THE INFLUENCE OF PAST BEHAVIOR ON FUTURE BEHAVIOR:
A MIND-SET PERSPECTIVE

BY

JING XU

DISsertATION

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Doctoral Committee:

Professor Robert S. Wyer, Jr., Chair & Director of Research
Associate Professor Rashmi Adaval
Professor Dolores Albarracín
Professor Sharon Shavitt
Professor Norbert Schwarz, University of Michigan
ABSTRACT

A behavioral mind-set refers to the effect of performing a behavior in one situation (e.g., deciding which animals jump higher, dolphins or sea lions) on the likelihood of performing a conceptually similar behavior in subsequent, unrelated situations (e.g., deciding which of two candies to purchase). It reflects the activation and persistence of procedural knowledge. My dissertation circumscribes the construct of a behavioral mind-set and proposes a theoretical framework describing how mind-sets operate as well as their cognitive and motivational determinants. Three sets of studies investigated the role of mind-sets in different domains.

The first set of studies explored the influence of making comparative judgments on subsequent decision making. Specifically, I found that making comparative judgment in one situation activates a *which-to-buy* mind-set that increases the willingness to decide which of two products to purchase in a later situation without considering the option of not buying anything at all. This mind-set can be activated not only by stating preferences for one of two products but also by comparing the relative attractiveness of wild animals, comparing the animals with respect to physical attributes, and estimating how similar one object is to another. Furthermore, the mind-set, once activated, influences not only purchase intentions in hypothetical situations but the actual decisions to purchase one of different types of products that are on sale after the experiment.

The second set of studies investigated whether generating supportive elaborations or counterarguments in one situation will influence people’s tendency to engage in similar behavior in a subsequent, unrelated situation. I found that making supportive elaborations in one situation gives rise to a *bolstering* mind-set that, once activated,
increases participants’ disposition to generate supportive thoughts in response to persuasive communications that they receive later and, therefore, increases the effectiveness of persuasion. Correspondingly, generating opposing arguments in an initial situation activates a *counterarguing* mind-set that increases the tendency to argue against the persuasive communications and decreases its effectiveness. However, a counterarguing mind-set may increase the effectiveness of persuasion if the messages are difficult to be refuted.

The third set of studies distinguished between the influence of motivation on consumer behavior and the influence of a mind-set that is activated by this motivation. Specifically, I found that appetitive motivation, which naturally increases people’s tendency to acquire food products, can give rise to a cognition-based *acquisition* mind-set that increases people’s disposition to acquire non-food products as well. This acquisition mind-set may persist even when the appetitive motivation that gave rise to it is satiated by eating. Moreover, the disposition to acquire non-food products is not mediated by the products’ attractiveness. The studies suggest that motivation and mind-sets may independently influence consumers’ evaluation of a product and their dispositions to acquire it. Motivation is more likely to influence product evaluations whereas a mind-set is more likely to influence consumers’ acquisition dispositions.

In summary, a behavioral mind-set can be activated in the process of performing a behavior. And the mind-set may influence people’s subsequent behaviors in unrelated situations in which the activated procedure is applicable. Moreover, motivation to engage in one behavior could also elicit a cognition-based mind-set, which may change people’s subsequent behaviors.
To Father, Mother, and Xuefeng
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Consumer judgments and decisions are influenced by numerous factors that exist at the time that judgments or decisions are made. Some factors (e.g., characteristics of the alternative options, consumers’ motivation and ability to make process information, etc.) are relevant to the judgment and decision task per se, whereas others (e.g., weather conditions, the presence of others, etc.) are irrelevant. Research on the influence of these factors (e.g., Tversky & Shafir, 1992; Ariely & Levav, 2000) has assumed that consumers approach each judgment or decision task with a fresh mind that has not been “contaminated” by the previous activities in which they have they engaged.

More recently, however, research has investigated how past behavior can influence future behavior. For example, product preferences that have been formed at one time may persist and influence consumer choices in the future (Muthukrishnan & Kardes, 2001; Muthukrishnan & Wathieu, 2007). Moreover, habits may emerge if people engage in a behavior repeatedly in a particular context in order to achieve a goal (Wood & Neal, 2007). Once a habit is formed, the presence of contextual features in a later situation can trigger the behavior without activating thoughts about the goal to which it is relevant. Thus, for example, people who intentionally buckle their seatbelt to keep safe when they get into a car may form a habit of doing so. Once this occurs, they will engage in the behavior whenever they get into a car without thinking about the goal of keeping safe.

In addition, the past behavior that people engage in may change their beliefs and attitudes about the behavior (Albarracin & Wyer, 2000; Bem, 1972), and further increase
their intentions to perform the same behavior in the future. For example, research on the foot-in-the-door effect suggests that compliance with a small request makes people perceive that they are generally helpful persons who would like to help others. As a result, they comply with a bigger request later (Freedman & Fraser, 1966).

However, not all effects of past behavior can be explained by the above formulations. For example, stimulating consumers to purchase a pen increased their disposition to purchase a keychain (Dhar, Huber, & Khan, 2007). In my own research, I have found that comparing the physical attributes of animals (which animals are heavier, elephants or hippos?) increased participants’ decisions to purchase chocolate candies and other products that were on sale upon completion of the study. In addition, generating arguments against propositions such as “University of Illinois should increase tuition fees in the next academic year” decreased participants’ susceptibility to ad promotions about vacation spots. These observations suggest that consumers’ behavior at one point of time could be influenced by their past behavior even though the two behaviors are directed toward different goals.

