifically, we argue that the activation of the nonconscious goal favorably distorts the taste of the diluted option relative to the taste of the undiluted option due to the former’s stronger positive automatic evaluation. At the same time, Experiment 2 attempts to rule out alternative explanations for the findings which we discuss next.

3.5 Alternative Accounts

While we argue that the results of Experiment 1 occurred because automatic evaluations formed from the nonconscious goal were used to assess the degree to which choice options satisfy the conscious goal, there are three explanations that could alternatively explain the results. Two of these explanations result in a post-choice justification based on the conscious goal. The third account suggests that our results are a consequence of goal primacy or the fact that the nonconscious goal was activated prior to the conscious goal. We describe these alternative explanations one by one in more detail below.

First, one could argue that participants’ choice could have been affected by social desirability (e.g., “It is expected of me to choose the healthy option”) or any other explicit (yet undisclosed) reason to choose the diluted option. As a consequence, their reasons for choice could have been simply justified based on the conscious goal in a post-hoc manner. This alternative account, however, is highly unlikely given that any effect of social desirability or any explicit reason to choose the diluted option would have applied not only to the experimental
condition but also to the control condition. Yet, we find choice to be different in the two conditions. Nonetheless, in Experiment 2 we rule out the possibility for this argument by pairing both the diluted and undiluted tea samples with the same health-instrumental label. Since choice options are now superficially identical, there should be no explicit reason for individuals to favor one over the other unless it is purely based on the option’s taste. Thus, by making the appearance of both options equal, we not only minimize any risk of post-choice justification but also ensure that any choice differences as a result of the nonconscious goal reflect changes in perceived taste.

When priming the nonconscious goal of health, we predict individuals will form positive automatic evaluations of similar strength for each option due to their equal instrumentality in attaining health, which in turn, produces similar taste assessments for both options (despite a difference in actual content). Therefore, we predict participants’ preference for the two drinks to be similar when the nonconscious goal is activated. Their preference, however, should still differ from preference a condition where participants are only given a conscious goal and are expected to favor the undiluted option.

Alternatively, a post-choice justification rationale could also apply to an implicit reason to choose the diluted (healthy) option unrelated to its taste. As a second alternative for our findings, the diluted option’s positive automatic evaluation acquired from the nonconscious goal may have produced an automatic behavioral approach tendency in the experimental condition, which led participants to choose the option irrespective of its perceived taste (Chen and Bargh 1999). In other words, participants may have exhibited a behavioral inclination to choose the diluted (healthy) option due to its automatic positivity without explicitly knowing why, and in turn, justified their choice based on taste thereafter (e.g., “I picked this tea, but I don’t know why. It must have tasted better.”). This explanation entails that the first stage of our model (i.e.,
difference in options’ automatic positivity) can suffice as the reason for the obtained effect in experiment 1. Unlike our distortion-based mechanism, this account suggests that the activation of the nonconscious goal directly influenced choice without altering participants’ taste experiences. To disentangle this explanation from ours, we include a condition in the next experiment where participants are given the opportunity to taste the teas prior to the activation of the nonconscious goal. If the options’ automatic evaluations from the nonconscious goal were to directly influence choice without distorting perceptions of their conscious goal instrumentality (taste attribute), one would predict a similar effect of the nonconscious goal on choice regardless of whether priming occurs before or after sampling the teas as long as it precedes participants’ final choice. On the other hand, if the effect of the nonconscious goal follows a distortion-based mechanism according to our model, nonconscious goal priming should affect choice only when it occurs before but not after assessing the alternatives. This is because in the latter situation, the nonconscious goal loses its opportunity to distort taste experiences since automatic evaluations are formed only after participants have sampled the options.4

Finally, a third explanation that accounts for the results of Experiment 1 is goal primacy. According to this explanation, whichever goal is activated first simply exerts the most influence in final choice; in the control (experimental) condition, the conscious (nonconscious) goal determined preference. While our conceptual model demands that the formation of automatic evaluations precedes the assessment of options with respect to the conscious goal, it does not

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4 Braun (1999) has shown that recollections of a taste experience can be distorted postexperience through misleading advertising. The misleading advertisements in her research, however, were presented 30 minutes after participants sampled a drink. During this delay, participants may have partially forgotten the taste experience which would have led them to rely more on the misinformation. In contrast, this group of participants in our experiment are given the priming task immediately after they sample the choice options, allowing a much smaller possibility, if at all, for postexperience distortion (see Lee, Frederick, and Ariely 2006 for a similar absence of postexperience distortion following the disclosure of ingredient information).
necessitate the order of goal activation be fixed. From our view, automatic evaluations formed toward the objects can be just as readily accessible as diagnostic input for assessing the taste of the options when the nonconscious goal is activated after the conscious goal. Therefore, to rule out the possibility of a goal primacy account, we add a fourth condition in Experiment 2 where participants are primed with the nonconscious goal after they have been given the conscious goal, but before they have been given the opportunity to sample the teas. Contrary to a prediction based on goal primacy, we predict the nonconscious goal to exert influence on preference and expect choice to be different from a control condition where participants are only given the conscious goal. The choice pattern in this condition should further replicate the predicted choice of a condition similar to the experimental condition in Experiment 1 where the nonconscious goal is activated before the conscious goal.
Chapter 4 – Experiment 2

4.1 Overview

Once again, all participants are given a conscious goal to choose the tastier drink between an undiluted sample and a diluted sample of iced tea. Unlike Experiment 1, however, both drinks are paired with the same health-instrumental label. Participants are assigned to one of four conditions. The first two conditions essentially replicate the control and experimental conditions of Experiment 1; in the control condition, participants are only given a conscious goal where we predict they will show a preference for the undiluted tea. In the priming first (PF) condition, participants are primed with the nonconscious goal before they receive the two drinks and the conscious goal to choose the tastier option. In this condition, we predict their preference will be similar across the two drinks, but nonetheless different from the control condition. In a third condition, participants are asked to sample the two options prior to completing the priming task for which activates the nonconscious goal (i.e., sampling first (SF) condition). In this condition, because the automatic evaluations from nonconscious goal activation are only formed after the teas have been tasted, they no longer affect participants’ taste experiences. As a result, we predict preferences to be similar to the control condition. Finally, in a fourth condition, participants are given the conscious goal at the very beginning of their experimental session (i.e., conscious goal first (CF) condition). They are then primed with the nonconscious goal and are given the two tea options to sample and choose from. Since sampling of the teas occurs after the priming of the nonconscious goal, we predict that the goal will influence participants’ preference in a direction
consistent to the PF condition. In sum, we hypothesize the following in this experiment.

**H2a:** Participants’ choice in the priming first (PF) condition will differ from the control condition where participants are only given a conscious goal. In the control condition, we predict participants will favor the undiluted (non-healthy) option that satisfies their conscious goal. When a nonconscious goal is additionally activated (PF condition), preferences will shift in the direction of the diluted (healthy) option.