To account for these and other phenomena, I invoke the construct of a behavioral mind-set. In this dissertation, a behavioral mind-set is defined as the effect of performing a behavior in one situation on the likelihood of performing a conceptually similar behavior in subsequent, unrelated situation. It reflects the activation and persistence of procedural knowledge. This conception is narrower than that proposed by others. For example, Keinan (2007) used the term mind-set to describe a motivation to collect unique experiences that will make people’s life a productive one. Oyserman, Sorensen, Reber, & Chen (2009) operationalized mind-sets as cognitive schemas including content,
procedures, and goals. In contrast, I focus on the influence *behavioral* mind-sets which are activated in the process of performing a behavior. Three sets of studies demonstrated the role of mind-sets in the generalizeability of behavior across different domains and goals. Each set of studies was conducted in a different area and provided evidence of the processes that govern how mind-sets operate.

In Chapter 2, I propose a theoretical framework for explicating the operation of mind-sets. The next three chapters describe the empirical studies that I have already conducted to examine the role of mind-sets. Chapter 3 explores the influence of making comparative judgments on subsequent decision making. In this research, I found that making comparative judgment in one situation activates a *which-to-buy* mind-set that increases the willingness to choose which of two products to purchase in a later situation without considering the option of not buying anything at all. This mind-set is activated not only by stating preferences for one of two products but also by comparing the relative attractiveness of wild animals, comparing the animals with respect to physical attributes, and estimating how similar one object is to another. Furthermore, the mind-set, once activated, influences not only purchase intentions in hypothetical situations but also the actual decisions to purchase chocolate candies or other products that are on sale after the experiment.

In Chapter 4, I investigated the impact of past cognitive behavior (either counterarguing or generating supportive elaborations of an attitude-related proposition) on the tendency to engage in similar behavior in a subsequent, unrelated situation. I found that making supportive elaborations in one situation can give rise to a *bolstering* mind-set that, once activated, increases people’s disposition to generate supportive thoughts in
response to persuasive communications (e.g., advertisements) that they receive later and, therefore, increases the effectiveness of these appeals. By the same token, generating opposing arguments in an initial situation can activate a counterarguing mind-set that increases the tendency to argue against the validity of a persuasive message, and therefore, decreases the effectiveness of persuasion. However, when the subsequent persuasive message is too difficult to refute, a counterarguing mind-set can produce a rebound effect, increasing the effectiveness of persuasion. A final study found that watching different TV programs, such as speeches or debates, can activate mind-sets that influence people’s responses to subsequent persuasion in a different domain.

Finally, in Chapter 5, I distinguish between the influence of motivation on consumer behavior and the influence of a mind-set that is activated by this motivation. Specifically, I found that appetitive motivation, which naturally increases people’s tendency to acquire food products, can give rise to a cognition-based acquisition mind-set that increases people’s disposition to acquire non-food products as well. This acquisition mind-set may persist even when the appetitive motivation that gave rise to it is satiated by eating. Moreover, the disposition to acquire non-food products is not mediated by the products’ attractiveness. These studies suggest that motivation and mind-sets can independently influence consumers’ evaluation of a product and their disposition to acquire it. Motivation is more likely to influence product evaluations whereas a mind-set is more likely to influence consumers’ acquisition dispositions.
CHAPTER TWO
THE CONSTRUCT OF MIND-SET

In this chapter, I propose a theoretical framework that specifies the characteristics of mind-sets and their consequent effects. Previous research on these effects is then reviewed. Assumptions that are made by the framework but have not been tested in literature are tested in the empirical studies to be reported in subsequent chapters. Finally, I discuss alternative formulations of the influence of past behavior on future behavior and distinguish the phenomena that are explained by these alternative formulations from the phenomena that are explained by mind-sets.

DEFINITIONS AND THEORETICAL CONSTRUCTS

The focus of my concern in this thesis is with behavioral mindsets. As such, my conceptualization of a mind-set is narrower than that proposed by others (Keinen, 2007; Oyserman et al., 2009). That is, a behavioral mind-set refers to the effect of performing a cognitive behavior in one situation (e.g., comparing which animals jump higher, dolphins or sea lions) on the likelihood of performing a conceptually similar cognitive behavior in subsequent, unrelated situations (e.g., comparing which chocolate candies are more attractive, M&Ms or Hershey’s kisses). To understand the processes by which a mind-set operates, it is necessary to distinguish between two types of knowledge—declarative knowledge and procedural knowledge.
Declarative Knowledge versus Procedural Knowledge

Smith (1994) conceptualizes declarative knowledge as the content of cognition: the information that we acquire, process, store in memory, and use in judgment (e.g., semantic concepts about persons, objects, events, beliefs and attitudes). Procedural knowledge comprises the processes that act on declarative knowledge: the sequences of actions that we perform to pursue a particular goal. The declarative-procedural distinction is analogous to the distinction between the data and program in a computer.

Successful goal-directed activity requires the application of both declarative knowledge and procedural knowledge. To cook a dish, for example, we not only need to know the raw materials, ingredients, and cookware that are needed to cook the dish, but also need to know how to use them. The distinction between declarative knowledge and procedure knowledge is important for understanding the difference between mind-set effects and many other effects of semantic priming on behavior.

Procedural knowledge could exist in a different format. As Smith (1994) suggested, one central property of procedural knowledge is that it changes with use, becoming increasingly effortless and automatic. Thus, procedural knowledge could be thought of as existing on a continuum. On one end of the continuum, it exists as strategies that could be written down, just like computer program syntax or a cooking recipe. With practice, procedures may become more and more automated. Thus, at the other end of the continuum, they are completely automatic, occurring with little if any cognitive mediation (Schneider & Shiffrin, 1977).
The knowledge that underlies a mind-set lies near the first end of the continuum. Thus, its accessibility is governed by rules similar to those that govern the accessibility of declarative knowledge. In contrast, procedural knowledge at the other end of the continuum is best characterized in terms of productions of the sort suggested by Anderson (1983). The implications of productions and how they different from implications of mind-set effects are discussed at the end of this chapter.

Structure of Goals and Means

Procedural knowledge refers to the sequences of actions that we perform in order to achieve a goal. For example, the goal of getting a cup of coffee may be associated with the procedures of first grinding coffee beans and then putting them into a filter in a coffee machine.

Goals exist as cognitive representations in memory (Kruglanski, 1996). As such, they not only contain information about the desired end state but also include the means of reaching that state (for a review, see Fishbach & Ferguson, 2007). Because goals vary in abstractness, the means of attaining them can also differ in abstractness. For example, the higher order (abstract) end state of happiness may be associated with the means such as “keeping healthy” and “having high career achievement”. In turn, “keeping healthy” per se is an end state what could be achieved by more specific means such as “exercising three times a week”, “eating healthy food”, “going to sleep on time”, etc. Again, “exercising three times a week” could be a subgoal that can be achieve by running, playing badminton, swimming, etc. It is apparent that in such a hierarchical organization,
the terms “end state” and “means” are meaningful only in relation to one another (Fishbach & Ferguson, 2007). In the present discussion, I will refer to a lower-order end state as a means by which a higher-order end state is consciously pursued.

Basic Assumptions

Two complications arise in conceptualizing the hierarchy of goals and means, which are recognized by Kruglanski et al. (2002) in their definitions of equifinality and multifinality. *Equifinality* refers to the structure that several alternative means may be used to attain the same goal. The goal of quenching one’s thirst, for example, might be attained by making coffee, and the series of steps involved might include grinding the coffee beans, putting them into coffee machine, turning on the machine, etc. However, the goal might also be attained by buying a beer, which requires a different series of actions. Alternatively, the goal of comparing two choice alternatives could be attained by either (a) computing an overall evaluation of each and comparing these evaluations or (b) determining the number of dimensions on which one alternative is superior to the other.

*Multifinality* describes the situation in which a subgoal concept can be a component of more than one sequence, each of which is relevant to a different goal. A comparison of alternatives, for example, is involved in both deciding which of two persons to invite for dinner and deciding which of two products to buy.

Understanding how a minds-set operates requires a consideration of both equifinality and multifinality. First, when there are several means of achieving a goal, the one that is used may depend on its accessibility. If one means comes to mind more
quickly than others when a goal is activated, it is more likely to be used. To comprehend
the sentence “A tiger is reading a book in the classroom,” for example, people might
either encode the sentence verbally (i.e., verbal information processing) or form a mental
image (visual information processing). Activating an information processing strategy in
one situation could increase the likelihood of applying this strategy in a later situation and
correspondingly decrease the likelihood of applying alternative strategies.

Second, when a particular means can be used to achieve several different goals,
activating the means in the course of pursuing one goal might increase its accessibility in
memory and this, in turn, might increase the likelihood of using it to pursue a different
goal to which it is applicable. In a study by Kühnen, Hannover, & Schubert (2001), for
example, stimulating individuals to identify differences between themselves and their
friends or family members activated a general process of distinguishing entities from
their context. As a result, performing this task increased participants’ ability to figures
that were embedded in a more complicated picture.

The aforementioned assumptions are fundamental to a theoretical account of the
effects of a mind-set. The first assumption explains why activating a mind-set in a
situation can override a processing strategy that might otherwise be applied and, therefore,
might influence judgments and decisions in this situation. The second assumption
suggests that activating a procedure in one situation can influence the likelihood of
applying it in a subsequent, totally unrelated situation and can influence judgments and
decisions in the latter situation.

For the effects of a mind-set to influence judgments and decisions across different
situations, the procedures that are applied in one situation must exemplify general
procedures at a more abstract level. Answering questions such as “Which animals are heavier, elephants or hippos?” for example, exemplifies a more general procedure of making comparative judgments. Deciding which of two products to purchase also exemplifies this general procedure. Consequently, comparing animals with respect to physical attributes may activate the procedure of making comparative judgment at general level, and these general procedures, once accessible in memory, may increase the likelihood of activating and applying other exemplars (deciding which of two products to buy) in a later situation. In this regard, individuals’ application of a particular information processing strategy in pursuing a goal can be conscious. However, they may not be aware of why they employ one strategy rather than others that are equally applicable.

Comparing Mind-set Effects to Knowledge Accessibility Effects in General

A mind-set reflects the activation and persistence of procedural knowledge. The effect of a mind-set is a manifestation of the effect of knowledge accessibility in general (Higgins, 1996; Förster & Liberman, 2007; Wyer, 2008). For example, a concept or unit of knowledge is generally more accessible, and thus comes to mind more easily, if it has been used either frequently or recently in the past (Higgins, Bargh, & Lombardi, 1985; Srull & Wyer, 1979). These factors play a role in the activation of a mind-set in particular. However, the effects of a mind-set may have several unique aspects.

First, mind-set effects reflect the activation of cognitive procedures. Procedural knowledge is more complex than semantic concepts, the effects of which have been extensively explored in knowledge accessibility research.
Active versus passive knowledge activation. Cognitive procedures are typically activated in the process of intentionally engaging in goal-directed behavior. In this regard, research on knowledge accessibility has typically treated participants as passive recipients of semantic priming. For example, exposure to trait-related constructs increased the likelihood that these constructs are used to interpret subsequent ambiguous behavior (Higgins, Rholes, & Jones, 1997). Moreover, unobtrusively exposing people to concepts associated with the elderly can influence their behavior in ways that exemplify these concepts (Bargh, Chen, & Burrows, 1996). In fact, subliminal exposure to concepts can have similar effects (Bargh, 1997; Bargh et al., 1996). Moreover, exposure to these constructs subliminally could produce similar effects. In these studies, semantic knowledge is activated through passive exposure to this knowledge. In contrast, mind-sets result from actively performing a cognitive or motor behavior at the priming stage. The procedures associated with this behavior are activated by applying them in a previous situation. If participants do not actively perform a behavior, a mind-set may not emerge.