**H2b:** Participants’ choice in the sampling first (SF) condition will differ from the priming first (PF) condition. In the priming first condition, participants show a similar preference for both drinks due to their equal instrumentality in attaining health which results in their equal strength of automatic positivity. In the sampling first (SF) condition, however, participants’ choice will be in favor of the undiluted option similar to the control condition. This prediction is consistent with a distortion-based mechanism, but inconsistent with alternative accounts that imply post-choice justification based on the conscious goal.

**H2c:** Participants’ choice in the conscious goal first (CF) condition will differ from the control condition. When a nonconscious goal is activated after the conscious goal but before the assessment of the options’ conscious goal instrumentality, it will influence participants’ preferences similar to the PF condition where choice is expected to be relatively even between the two options. This prediction is consistent with our conceptual model, but inconsistent with a goal primacy account.
4.2 Method

Participants and Design. We employed a single factor (no goal priming (control) vs. nonconscious goal priming first (PF) vs. sampling first (SF) vs. conscious goal first (CF)) between-subjects design. Two hundred and sixty-nine undergraduate students at a large East Asian university were randomly assigned to one of the four conditions in exchange for partial course credit.

Procedure. The procedure was similar to Experiment 1. Participants who only received the conscious goal (control condition) and those who were additionally primed with the nonconscious goal prior to sampling the drinks (PF condition) were given the same priming task, filler task, and taste test under the same cover stories as the control and experimental conditions in Experiment 1, respectively. Additionally, a third and fourth group of participants were given the same treatments as the PF condition with minor but important variations. In the SF condition, participants were given the two iced tea samples at the very beginning of the experimental session and were told that they would be asked questions about the drinks shortly after. After sampling the teas, they completed the priming task and filler task before receiving the taste test questionnaire with the explicit instructions to choose the tastier drink. In the CF condition, participants were given the conscious goal of choosing the tastier drink at the very beginning, after which they were given the priming, filler, and choice tasks.

Unlike Experiment 1, health instrumentality was made equivalent by pairing both tea samples in the taste test with the identical tagline, “nutritious iced tea packed with vitamins.” The hypothetical brand names were replaced as “Tea 1” (diluted tea) and “Tea 2” (undiluted tea).
We did not counterbalance the labels as neither the numbering in the blind taste test nor the labeling in Experiment 1 influenced choice. Hence, the only significant difference between the two drinks was their content.

4.3 Results

Choice. As depicted in Figure 4, choice was significantly different across the four conditions ($\chi^2(3, N = 269) = 9.13, p < .05$). In the absence of the nonconscious goal (control condition), 71.2% of the participants chose the undiluted iced tea over the diluted iced tea. In the PF condition, where the nonconscious goal of health was primed prior to sampling the drinks, a significantly lower proportion of participants (52.2%) favored the undiluted tea. Choice was significantly different between the control and PF conditions ($\chi^2(1, N = 140) = 5.358, p < .05$), supporting H2a. As in Experiment 1, this result indicates that the additional activation of the nonconscious goal affected participants’ choice.

For individuals who were primed with the health goal after they had sampled the drinks in the SF condition, 69.1% preferred the undiluted iced tea. This proportion differed from those in the PF condition ($p < .05$) but not those in the control condition ($p > .78$). The difference in choice between the PF and SF conditions is consistent with H2b. It suggests that in the PF condition priming the nonconscious goal affected choice by changing taste experiences in favor
of the diluted tea. Alternatively, a direct effect of nonconscious goal activation on preference without influencing taste experiences would have resulted in a similar choice pattern in the two conditions since nonconscious goal priming preceded participants’ final choice in both the PF and SF conditions.

Finally, in the CF condition where the conscious goal was provided at the very beginning of the experimental session, the nonconscious goal affected participants’ choice (52.5% preferred undiluted tea) such that their preference was more evenly distributed across the drinks than in the control condition ($\chi^2(1, N = 134) = 5.007, p < .05$), supporting H2c. The findings of a similar effect of the nonconscious goal in the PF and CF conditions ($p > .98$) rule out goal primacy as an alternative account for the effect of the nonconscious goal since the order of goal activation was reversed in these two conditions.

Reasons for Choice. All participants across conditions gave “taste” as the main reason for their choice. As in Experiment 1, individuals who chose the diluted tea in the PF and CF conditions gave responses consistent to their conscious goal of taste (e.g., “lighter taste,” “cleaner taste”) despite their nonconscious goal-seeking behavior. Once again, these reasons confirm that individuals were unaware of the operation of the nonconscious goal.

4.4 Discussion
Replicating the results of Experiment 1, we find that additionally activating a nonconscious goal can influence preference compared to when participants are given only a conscious goal. The effect occurred when both alternatives satisfied the nonconscious goal of health but differed with respect to their instrumentality in attaining the conscious goal of taste. This finding is consistent with our conceptual model which suggests that a similar strength of automatic positivity formed toward each alternative upon the priming of the nonconscious goal carried over to their taste assessments, and consequently led to a similar preference for both options.

In the PF condition, one might argue that the automatic positivity toward the undiluted option should have improved its perceived taste such that participants’ preference should have resembled the pattern in the control condition. In the PF condition, we argue that the undiluted option’s positive automatic evaluation did not produce an additive effect to its taste assessment if bottom-up signals suggested its taste to be already at a “ceiling level” of pleasure. Past research shows that for a stimulus which is already considered pleasant (e.g., pure sucrose solution), hedonic reactivity to its taste following food deprivation (i.e., activation of hunger) does not change from its baseline level, while for a less pleasurable stimulus (e.g., sucrose with more bitter components) taste is enhanced from its baseline following the same period of deprivation (Berridge 1991). Similarly, suppose that in the absence of the nonconscious goal, the undiluted (healthy) option’s taste is rated as an eight on a nine-point scale of taste pleasantness. When the nonconscious goal is activated and the option acquires a positive automatic evaluation, its perceived taste may still be rated as an eight as any higher would imply the equivalence to the participant’s most pleasurable taste experience, an extreme case of distortion. The baseline of the diluted (healthy) option, on the other hand, is supposedly much lower than that of the undiluted
(healthy) option. Thus, its perceived taste is subject to an enhancement following nonconscious goal activation.

The results of Experiment 2 rule out the alternatives accounts of post-choice justification and goal primacy. We find that when the nonconscious goal loses its opportunity to distort taste assessments by asking participants to sample the drinks first (SF condition), it no longer has an effect on choice. The difference in choice between the PF and SF conditions counters the explanation that the automatic evaluations from nonconscious goal priming may serve as a direct input for choice without changing taste perceptions. Otherwise, choice patterns in these two conditions would have been similar. Furthermore, if the effect of the nonconscious goal in the PF condition was simply because the goal was activated before the conscious goal, reversing the order of goal activation would have mitigated the effect. In the CF condition, where we reverse the order of goal activation compared to the PF condition, this was not the case. The nonconscious goal influenced choice, mimicking the results of the PF condition, and participants’ preference was different from the control condition. These results indicate that goal primacy is an unlikely explanation for the effect of the nonconscious goal.