Mind-sets versus automatic behavior. The effect of mind-set should also be distinguished from habitualized cognitive behavior. This behavior is often captured by “productions” of the sort suggested by Anderson (1982, 1983). Productions describe automated procedures that are applied in the pursuit of very concrete goals. They metaphorically have the form of “If [X], then [Y]” rules, where [X] is a configuration of perceptual or cognitive stimulus features and [Y] is a sequence of cognitive or motor acts that are elicited automatically when the eliciting conditions are met. Productions may govern behavior at very concrete levels (e.g., stepping on the brake when seeing a red light). After they are formed, they can be activated and applied with little if any cognitive
mediation (Schneider & Shiffrin, 1977; Smith, 1990; Wyer, 2004). Research that distinguishes the influence of productions and the influence of mind-set effects is elaborated later in this chapter.

Mind-sets and ease of processing. Using one processing strategy in a situation may have two potential consequences on subsequent applications of a similar processing strategy. First, using a particular strategy in one situation could increase the accessibility of this strategy, and thus increase the likelihood that this or a similar processing strategy will be used in subsequent situations. Second, using a particular strategy in one situation could increase the fluency of applying the strategy. Therefore, people may use this or a similar strategy more efficiently in the subsequent situation. The studies reported in this dissertation explored the first possibility.

PREVIOUS RESEARCH ON MIND-SET PHENOMENA

The effects of mind-sets have been investigated since the early 1900s (Rees & Israel, 1935; Luchins, 1942). The earliest research explored the impact of mind-set under the general framework of understanding behavioral rigidity. More recent research has provided evidence of the influence of past behavior on future behavior but has been interpreted in different ways. The present conceptualization of a behavioral mind-set provides a framework for integrating this research and for calling attention to new phenomena that have not yet been investigated.
Einstellung Water Jar Task

In Luchins’ early studies on behavioral rigidity, participants were given water jars with different capacities and asked to measure a given volume of water (for example, to measure 100 units of water using jars A, B and C with capacities 21, 127 and 3 units, respectively). This and other problems could be solved using the rule B-A-2C. After applying this strategy several times, participants developed a mental set to apply it other problems (e.g., measuring 22 units of water given jars with capacities, 18, 48 and 4) even though the later problems could be solved using a much simpler rule (e.g., A + C). Thus, applying one strategy in solving a problem increased the likelihood of applying it to subsequent problems and simultaneously decreased the likelihood of identifying alternative strategies.

Deliberative versus Implemental Mind-set

More recent interest in mind-set phenomena has been stimulated by the conceptualization of deliberative versus implemental mind-sets proposed by Gollwitzer and his colleagues (Gollwitzer & Bayer, 1999; Gollwitzer, Heckhausen, & Steller, 1990). They suggested that a decision to pursue a particular goal requires an evaluation of its pros and cons and, therefore, induces a deliberative mind-set. In contrast, considering the sequence of actions that are necessary to attain a chosen goal can activate an implemental mind-set. Once activated, these mind-sets persist to influence reactions to subsequent activities even though the latter activities are totally irrelevant to the prior situation that
gave rise to them.

In a study by Gollwitzer et al. (1990), for example, participants were asked either to deliberate on unresolved personal problems (i.e., whether to find a summer internship) or to make plans for how to implement a chosen goal (i.e., how to find a summer internship). Then, in an ostensibly unrelated, task, participants were presented with the first few lines of several fairy tales and instructed to complete each tale. Even though participants were instructed to continue the stories in any way they liked, participants who had developed a deliberative mind-set generated more reasons for choosing or not choosing to pursue a particular goal. In contrast, participants who developed an implemental mind-set placed more emphasis on how to accomplish a chosen goal.

In another study, Gollwitzer et al. manipulated either a deliberative or an implemental mind-set and then exposed participants to the thoughts of a person who was reflecting on a decision problem. Some thoughts concerned the positive or negative consequences of engaging in a behavior, whereas other thoughts concerned how to execute a goal-oriented behavior. A following cued recall test showed that participants in a deliberative mind-set recalled the pros and cons of the behavior better than information about when, where, and how to engage in it. When participants had developed an implemental mind-set, the reverse was true. Both of these studies provided evidence that activating a processing strategy in a prior situation can increase the likelihood of applying it in a subsequent, unrelated situation.

Shopping momentum. The conceptualization of deliberative versus implemental mind-sets has implications for consumer behavior. Dhar, Huber, and Khan (2007) proposed that consumers approach a purchase situation with a deliberative mind-set. That
is, they decide whether or not they want to buy the particular product that they are considering. In the course of making an initial purchase, however, they are likely to acquire an implemental mind-set and this mind-set, having been activated, persists. Consequently, stimulating consumers to make an initial purchase increases their likelihood of making a second, unrelated purchase later on. In a typical study, participants either received a pen from the experimenter as a gift or purchased a pen from the experimenter before they were given the opportunity to purchase a keychain. Participants who had purchased a pen were more likely to purchase the keychain than those who had received the pen as a gift.

In the research on shopping momentum effect, an implemental mind-set was elicited by stimulating participants to make an initial purchase. There are also other ways to induce an implemental mind-set. For example, Chandran and Morwitz (2005) found that when faced with a bargaining situation (e.g., an auction), consumers were inclined to think about and plan actions required to negotiate a price, such as when to negotiate, what the first offer should be, how long to wait before making an offer, how many offers to make, and so on. This action-oriented planning activated an implemental mind-set that led consumers to focus on the negotiation process itself rather than on the costs and benefits of the purchase. As a result, these consumers were more likely to make a purchase than consumers who were given the opportunity to purchase the same product at a fixed price.

The aforementioned studies provide converging evidence that inducing an implemental mind-set can decrease consumers’ consideration of whether or not to make a purchase, a decision that normally precedes implementation. Thus, they support my
hypothesis that when the pursuit of a goal entails a sequence of actions, inducing a
disposition to perform an action in the middle of the sequence can prevent individuals
from performing earlier steps in the sequence. Studies reported in Chapter 3 will further
test this possibility.

Abstract versus Concrete Mind-set

Research on construal-level theory (Trope & Liberman, 2003; Liberman, Trope,
& Stephan, 2007) suggests that people tend to construe psychologically distant entities in
terms of abstract high-level concepts but to construe proximal entities in more concrete,
low level terms. For example, the act of voting could be construed either abstractly (as
influencing the election) or concretely (marking a ballot). People who practice construing
actions abstractly may develop an abstract mind-set, whereas those who practice
construing actions concretely may develop a concrete mind-set. Once activated, these
mind-sets may affect their subsequent information processing and influence behaviors
that are irrelevant to the situations that give rise to the mind-sets.

Freitas, Gollwitzer, and Trope (2004) found that activating an abstract mind-set
directed people to focus on the long-term benefits of an activity, whereas activating a
concrete mind-set disposed them to focus on short-term but immediate benefits. In one
study, for example, some participants were asked to consider why they might engage in
an activity to improve and maintain health. Others were asked to consider how they might
engage in this activity. Then, all participants took part in an ostensibly unrelated study in
which they were asked to whether high school students should be given either positive or
negative feedback about their social intelligence. Participants who had developed a concrete mind-set were more likely to recommend positive feedback because it brought others immediate benefits of happiness and satisfaction. However, participants who had developed an abstract mind-set were more likely to recommend negative feedback because it provided guidance on how to improve, which might benefit them in the long run.

Because personal values are high-level constructs, people may be more likely to use them as bases for behavioral decisions when they have an abstract mind-set than when they do not. Thus, for example, Torelli and Kaikati (2009) found that inducing an abstract mind-set increased individuals’ tendency to base their decision to help East African immigrants on their personal values.

Meyvis, Goldsmith, and Dhar (2009) explored the influence of abstract versus concrete mind-sets on brand extension evaluations. They found that activating an abstract mind-set in an unrelated previous task led participants to evaluate a brand extension on the basis of its fit to the parent brand. In contrast, activating a concrete mind-set led participants to place greater emphasis on the quality of the parent brand, which provided more concrete indications of the extension’s quality.

Counterfactual Thinking Mind-set

Counterfactual thinking normally requires one to imagine alternative courses of action and their consequences other than an action that had actually occurred. Engaging in counterfactual thinking in one situation may activate a procedure of generating
alternative solutions to a problem – a counterfactual thinking mind-set. Once activated,
the mind-set will influence people’s behavior in a subsequent, unrelated situation. In
research by Galinsky and Moskowitz (2000), participants first read a scenario describing
an event that could stimulate them to engage in counterfactual thinking. (For example,
one scenario depicted a woman who missed the opportunity to win a trip to Hawaii
because she had switched seats at a concert.) Exposure to these scenarios increased
participants’ performance on a subsequent creativity task (i.e., the Duncker candle
problem) that required a consideration of alternative ways of using the tools available. On
the other hand, activating a counterfactual thinking mind-set decreased performance on a
task in which generating alternative solutions typically led to errors.

If activating a counterfactual thinking mind-set in one situation increases the
disposition to generate alternative hypotheses, it may lead to less biased decisions in
subsequent, unrelated situations. Several studies suggest this possibility. Hirt, Kardes,
and Markman (2004), for example, induced a counterfactual thinking mind-set by asking
participants to generate alternative hypotheses concerning which TV sitcom would
research a “best program” award. These participants made less extreme estimates than
control participants of the likelihood that a basketball team would win the NBA
championship. Kray and Galinsky (2003) tested a similar hypothesis in the context of
group decision making. They found that after adopting a counterfactual thinking mind-set,
participants were more likely to correctly recognize the disadvantages of pursuing a very
attractive goal rather than considering only its advantages.
Linguistics and Mind-sets

Linguistic features (e.g., verbs, adjectives, etc.) can vary along a continuum of abstractness vs. concreteness (Semin & Fiedler, 1988). Action verbs that depict a single event (e.g., A punches B) are on the concrete end of the continuum, whereas adjectives that describe general properties that are not specific to any behavior (e.g., A is aggressive) are on the abstract end. Stapel and Semin (2007) found that using adjectives in one situation gave rise to a mind-set that led people to pay attention to the global properties of objects that they encountered later. However, using verbs in one situation gave rise to a mind-set that directed people’s attention to details of the objects. In one study, participants were instructed to watch a short film with chess pieces moving in ways that invited an anthropomorphic interpretation. Participants then described either the chess pieces’ behavior or their personality. Participants used more action verbs in the former case than in the latter. In a subsequent unrelated task, participants were asked to indicate which of two geometric comparison figures was more similar to a target. The two comparison figures were a large square that was formed from a number of smaller triangles or a large triangle that was made up of smaller squares. Participants who had used adjectives to describe the chess pieces’ personality based their similarity judgments on the target’s similarity to the large figure, whereas participants who had used verbs to describe the target person’s behaviors based their judgments on its similarity to the components.
Independence versus Interdependence Mind-sets

Inducing people to think about themselves independently will activate an *independence* mind-set, which facilitates context–independent information processing. People who have adopted this mind-set are likely to process stimulus information as if the stimulus is unaffected by the context in which it appears. However, inducing people to think about themselves in relation to others will activate an *interdependence* mind-set, which promotes context-interdependent information processing. People who have developed this mind-set will be inclined to process stimulus information while paying attention to its relations to the background information. These different mind-sets could be either cognitive residues of the procedures used during the acquisition of the independent and interdependent self-construals (Kühnen, Hannover, & Schubert, 2001), or activated independently of people’s chronically accessible self-construals.