Although the findings of this experiment are in line with the distortion-based mechanism proposed in our conceptual model, the supporting evidence was nonetheless indirect – taste distortion in favor of the diluted option was inferred from differences in choice across conditions. In the next two experiments, we ask participants to rate the taste of each option on a continuous scale. By comparing taste ratings of the diluted option in the absence versus the presence of nonconscious goal activation, we assess attribute distortion in a more direct manner.
Chapter 5 – Experiment 3

5.1 Overview

The purpose of Experiment 3 was to provide more evidence for the first stage of our conceptual model which implies that a more positive automatic evaluation toward the option that satisfies the nonconscious goal inflates perceptions of the option’s instrumentality (i.e., taste) in attaining the conscious goal. Given there has been strong support in the goal literature that shows individuals form positive automatic evaluations toward goal-relevant objects relative to goal-irrelevant objects (Ferguson 2008; Ferguson and Bargh 2004), we predict that when endowing positive automatic evaluations of varying strength to choice options the effects on taste perception should resemble those produced by the nonconscious goal.

Similar to Experiment 1, all participants are given a conscious goal to decide which of the two options is tastier, an undiluted but non-healthy iced tea and a diluted but healthy iced tea. Half of the participants are assigned to a condition where they are only given the conscious goal, while the remaining participants are given the conscious goal and additionally primed with a nonconscious goal of being healthy. In addition to the goal manipulation, choice options are induced with either a positive automatic evaluation or a less positive automatic evaluation through an evaluation conditioning task where one of the tea options (but not the other) is repeatedly paired with positive stimuli (Olson and Fazio 2002). In a baseline condition, both tea options are conditioned with neutral stimuli. Hence, along with the effects from nonconscious goal activation, we predict that differences in the relative positivity of choice options due to
evaluative conditioning will produce a similar distortion of conscious goal-related attribute information. Unlike the previous experiments where taste perceptions were inferred from choice, we assess the pleasantness of each option’s taste on a continuous measure. The difference in ratings between the undiluted tea and the diluted tea was used as a dependent measure of relative taste. The hypotheses are as follows.

**H3a:** In the baseline condition where choice options are neutrally conditioned, participants’ perceived taste difference between the undiluted and diluted teas will be different from zero when they are only given a conscious goal. When they are additionally primed with a nonconscious goal, the perceived taste difference between options is eliminated.

**H3b:** When the undiluted option is positively conditioned and the diluted option is neutrally conditioned, participants’ perceived taste difference between the two options will be different from zero when they are only given a conscious goal. When they are additionally primed with a nonconscious goal, the perceived taste difference between options is eliminated.

**H3c:** When the undiluted option is neutrally conditioned and the diluted option is positively conditioned, participants’ perceived taste for the teas is similar across the two goal conditions. The elimination in perceived taste difference when participants are only given a conscious goal indicates that inducing a positive automatic evaluation to the diluted option replicates the effect of the nonconscious goal.
5.2 Method

Pretests. Two fictitious brand names (i.e., Daker, Prole) and logos were selected for the purpose of the main experiment. Twenty-three participants from the same population as those in the main experiment reported the paired logos and brand names to be low in familiarity ($M_{\text{Daker}} = 3.48$ vs. $M_{\text{Prole}} = 3.63$; both means are lower than the midpoint, $p < .05$) when asked to rate each pairing on a two-item semantic differential scale (1 = unfamiliar/novel, 9 = familiar/old). In addition, they perceived the stimuli as being affectively neutral ($M_{\text{Daker}} = 4.80$ vs. $M_{\text{Prole}} = 4.77$; both means are not different from the midpoint, $p > .52$) when asked to rate each of them on a three-item semantic differential scale (1 = dislike/unfavorable/negative, 9 = like/favorable/positive).

In a separate pretest, 54 participants from the same subject pool as those in the main experiment participated in an evaluative conditioning task adapted from Olson and Fazio (2002). The purpose of this task was to intensify the automatic positivity of one choice option relative to the other. Participants were exposed to a randomized sequence of hypothetical brands, images, words, and non-words, presented either individually or in pairs, on a computer screen across five blocks. They were told that the experiment was about “attention and rapid responding” and were asked to identify a target brand by pressing the space bar each time it appeared on the computer screen. Each block consisted of 86 trials, each of which was 1.5 seconds in length. Within each block, 16 trials were blank screens and 10 trials contained the target brand which was different for each of the five blocks (e.g., Jante shampoo, Stade cameras, Broon toothpaste). The two tea brands were never used as the target brand. Systematically embedded in each block were eight critical trials where one of the tea brands was paired with positive images (e.g., sunset, puppies).
or words (e.g., family) while the other was paired with weakly negative images (e.g., fire, crying boy) or words (e.g., tumor). The images were selected from the International Affective Picture System. The valence of conditioning was counterbalanced for the two tea brands.

To ensure the conditioning task produced the desired effect, participants were then asked to complete an evaluative priming task (Fazio et al. 1986; Olson and Fazio 2002) where automatic evaluations toward the two tea brands were assessed. Participants were asked to identify the meaning of a series of target words as “positive” or “negative,” while unbeknownst to them each target word was preceded by a subliminal prime. Each trial began with a pre-mask consisting of a string of letters that appeared on the computer screen for 56 milliseconds, followed immediately by the prime – one of the two conditioned tea brands. The prime appeared for 28 milliseconds and was followed by the same letter string which served as a post-mask for 42 milliseconds. Ninety-eight milliseconds later, a target adjective appeared, to which participants responded by pressing a key labeled “good” if the word had a positive connotation, and a key labeled “bad” if the word had a negative connotation. Stimulus onset asynchrony was 224 milliseconds. The target word disappeared upon the participant’s pressing a key. Participants were instructed to respond as quickly and accurately as possible. They first completed a practice block of 16 trials with no primes. They then completed two blocks of 32 trials each. Within each block, the two tea brands were presented 16 times each, followed by one of 16 positively and 16 negatively valenced target adjectives. The presentation of all items was randomized for each participant.

\[5\] It is important to note that we did not pair any of the tea brands with extremely negative stimuli to prevent the formation of negative automatic evaluations, which could potentially detract from any effects of the nonconscious goal in the main experiment.
We analyzed the response times of participants who made five or less errors across the 64 critical trials (92.2% accuracy rate), leaving a total of 30 participants. Their response times were submitted to a 2 (conditioning: Daker-positive and Prole-neutral vs. Daker-neutral and Prole-positive) x 2 (prime: Daker vs. Prole) x 2 (target valence: positive vs. negative) ANOVA with the latter two factors as repeated measures. This analysis revealed a main effect of target valence ($F(1, 28) = 18.55, p < .001$), where positive targets were responded to more quickly than negative targets. More important was the emergence of the three-way interaction, $F(1, 28) = 5.00, p < .05$, indicating that response latencies to positive versus negative targets varied as a function of which prime had been presented and whether that tea brand had earlier been conditioned with positive or negative stimuli. Collapsing across the conditioning variable, a two-way interaction between prime and target valence was observed ($F(1, 29) = 5.06, p < .05$), which indicated that the conditioning was successful. The difference in response times between negative and positive target words was greater when targets followed the positively conditioned prime ($M = 69$ ms, $SD = 91$) than when they followed the more neutrally conditioned prime ($M = 37$ ms, $SD = 62$; $t(29) = 2.249, p < .05$) indicating that the positivity of the automatic evaluation for the former was stronger.