In one study, Trafimow, Triandis, and Goto (1991) assigned participants from both individualist (U.S.) and collectivist (Chinese) cultures to two conditions. Some participants were asked to think about differences between themselves and their family and friends—activating an independence mind-set. Others were asked to think about what they had in common with their family and friends—activating an interdependence mind-set. Later on, participants performed self-description task and wrote down 20 answers to the question “Who am I?” Participants with an independence mind-set reported more independent self-descriptions (e.g., “I am intelligent”) and fewer interdependent descriptions (e.g., “I am a sister of Tom”), than participants with an interdependence mind-set.
After manipulating an independence or an interdependence mind-set in the same way as Trafimow et al. (1991) did, Kühnen et al. (2001) exposed German participants to a series of Embedded Figures Test. Specifically, participants were presented with a series of simple figures and complex figures and they were asked to search for the simple figures in the complex ones. Successfully solving the problems required participants to separate the simple figures from the context in which they were embedded. Participants with an independence mind-set were faster at solving these problems than those with an interdependence mind-set.

The Verbal Overshadowing Effect: Verbal versus Visual Information Processing Mind-set

Schooler and his colleagues found that asking participants to verbally describing a previously seen face decreased their ability to recognize the face later (Fallshore & Schooler, 1995; Schooler & Engstler-Schooler, 1990; Dodson, Johnson, & Schooler, 1997). In their initial study (Schooler & Engstler-Schooler, 1990), participants were shown a video of a bank robbery. Then half of the participants were directed to verbally describe the robber and the other half were asked to complete a filler activity. Generating verbal descriptions, which might intuitively be expected to strengthen the memory of the face, actually impaired successful face recognition.

In a study of particular relevance to the effect of a mind-set (Dodson et al., 1997), participants were first exposed to a series of faces and then were asked to describe one of the faces verbally. Generating this description increased participants’ difficulty in
recognizing not only this face but also other faces they had seen but had not described verbally. Dodson et al. concluded that verbally encoding the face in the course of describing it activated a verbal processing procedure, which interfered with the visual processing that was necessary for accurate recognition of the faces that participants encountered subsequently. Furthermore, this interference generalized to stimuli other than the one to which the verbal encoding strategy had been applied.

Summary

The studies reviewed above provide convergent evidence that activating an information processing strategy in one situation can increase the likelihood that a similar strategy will be used to pursue a goal in subsequent, unrelated situation. Correspondingly, activating one strategy can decrease the likelihood that alternative strategies will be identified and applied.

BEYOND THE INFLUENCE OF MIND-SETS

Some other lines of research also have investigated the influence of past behavior on future behavior. However, the mechanisms that underlie these effects may differ from those that underlie the impact of mind-sets. Several studies exemplify this difference.

Attitude-Mediated Influences of Past Behavior on Future Behavior
The foot-in-the-door effect (Freedman & Fraser, 1966; for a review, see Burger, 1999) refers to instances in which people’s past behavior (i.e., compliance with a small request) increases their intentions to engage a similar behavior which is more demanding (i.e., compliance with a big request). In one study (Freedman & Fraser, 1966), one group of California residents were approached by an experimenter who asked them to sign a petition advocating support for “Keep California Beautiful”. Two weeks later, a second experimenter visited them and asked if they would be willing to put a very large and poorly lettered sign concerning safe driving in their front yard. These participants were substantially more likely to agree to put up the sign than control participants who had not been asked to sign the petition (47.4% vs. 16.7%, respectively). One explanation of this effect is provided by self-perception theory (Bem, 1972). That is, individuals who recall their petition signing behavior may infer from this behavior that they are helpful persons, and may base their later decision on this perception.

The effect, however, may not reflect a mind-set. For one thing, the effects of a mind-set are normally of short duration, whereas the effects identified by Freedman and Fraser were evident even after a delay of two weeks. Second, situational factors that influence participants’ attitude toward themselves can influence the effectiveness of foot-in-the-door technique. For example, labeling the participants’ agreement to the initial request as helpful can enhance the foot-in-the-door (Gorassini & Olsen, 1995), whereas giving them extrinsic rewards for agreeing to the initial request can undermine it (DeJong & Funder, 1977).
Influence of Generalized Motivation

Wadhwa, Shiv, and Nowlis (2008) found that participants who sampled a tasty drink not only consumed more Pepsi in a subsequent situation but also evaluated other hedonic products more favorably. The authors proposed that consumption cues activated a general motive that, once activated, increased the attractiveness of different kinds of hedonic products that are intrinsically rewarding.

A similar account was proposed by Li (2008). She found that exposing participants to appetitive stimuli (e.g., chocolate cookies) changed participants’ temporal orientation. For example, they were more likely to prefer a small immediate reward to a larger delayed reward. Li suggested that exposure to appetitive stimuli activated a general motivational system that changed individuals’ emphasis on the present rather than the future.