Finally, all participants were given a post-experimental questionnaire where no participant indicated awareness of the primes in the evaluative priming task or the true nature of any of the tasks completed. Additionally, a subset of participants ($N = 19$) was probed with regard to their awareness of the contingent pairings in the conditioning task. These individuals were given a covariation estimation task where each tea brand was paired with three different negative images, three different positive images, and three different neutral images. For each pair, they were asked to respond on a nine-point scale from -4 (I’m confident that the two items never
appeared together) to 0 (don’t know) to +4 (I’m confident that the two items appeared together at least once). Results of a 2 (prime: Daker vs. Prole) x 3 (target valence: positive vs. negative vs. neutral) repeated measures ANOVA revealed no significant effects ($F$s < 1). In other words, participants were no more confident that a given tea brand was paired with an image that matched the valence of the stimuli it was conditioned with than when it did not match the valence of the stimuli in the conditioning phase. This result indicates that they were not aware of the contingent relationships in the conditioning task.

Taken together, the findings from the pretests indicate that conditioning a choice option with positive stimuli produces a relatively more positive automatic evaluation compared to an option that is conditioned with weakly negative or more neutral stimuli. Moreover, evidence from the post-experimental inquiry and the covariation estimation task indicates that these evaluations were formed outside of participants’ awareness.

**Participants and Design.** Eighty-three participants from a large North American university participated in the experiment in exchange for either partial course credit or renumeration of 5 Canadian dollars. A 2 (nonconscious goal: no goal vs. health goal) x 3 (conditioning: diluted-positive and undiluted-neutral vs. diluted-neutral and undiluted-positive vs. diluted-neutral and undiluted-neutral) between-subjects design was employed. Participants were randomly assigned to one of the six conditions.

**Procedure.** Upon arrival, all participants completed an evaluative conditioning task under the guise of a experiment on “attention and rapid responding.” Participants who were assigned to the two conditions where one of the tea brands was positively conditioned (but not the other)
completed a conditioning task similar to the one used in the pretest. Meanwhile, participants who were in the baseline condition completed a conditioning task where both tea brands were paired with neutral images and words (e.g., pencil, mug).

After the conditioning phase, all participants completed a scrambled sentence task similar to the one used in the previous studies. Half of the participants were primed with a health goal whereas the remaining participants were exposed to health-irrelevant constructs instead. All participants then completed a short filler task which was followed by the final taste test. Similar to the previous studies, participants were presented with two iced teas samples, one of which was diluted while the other was undiluted. The diluted tea was labeled as “Daker” and was described as being instrumental to health (“nutritious iced tea packed with vitamins”). The undiluted tea was labeled as “Prole” and was accompanied with a slogan that contained no health-related cues (“iced tea that makes everyday smooth”). Depending on participants’ earlier conditioning assignment, Daker (diluted/healthy) had been positively conditioned, Prole (undiluted/non-healthy) had been positively conditioned, or neither tea brand had been positively conditioned (baseline condition). All participants were given the conscious goal to decide which one of the two teas tasted better and were asked to make their evaluations for each tea on a continuous scale (0 = tastes bad, 99 = tastes good). At the end of the experiment, they were debriefed and thanked.

5.3 Results

Perceived Taste. Participants’ taste ratings for Daker (diluted/healthy tea) and Prole (undiluted/non-healthy tea) were submitted to a 2 (option: diluted vs. undiluted) x 2 (nonconscious goal: no goal vs. health goal) x 3 (conditioning: diluted-positive and undiluted-
neutral vs. diluted-neutral and undiluted-positive vs. dilute-neutral and undiluted-neutral) mixed
ANOVA where the first factor was a repeated measure. First, a main effect of option occurred
which indicated that on average participants perceived the taste of the undiluted tea ($M = 71.8,
SD = 18.8$) to be better than that of the diluted tea ($M = 60.3, SD = 24.2; F(1, 77) = 19.182, p
< .001$). The interaction between option and goal priming was also significant, indicating that the
taste of the teas were affected by the activation of the nonconscious goal ($F(1, 77) = 10.142, p
< .05$). Perceived taste of the diluted tea became more positive when the nonconscious goal of
health was primed ($M = 65.1, SD = 23.6$) than when the health goal was not activated ($M = 55.3,
SD = 24.2; F(1, 77) = 4.007, p < .05$). Perceived taste of the undiluted tea, on the other hand, did
not differ as a consequence of the nonconscious health goal ($p > .91$). Finally, a three-way
interaction emerged suggesting that conditioning moderated the extent to which the
nonconscious goal affected the taste of the options ($F(2, 77) = 3.024, p = .05$).

**Relative Taste.** To better understand how nonconscious goal priming and conditioning
jointly affected the relative taste perceptions of the two teas, we analyzed the difference in
participants’ taste ratings between the undiluted and diluted teas. These difference scores were
submitted to an ANOVA where nonconscious goal priming and conditioning were predictors.
Results of the analysis revealed a main effect of nonconscious goal priming such that the
difference in perceived taste between the tea beverages was larger when the goal of being
healthy was not primed ($M = 19.8, SD = 23.9$) than when it was ($M = 3.4, SD = 25; F(1, 77) =
10.450, p < .005$). The interaction between goal priming and conditioning was also significant
($F(2, 77) = 3.024, p = .05$). As depicted in Table 1, when both teas were neutrally conditioned,
the taste difference perceived between the teas when the health goal was not activated ($M = 23,$
$SD = 29.9$) diminished upon priming the health goal ($M = -9.7$, $SD = 25.8$; $F(1, 24) = 8.967, p < .05$), supporting H3a. This pattern was similar when the undiluted (diluted) tea was positively (neutrally) conditioned. The perceived taste difference of the two options when participants were only given the conscious goal ($M = 25.9$, $SD = 16.7$) was eliminated following the priming of the health goal ($M = 8.9$, $SD = 23.8$; $F(1, 27) = 4.888, p < .05$), supporting H3b. When the diluted (undiluted) tea was positively (neutrally) conditioned, however, there was no perceived taste difference between the teas regardless of whether the nonconscious goal was primed or not ($p > .91$). In other words, positively conditioning the diluted tea produced a positive taste experience similar to when it was regarded as instrumental to a nonconscious health goal, supporting H3c.

5.4 Discussion

In this experiment, we find that positively conditioning the diluted option, allowing it to acquire a positive automatic evaluation, produces the distortion of conscious goal-related attribute information. This result replicates the effect of priming a nonconscious goal, providing additional support for our conceptual model which suggests that the automatic positivity of choice options (strong vs. weak) results in the distortion of their conscious goal instrumentality and subsequently affects participants’ choice behavior. When the undiluted option was positively
conditioned or when both options were neutrally conditioned, we observed an effect of the nonconscious goal such that the perceived taste difference between options was eliminated following the priming of the goal compared to when participants were only given a conscious goal and perceived the undiluted tea to taste better.

Similar to the results of Experiment 2, we find that positively conditioning the undiluted option or positively conditioning the diluted option when the nonconscious goal was also active did not increase the absolute taste ratings of the respective options. The absence of an additive effect of positive automatic evaluations on bottom-up taste signals suggests that the taste ratings of the options in these conditions were at positive ceiling levels.

Thus far, we have shown that a nonconscious goal can determine preference when choice options differ with respect to their instrumentality in attaining a conscious goal. We have further shown that a difference in automatic evaluations between choice options results in a distorted perception of the options’ conscious goal-related attribute. These findings however were obtained when the taste difference between the undiluted and diluted options was small. The difficulty of the choice task may have interfered with the effective operation of the conscious goal, enabling the nonconscious goal to bias participants’ taste assessments. If the superior taste of the undiluted option were to be made more salient by increasing the dilution level of the option it was paired with, thereby making the choice easier, we predict that the nonconscious goal may be less effective in distorting attribute information related to the conscious goal.
Chapter 6 – Experiment 4

6.1 Overview

In Experiment 4, we identify a boundary condition for the effect of the nonconscious goal on preference, i.e., task difficulty. Throughout the dissertation, we have assumed that nonconscious goal pursuit is based on automatic processes that operate more efficiently than the effortful processes that define conscious goal pursuit. Past research has suggested that when conscious processing is distracted by contextual constraints such as task difficulty, cognitive load, time pressure, or stress, decision making can be affected by alternative information accessible in memory. As an example, we have argued that conscious goal-based preferences can be influenced by automatic evaluations which are accessible due to an active nonconscious goal. The findings in the previous experiments have been limited to choice tasks where the options were of a just-noticeable-difference with respect to their conscious goal instrumentality. We predict that when the taste of the undiluted option is made more salient, the nonconscious goal will have a less pronounced effect on preference since the choice task becomes easier to participants. For half of the participants in this experiment, the salience of the undiluted option’s taste was made higher by increasing the dilution level of the option that it was paired with. Because of the increased taste difference between the two drinks, we predict that the choice task for these participants will be easier and subject to less bias from the nonconscious goal.

As in Experiment 3, we assess the pleasantness of each option’s taste on a continuous measure to directly capture attribute distortion. Additionally, we examine whether changes in perceived taste due to nonconscious goal activation predict participants’ overall preference for the two options.
To identify whether the nonconscious goal produces a global halo effect to its means, we further measured the pleasantness of each drink’s color and scent. A global halo effect would predict participants to favorably evaluate the goal-relevant means on all of its attributes. Alternatively, any positivity acquired from the nonconscious goal may only be used to favorably evaluate the option’s taste since it is an attribute that is relatively more accessible than other attributes due to the active conscious goal (for attribute-specific carryover effects, see Brendl et al. 2005). In this experiment, we hypothesize the following.

**H4a:** Participants’ overall preference will differ as a function of nonconscious goal priming and the salience of the undiluted option’s taste. When participants are only given a conscious goal, their overall preference for the undiluted tea is similarly high in both the low salience and high salience conditions. When participants are primed with the nonconscious goal, however, their overall preference for the undiluted tea drops significantly in the low salience condition but not in the high salience condition.

**H4b:** The difference in taste between the undiluted and diluted teas will differ as a function of nonconscious goal priming and the salience of the undiluted option’s taste. In the control condition, participants will perceive the taste of the undiluted option to be better than that of the diluted option. In the experimental condition, the taste difference between the options will be significantly reduced following nonconscious goal activation. This difference in relative taste between conditions will only occur when the undiluted option is low in salience (difficult choice) but not when it is high in salience (easy choice).
**H4c**: In the low salience condition, the relative taste between the undiluted and diluted options mediates the effect of the nonconscious goal on overall preference. Differences in color or scent, however, do not mediate the effect of the nonconscious goal on overall preference.

### 6.2 Method

**Pretest.** The salience of the undiluted tea’s taste was manipulated in this experiment by pairing the option with a diluted tea that was either moderately diluted (20% dilution) or heavily diluted (50% dilution) with water. We asked 23 participants from the same subject pool as those in the main experiment to participate in a taste test where they received the undiluted tea and one of the two versions of the diluted tea. The undiluted option was paired with a label that suggested it was health-instrumental, while the diluted option was paired with a label that contained no health-related cues. Participants were asked to sample the two options and choose the option that tasted better. Pertinent to the purpose of the pretest, they were then asked how difficult the choice task was on a nine-point scale (1 = not at all, 9 = very difficult). Participants who were given the undiluted tea with the moderately diluted tea perceived the choice task to be more difficult \( (M_{\text{Low salience}} = 6.09) \) than those who were given the same tea with the heavily diluted tea \( (M_{\text{High salience}} = 2.58; F(1, 21) = 13.027, p < .05) \).

**Participants and Design.** A 2 nonconscious goal priming (control: no goal priming vs. experimental: nonconscious goal priming) x 2 salience of the undiluted option’s taste (low salience: 20% diluted option pairing vs. high salience: 50% diluted option pairing) between-
subjects design was employed. Sixty-two undergraduate students at a large North American university were randomly assigned to one of the four conditions. All participants were remunerated for their participation with 5 Canadian dollars.

Procedure. The procedure was similar to Experiment 1. In addition to receiving a sample of the undiluted (non-healthy) drink, half of the participants received the moderately diluted (healthy) drink used in the pretest. The remaining participants received the heavily diluted (healthy), thereby making the superior taste of the undiluted option more salient and the choice task easier.

In the taste test, participants were given the conscious goal to decide which one of the two teas tasted better. They were asked to make their evaluations for each tea on a continuous scale (0 = tastes bad, 99 = tastes good). In addition, participants were asked to rate each tea with regard to its color and scent (0 = smells/looks bad, 99 = smells/looks good). The purpose of these attribute ratings was to identify whether the automatic positivity from a nonconscious goal creates a global halo effect that affects all attributes of a goal-relevant means or only its attribute related to the conscious goal (i.e., taste). At the end of the questionnaire, participants were asked to indicate their overall preference between the diluted and undiluted teas (1= definitely Tea 1 (diluted), 9 = definitely Tea 2 (undiluted)).