Motivational accounts differ from mind-set effects. The latter effects are cognition based—the activation of a mind-set may change people’s thinking mode and change the thoughts that people generate about new stimuli. However, the motivation to pursue a goal can activate the cognitive procedures to pursue the goal, and these procedures, once activated, may persist and influence behavior in subsequent situation independently of the motivation that gave rise to them. The studies described in Chapter 5 provide such an example.
Habituated Behavior

Mind-sets should be distinguished from habits. Habits are learned dispositions to repeat past responses. They emerge from the gradual learning of associations between responses and features of contexts that have historically covaried with them (Wood & Neal, 2007). For example, when a behavioral response (e.g., buckling a seatbelt) is consistently activated in a particular context (e.g., getting into a car), associative links gradually form between the behavior and the context. Habitualized cognitive behavior is often captured by “if [X], then [Y]” productions” of the sort suggested by Anderson (1982, 1983) and noted earlier in this chapter. These productions, which are acquired through learning, are strengthened by repetition and can ultimately be activated and applied with minimal cognitive mediation. In the seatbelt example described earlier, getting into a car could be a feature of [X] that in combination with other features will elicit the response of buckling the car [Y].

Productions may govern behavior at very concrete levels (e.g., stepping on the brake when seeing a red light). After they are formed, they can be activated and applied with little if any cognitive meditation (Schneider & Shiffrin, 1977; Wyer, 2004). A good example could be found in the case of acquiring typing skills. People who are learning how to type may consciously search for the key they need to type particular letter. With practice, however, the process of typing becomes automated and people can type correctly without being consciously aware of where the letters are located. (In fact, people who are very proficient at typing may not be able to recall the exact location of
each letter key. Moreover, intentionally thinking about where the keys are may even harm performance.)

Several studies have investigated the effects of productions. For example, Shen and Wyer (2008b) asked one group of participants to rank order the attributes of five products from most to least favorable. Other participants, however, ranked the same attributes from least to most favorable. Ranking from most to least favorable requires participants to consider the high-valued (favorable) attributes before low-valued attributes, whereas ranking from least to most favorable requires a consideration of low-valued attributes first. In an ostensibly unrelated second study, participants were given descriptions of a computer containing 10 attributes that varied in favorableness. They had either 15 seconds or as much time as they wanted to evaluate the computer. Ranking product attributes from most to least favorable activated a procedure of attending to favorable attributes before unfavorable ones, and therefore, led to more favorable judgments of computers. Ranking attributes from least to most favorable had the opposite effects. These effects were evident only when participants were under time pressure and did not have much cognitive resources to process information.

The impact of activating a production differs from the effects of a mind-set in that a conscious “mind” does not play a role in the former case. Once a mind-set is activated, it can shape people’s way of thinking in other situations (Dhar et al. 2007; Gollwitzer et al. 1990). However, the consequences of a mind-set-induced change should be evident when people have sufficient cognitive capacity to process information and make judgments or decisions.
SUMMARY

The present conceptualization of mind-set provides an integrative framework that (a) defines the construct of behavioral mind-set; (b) clarifies the assumptions underlying mind-set effects; (c) specifies the mechanism by which mind-sets operate, (d) explores the cognitive and motivational antecedents of mind-sets, (e) discusses the possible of consequences of mind-set effects; and (f) distinguishes mind-set effects from other effects pertaining to the influence of past behavior on future behavior. This framework is helpful for categorizing previous research investigating the influence of past behavior on future behavior. More importantly, the framework may guide discovery of connections between seemingly unrelated behaviors and contribute to the increment of knowledge on human behavior.

In the following three chapters, I describe empirically studies that explore the influence of mind-set in different areas of consumer research. These studies show that the conception of mind-set can help researchers identify new phenomena that are important in the areas under investigation. These studies also provide empirical supports for the specifications that characterize the construct of behavioral mind-set. Studies in chapter 3 demonstrate the influence of mind-set on consumer decision making. They verify the assumptions that underlying the mind-set conceptualization and test the idea that when pursuit of a goal entails a sequence of actions, activating a mind-set to make people perform an action in the middle of the sequence may prevent them from performing actions pertaining to an earlier step in the sequence. The studies reported in chapter 4 investigated the role of mind-set in understanding the effectiveness of persuasive
communication, which have never before been explored before. Finally, the studies reported in chapter 5 distinguish between the influence of motivation on consumer behavior and the influence of a mind-set that is activated by this motivation.
A purchase decision often involves three steps: whether to make a purchase at all, which alternative to choose, and how to implement the purchase. Shoppers who are confronted with a purchase opportunity and activate this procedure will normally identify the first subgoal in the sequence (deciding whether to buy) and engage in the operations required to attain it. Then, if their decision at this stage is affirmative, they proceed to the next subgoal in the sequence and so on until they have attained their primary objective. If, on the other hand, their initial decision is negative, the remaining subgoals in the sequence become irrelevant. Consequently, they are likely to stop processing without performing the cognitive activities required to attain them.

However, suppose people are induced to consider the second subgoal in the sequence (deciding which to buy) without having thought about the first one. They will presumably select a routine that is relevant to the attainment of this subgoal and will perform the activities it specifies. In doing so, however, they are unlikely to consider subgoals that precede the one being pursued. In other words, deciding which product to buy may not activate thoughts about whether to buy. Instead, the individuals may implicitly assume that the first subgoal has already been pursued and the resulting decision is affirmative. As a consequence, they are more likely to make a purchase than
they would if the first subgoal had actually been pursued. In short, computing a relative preference for one alternative over the others may induce a *which-to-buy* mind-set that, once activated, is applied without consulting segments that precede it in the purchasing procedure as a whole.