6.3 Results

Overall Preference. An ANOVA on participants’ overall preference for the two options was conducted with nonconscious goal priming and salience of the undiluted option’s taste as
factors. The main effects of priming and salience were both significant (ps < .05). More importantly, these effects were qualified by the interaction between the two factors \(F(1, 58) = 3.941, p = .05\). When participants were only given the conscious goal to decide which tea tasted better, preference in favor of the undiluted (non-healthy) tea was similarly high irrespective of the salience of the undiluted (non-healthy) tea’s taste \(M_{\text{Low salience}} = 6.93\) vs. \(M_{\text{High salience}} = 7.00\); \(F(1, 27) = .009, p > .92\). When the nonconscious goal of being healthy was additionally primed, however, preference in favor of the undiluted option dropped significantly in the low salience condition \(M_{\text{Low salience}} = 4.44\) but not in the high salience condition \(M_{\text{High salience}} = 6.76; F(1, 31) = 7.170, p < .05\). Supporting H4a, the nonconscious goal affected participants’ overall preference for the undiluted option when its taste was low in salience but not when it was high in salience.

Perceived Taste, Color, and Scent. In the low salience condition, we find that participants’ perceived taste of the diluted (healthy) tea is enhanced following nonconscious goal priming \(M_{\text{Control}} = 47.67\) vs. \(M_{\text{Experimental}} = 72.56; F(1, 29) = 10.535, p < .05\). The perceived taste of the undiluted (non-healthy) tea, however, did not change as a consequence of nonconscious goal priming \(M_{\text{Control}} = 75.07\) vs. \(M_{\text{Experimental}} = 64.50; F(1, 29) = 2.628, p > .12\). These findings support our argument that individuals form positive (vs. less positive or neutral) automatic evaluations toward an option which meets (vs. does not meet) a nonconscious goal and
subsequently use these evaluations to judge the option on its attribute related to the conscious goal (i.e., taste). In the high salience condition, the activation of the nonconscious goal did not affect the perceived taste of either drink as predicted ($ps > .21$). These results support H4b.

As for perceived color, we find that in the low salience condition more individuals perceive the color of the diluted (healthy) tea to be less pleasant as a consequence of nonconscious goal priming ($M_{Control} = 67.13$ vs. $M_{Experimental} = 54.06$; $F(1, 29) = 3.126, p = .088$). A similar pattern occurred with respect to the perceived scent of the diluted (healthy) tea ($M_{Control} = 71.00$ vs. $M_{Experimental} = 60.66$; $F(1, 29) = 3.978, p = .056$). Compared to taste, the opposite effect of the nonconscious goal on perceived color and scent can be explained by post-attainment goal inhibition (Fürster et al. 2007) – significant decreases in motivation to further pursue a goal following its fulfillment. Because the nonconscious goal of being healthy is likely to have been sufficiently satisfied after participants consumed the healthy tea, the desire to further pursue health and evaluate its means more positively would have been diminished following the sampling experience. Therefore, when evaluating the diluted tea’s color and scent, participants would have inhibited the health goal and evaluated the diluted tea more negatively on these

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6 Brendl et al. (2003) have shown that when a goal is active, goal-irrelevant options can be devalued compared to when the goal is not active. The absence of a devaluation effect in these results is not alarming as the evidence for valuation and devaluation effects in the goal literature is mixed (for a discussion, see Markman, Brendl, and Kim 2008).
attributes when the nonconscious goal was activated. The perceived color or scent of the undiluted tea, on the other hand, was unaffected by nonconscious goal priming ($ps > .18$). No differences in color or scent following nonconscious goal priming were found for either tea in the low salience condition.

**Mediation Analysis.** In the low salience condition, a series of regression analyses were conducted to see whether a reduction in taste difference between the undiluted and diluted teas mediated the effect of the nonconscious goal on participants’ overall preference. The taste difference between the undiluted and diluted teas was calculated by subtracting the taste rating of the diluted tea from the taste rating of the undiluted tea. Goal priming significantly reduced preference for the undiluted tea ($\beta = -.52; t(29) = -3.269, p < .001$). In addition, nonconscious goal priming significantly reduced perception of a taste difference ($\beta = -.66; t(29) = -4.712, p < .001$). The perceived taste difference between the teas predicted preference for the undiluted tea ($\beta = .82; t(28) = 7.747, p < .001$). When controlling for a taste difference between the two options, however, the effect of nonconscious goal priming on preference became nonsignificant ($\beta = .04; t(28) = .268, p = .79$). The Sobel test statistic indicated that the reduction of the effect of the nonconscious goal on preference was significant ($z = -3.68, p < .001$), supporting H4c.

Insert Figure 7 about here

6.4 **Discussion**
In Experiment 4, we find that the effect of the nonconscious goal occurs when there is only a just-noticeable-difference between choice options with respect to the conscious goal or when the option that satisfies the conscious goal is low in salience. When the superior taste of the undiluted tea was more salient, we find that the nonconscious goal did not affect the option’s perceived taste. In the low salience condition, however, the taste of the diluted option was perceived more favorably following nonconscious goal priming such that participants no longer perceived it to taste worse than the undiluted tea. The elimination of a taste difference between the undiluted and diluted drinks in this condition mediated the effect of the nonconscious goal on the overall preference for the two options.

An additional finding in Experiment 4 is the post-attainment inhibition of the nonconscious health goal. In the low salience condition, once health was attained by sampling the diluted (healthy) tea, participants no longer pursued the health goal and suppressed it as mirrored in their less favorable perceptions of the tea’s color and scent. In addition, these results suggest that the nonconscious goal did not produce a global halo effect toward its means. It only affected the diluted option’s taste, an attribute that was relatively more accessible due to the active conscious goal.
Chapter 7 – General Discussion

7.1 Summary of Findings

The current research shows that a nonconscious goal can determine preference when binary options put the goal in competition with a conscious goal. In Experiment 1, when participants were only given the conscious goal to choose the tastier drink, the majority preferred the alternative that contained the undiluted iced tea replicating results of a blind taste test. However, when a nonconscious goal of being healthy was additionally activated, preference for the diluted (healthy) alternative increased significantly.

In Experiment 2, both alternatives were equally instrumental in attaining the nonconscious goal of health but were different in terms of taste. We find an even split in choice when both conscious and nonconscious goals are active, but only when participants were primed with the nonconscious goal prior to examining the choice options (PF). When the nonconscious goal was activated after sampling the alternatives (SF) or when participants were only given a conscious goal (control), participants chose the option that was more instrumental to their conscious goal. These results are in line with our argument that priming the nonconscious goal can bias the perceived instrumentality of options in attaining the conscious goal. Furthermore, we find that when giving individuals the conscious goal first and priming them with the health goal later (CF) the reversed order of goal activation did not weaken the effect of the nonconscious goal, which eliminates goal primacy as an alternative account.

In Experiment 3, we establish that positive automatic evaluations indeed distort the perception of conscious goal instrumentality. When the diluted (undiluted) option was positively
(neutrally) conditioned, it eliminated the perceived taste difference between the undiluted and diluted options which mirrored the effect of the nonconscious goal.

In Experiment 4, the effect of the nonconscious goal was obtained only when the undiluted option was made less salient by pairing it with an option that was similar in its instrumentality to the conscious goal, thereby making the choice task difficult. When the taste of the undiluted option was more salient by pairing the option with a heavily diluted tea, the nonconscious goal no longer influenced preference.

In all four experiments, nonconscious goal pursuit occurred despite explicit emphasis of the conscious goal and tradeoffs between choice options. Participants who chose the suboptimal (diluted) alternative reflected no sign of sacrificing their conscious goal. Rather, they reported that their choice was based on taste which was consistent with their conscious goal (e.g., milder taste, smoother texture). These findings indicate that they were unaware of the process leading to their behavior. Throughout the experiments, we presented participants with the critical choice task after 5 minutes of priming the nonconscious goal. We argue that behavioral consequences following this delay are a result of goal priming since priming effects of semantic or perceptual constructs tend to decay following the same amount of time. The results of Experiment 4 further indicate that our priming effects were goal-based since participants exhibited post-attainment goal inhibition following the sampling of the diluted tea. By consuming the means to their nonconscious goal, they are likely to have attained the goal either partially or completely. As a result, the health goal would have been inhibited and the means to the goal (diluted option) would have no longer been perceived as more favorable. Consequently, participants rated the color and scent of the diluted option as less pleasant than those of the undiluted option.
7.2 Implications for Goal Research

Our findings that nonconscious goals can influence preference when alternatives *unequally* satisfy the conscious goal differ from prior research on multifinal choice which limits the role of nonconscious goals as decision tiebreakers. Furthermore, we establish a previously overlooked mechanism which can resolve goal competition in choice – i.e., the distortion of a choice option’s conscious goal-related attribute through the priming of a nonconscious goal.

As a consequence of their behavior, are individuals who chose the diluted tea worse off than those who did not? From the conscious goal standpoint, preferences in the absence of nonconscious goal activation suggest they are. However, sacrificing the expectancy of conscious goal attainment to pursue a nonconscious goal may not necessarily come at the cost of subjective utility. According to Kruglanski et al. (2002), the subjective utility derived from multiple goals put together may compensate for a potential loss of subjective utility from a lower expectancy of one’s current focal goal. Therefore, if an individual is capable of obtaining more utility from a less tasteful but healthy drink than from a tastier but health-neutral drink, the individual may well be satisfied with her final choice. Furthermore, as the results of Experiments 2, 3, and 4 indicate, if taste experiences changed due to the influence of the nonconscious goal such that individuals actually perceived the diluted tea to be of similar taste to that of the undiluted tea, their behavior can still be interpreted as an attempt of seeking multifinality since individuals supposedly attained their conscious goal while additionally gratifying their nonconscious goal.

To recapitulate an important point made earlier, the conscious and nonconscious goals in our research were put in opposition by alternatives that favored one goal over the other, but the goals themselves were not viewed as conflicting as is often the case in self-control domains (e.g.,
diet vs. indulge). When goals are conflicting, we predict that a nonconscious goal will not be as effective, if at all, at distorting perceptions of means instrumentality in attaining a conscious goal. This is because a means will no longer be able to accommodate the attainment of both a nonconscious goal and a conscious goal due to their conflicting nature. Instead, it is likely that one of the goals will automatically inhibit (or shield) as opposed to distort the other (e.g., Fishbach et al. 2003).

7.3 Implications for Marketers

The findings of this research can be generalized to more real-life scenarios where consumers intentionally focus on the performance of a product but nevertheless purchase products that are in fact unsatisfactory along that dimension. Brands may have the power to elicit various nonconscious goals (e.g., Fitzsimons, Chartrand, and Fitzsimons 2008) despite the fact that many of them tend to show little difference from unbranded products in terms of quality. Thus, for firms that are second-movers or underdogs whose products lack instrumentality in serving focal dimensions defined by first-movers or category leaders (e.g., Listerine – killing germs), their product or brand positioning strategies might benefit from marketing attributes that are desired to consumers but not deliberately sought after in the product category (e.g., Scope – good taste).

7.4 Limitations and Directions for Future Research

In our findings, the effect of the nonconscious goal on preference occurred only when
there was a relatively small difference between choice options with respect to the conscious goal, making the choice task difficult. Other contextual constraints that distract conscious processing may result in a similar effect of the nonconscious goal. For example, when individuals are put under cognitive load, conscious goal processing may be hindered and preferences may be more influenced by nonconscious goals that are active in the environment. Thus, exploring other contexts where nonconscious goals might exert greater influence than conscious goals may provide a better understanding of the underlying processes of these goals.

While the goals examined in this dissertation are behavioral goals, one might argue that our findings can be explained by information processing goals. For example, participants who were only given the conscious goal may have pursued a goal of accuracy maximization. On the other hand, those who were additionally primed with the nonconscious goal acted as if they were pursuing a satisficing strategy. While it is possible that participants’ idiosyncratic information processing goals were active during decision making, it is difficult to understand at an aggregate level why one type of goal would have been elicited in one condition and not the other. Furthermore, while effort minimization or satisficing may predict participants’ choices and overall preference judgments when the nonconscious goal was primed, neither of these goals in our opinion can systematically predict the enhancement of the diluted (healthy) option’s taste over a reduction in perceived taste of the undiluted (non-healthy) option.

Finally, a limitation of the present research is the lack of investigation for different types of goals. Future research warrants generalizing the effect of nonconscious goals using various types of consumption goals and products.

7.5 Conclusion
Despite a considerable amount of research that demonstrates nonconscious goals guide consumer attention and behavior, none have so far indicated whether these effects will sustain in contexts where nonconscious goals are confronted with competing conscious goals. The present research demonstrates that they can. While most consumers strive to be rational decision makers in their daily lives, our findings indicate that they may in fact contradict their behavior, had they not been primed by environmental cues, to pursue a nonconscious goal. In the present research, we aimed to provide a better understanding of the interaction of conscious and nonconscious goals. As it is an early attempt, we hope that future research will be able to shed more light on the interplay of these goals.
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FIGURE 1.
CONCEPTUAL MODEL

STAGE 1
Formation of Positive Automatic Evaluations

↓

STAGE 2
Distortion of Conscious Goal Instrumentality (i.e., taste)

↓

Conscious Goal-Based Preference

Nonconscious Goal Activation (being healthy)

→

Diluted (Healthy) Option (strong)

vs.

Undiluted (Non-Healthy) Option (weak)

→

Distortion in favor of Diluted Option

Difficult (low salience)

Task Difficulty (salience of undiluted option's taste)

Easy (high salience)

→

No (or little) Distortion

→

Diluted ≥ Undiluted

↓

Diluted < Undiluted
FIGURE 2.
PERCENTAGE OF CHOICE FAVORING UNDILUTED (NON-HEALTHY) OPTION
(EXPERIMENT 1)

Note. Error bars represent standard errors.
FIGURE 3.
PROCEDURES FOR EACH CONDITION IN Experiment 2

Control  Priming First (PF)  Sampling First (SF)  Conscious Goal First (CF)

- Priming (no goal)
  - Conscious goal
    - Sampling
      - Choice
  - Priming (health)
    - Conscious goal
    - Sampling
      - Choice
- Priming (health)
  - Conscious goal
  - Sampling
    - Choice
- Priming (health)
  - Conscious goal
    - Sampling
      - Choice
FIGURE 4.
PERCENTAGE OF CHOICE FAVORING UNDILUTED (HEALTHY) OPTION
(EXPERIMENT 2)

Note. Error bars represent standard errors.
FIGURE 5.
OVERALL PREFERENCE FOR UNDILUTED (NON-HEALTHY) OPTION
(EXPERIMENT 4)

Note. Higher number indicates relative preference for undiluted option (1 = Tea 1 (diluted), 9 = Tea 2 (undiluted)). Error bars represent standard errors.
FIGURE 6.
PERCEIVED TASTE IN LOW SALIENCE CONDITION (EXPERIMENT 4)

Note. Higher number indicates pleasant taste (0 = tastes bad, 99 = tastes good). Error bars represent standard errors.
FIGURE 7.

MEDIATION ANALYSIS WITHIN LOW SALIENCE CONDITION (EXPERIMENT 4)

Note. Numbers not in parentheses are standardized betas. Numbers in parentheses are zero-order standardized betas. *p < .001
**TABLE 1.**
PERCEIVED TASTE AS A FUNCTION OF NONCONSCIOUS GOAL PRIMING AND EVALUATIVE CONDITIONING (EXPERIMENT 3)

<table>
<thead>
<tr>
<th></th>
<th>No Goal Priming</th>
<th>Health Goal Priming</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M_{Undiluted}$</td>
<td>$M_{Diluted}$</td>
</tr>
<tr>
<td>Baseline (both neutral)</td>
<td>71 (20)</td>
<td>48 (29)</td>
</tr>
<tr>
<td>Undiluted (positive) Diluted (neutral)</td>
<td>78 (16)</td>
<td>52 (18)</td>
</tr>
<tr>
<td>Undiluted (neutral) Diluted (positive)</td>
<td>77 (12)</td>
<td>66 (23)</td>
</tr>
</tbody>
</table>

Note. Numbers in parentheses represent standard deviations. * denotes significant difference from zero at the .05 level.
APPENDIX A.

SRAMMBLED SENTENCE TASKS (CONTROL WORDS IN PARANTHESES)

Below is a set of items each of which contain five scrambled words. For each item, your task is to create a grammatically correct sentence using FOUR of the five words in the space provided.

Example: by an train flew eagle → An eagle flew by.

1. healthy (short) the is cloudy boy
2. is house physique (intellect) his different
3. home strong (dome) he played at
4. to longevity (turtle) walk she wants
5. reported balanced (purple) the chair was
6. please comments glass your (strengthen) write
7. her stacked advantageous (annually) books up
8. class recover (chair) has she today
9. cooking nutrition (houses) his is hobby
10. tomorrow let’s natural (yesterday) go hiking
11. finally how the scar healed (faded)
12. take everyday almost (exercise) bathe I
13. still often he sound (listen) sits
14. gradually field organic (shrink) the grew
15. the sun us vital (large) is
Please solve the problems below in the space provided. Please stop working on them at the experimenter’s request.

1. 356__ is a four-digit number that is a multiple of 4 and a multiple of 3. Find the last digit of this number.

2. Divide this number by 65 and you will get 4 as a quotient and 5 as a remainder. Find this number.

3. When dividing this two-digit natural number by 3, 4, or 5, you will always have 2 as a remainder. Find this number.
APPENDIX C.

TASTE TEST QUESTIONNAIRE (EXPERIMENT 1)

The purpose of this taste test is to collect consumer opinions regarding the taste of two new products XX Company is currently developing. The following labels are given at your convenience to identify the two drinks you are about to taste. Please sample the drinks in any order you wish. **We ask you to choose the one that tastes better below.**

1. Which drink do you think tastes better? (circle one)
   
   (1) Nutratea  
   (2) Dailytea
2. Please explain in detail the reasons for your choice.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

3. How often do you drink iced tea? (circle number)

<table>
<thead>
<tr>
<th>Almost never</th>
<th>Very often</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
</tbody>
</table>

4. When purchasing beverages, how important to you are each of the factors below?

<table>
<thead>
<tr>
<th>Not at all important</th>
<th>Very important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brand</td>
<td>1 2 3 4 5 6 7 8 9</td>
</tr>
<tr>
<td>Taste</td>
<td>1 2 3 4 5 6 7 8 9</td>
</tr>
<tr>
<td>Package</td>
<td>1 2 3 4 5 6 7 8 9</td>
</tr>
<tr>
<td>Health</td>
<td>1 2 3 4 5 6 7 8 9</td>
</tr>
<tr>
<td>Manufacturer</td>
<td>1 2 3 4 5 6 7 8 9</td>
</tr>
</tbody>
</table>

5. The following items are for demographic categorization.

- Gender (circle one): (1) male  (2) female
- Age: ________ years old

THANK YOU!
APPENDIX D.

SCREENSHOTS OF EVALUATIVE CONDITIONING TASK (EXPERIMENT 3)
APPENDIX E.

TARGETS USED IN EVALUATIVE PRIMING TASK (EXPERIMENT 3)

<table>
<thead>
<tr>
<th>Positive Adjectives</th>
<th>Negative Adjectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Excellent</td>
<td>1. Annoying</td>
</tr>
<tr>
<td>2. Favorable</td>
<td>2. Horrible</td>
</tr>
<tr>
<td>3. Lovable</td>
<td>3. Repulsive</td>
</tr>
<tr>
<td>4. Charming</td>
<td>4. Disgusting</td>
</tr>
<tr>
<td>5. Fabulous</td>
<td>5. Lousy</td>
</tr>
<tr>
<td>6. Appealing</td>
<td>6. Irritating</td>
</tr>
<tr>
<td>7. Magnificent</td>
<td>7. Gruesome</td>
</tr>
<tr>
<td>8. Beneficial</td>
<td>8. Awful</td>
</tr>
<tr>
<td>10. Attractive</td>
<td>10. Inferior</td>
</tr>
<tr>
<td>11. Desirable</td>
<td>11. Nasty</td>
</tr>
<tr>
<td>12. Fantastic</td>
<td>12. Stupid</td>
</tr>
<tr>
<td>14. Likeable</td>
<td>14. Tragic</td>
</tr>
<tr>
<td>15. Outstanding</td>
<td>15. Worthless</td>
</tr>
</tbody>
</table>