To evaluate these possibilities in our research, participants in one condition were asked to indicate which of two products they would prefer to buy. I assumed that in the course of performing this task, these participants would activate the second subgoal of the shopping procedure described earlier and, therefore, would acquire a which-to-buy mind-set. Participants in a second condition were asked to decide whether they would want to purchase one of a set of products without indicating which alternative they preferred. I assumed that these latter participants would activate the first subgoal of the shopping procedure but would only pursue the remaining subgoals if their decision at the first stage was affirmative and thus they were motivated to make a final purchase decision in the situation at hand. These considerations suggest the following hypothesis:

**H3.1:** Individuals are more disposed to purchase one of two alternative products if they have previously decided which alternative they prefer than if they have not.

Moreover, if stimulating participants to form a preference for the alternatives induces a which-to-buy mind-set, the effects of this mind-set should theoretically persist to affect behavior in situations that are unrelated to the one in which it is induced. Thus, the following hypothesis is viable:

**H3.2:** Individuals who have stated a preference for choice alternatives in one product domain are more willing to make a purchase in other, unrelated
product domains than are consumers who have not stated such a preference.

The focus of our research and the conceptualization underlying it should be distinguished from the shopping momentum effect that I explained earlier (Dhar et al., 2007). Dhar et al. showed that making an initial purchase increased the likelihood of making a later purchase in an unrelated domain. However, two features distinguish their research from mine. First, participants in Dhar et al’s research were given only one choice alternative and asked to decide whether they wanted to purchase it. Thus, the deliberative stage of processing consisted of only one stage (deciding whether to buy), and the stage I considered in the present research (deciding which to buy) was not relevant. Second, making a tentative decision on whether to purchase may not activate an implemental mind-set. Participants in Dhar et al’s research actually made a purchase and, therefore, were motivated to attain the last (implemental) subgoal of the procedure I assume to underlie purchase decisions. In contrast, one group of participants in the present research were only asked make a tentative purchase decision (i.e., whether they would want to buy one of the computers). In this case, participants might perform the activities relevant to the first subgoal of the procedure (deciding whether to buy) without being motivated to perform later stages. To this extent, an implemental mind-set was unlikely to be activated.

However, given the above differences, it is worth emphasizing that the research on shopping momentum provided preliminary support for the assumption that when the pursuit of a goal entails a sequence of actions, inducing a disposition to perform an action later the sequence can prevent individuals from performing earlier steps in the sequence. Specifically, whether to make a purchase is supposed to be a decision that should be
made before considering how to implement the purchase. However, inducing an implemental mind-set can decrease consumers’ disposition to consider whether or not to make a purchase.

Three studies tested my hypotheses. Experiment 3.1 showed that consumers evaluate choice alternatives more favorably, and are more disposed to purchase one of the alternatives, if they have previously indicated which alternative they prefer than if they have not. Experiment 3.2 showed that the mind-set induced by reporting a preference can increase the likelihood of making a purchase in situations that are unrelated to the one in which the mind-set was activated. Thus, for example, consumers who have decided which product they would prefer in one domain (computers) become more inclined to make a purchase in another, quite different domain (vacation packages). Experiment 3.3 showed that inducing a which-to-buy mind-set can influence actual purchase decisions (i.e., the purchase of candy that is on sale upon completion of the experiment).

Experiment 3.1

Experiment 3.1 provided preliminary evidence of the effect of inducing a which-to-buy mind-set on purchase decisions.

Participants received information about two equally attractive products, each described by six features: two positive, two negative and two neutral. In one condition, participants first decided whether they would want to buy one of the two products or would rather not buy anything at all. Then, after making this decision, they had to consider which of the products they preferred. In a second condition, participants first
indicated which of the two products they preferred and then, having done so, indicated whether or not they would want to make a purchase. In all cases, participants evaluated each product separately after making their decisions. According to hypothesis 1, asking participants to state their preference first should induce a which-to-buy mind-set and, therefore, should increase their willingness to make a purchase relative to individuals who are asked whether they wanted to buy something at the outset.

Two additional variables were manipulated. First, I constructed choice alternatives that had (a) unique positive and common negative features, (b) unique negative and common positive features, or (c) all unique features. Second, I varied implications of the no-purchase option that participants were given. In previous research (Dhar & Sherman, 1996; Dhar & Simonson, 2003; Tversky & Shafir, 1992), participants were usually told to assume that they could either make a purchase immediately or defer their choice until a later point in time. That is, the decision to forego making a purchase was revocable. In these circumstances, there is no necessary cost to defer choice, as the original alternatives can be reconsidered if nothing better comes along.

In many purchase situations, however, alternatives become unavailable if customers do not take advantage of a purchase opportunity when they have a chance. In these situations, people are likely to consider their decision more carefully and, therefore, to evaluate each alternative individually on the basis of its common as well as its unique features. If reporting preferences induces a which-to-buy mind-set, however, the effects of this mind-set should affect purchase decisions regardless of whether these decisions are revocable or irrevocable.
Method

Subjects and design. One hundred twenty-four undergraduates in Hong Kong University of Science and Technology participated to fulfill a course requirement. They were randomly assigned to the 12 conditions of a 2 (preference-decision order: preference-first vs. decision-first), x 2 (the implication of taking the no-purchase option: revocable vs. irrevocable) x 3 (feature similarity: unique positive/common negative features vs. unique negative/common positive features vs. all unique features) design.

Stimulus materials. The favorableness and importance of 17 attributes were determined on the basis of pretesting. Twenty subjects rated each attribute along scales from –5 (not at all favorable) to 5 (very favorable) and from 0 (not at all important) to 10 (very important). Twelve attributes were selected, of which four were favorable ($M = 3.75$) and important ($M = 8.56$), four were unfavorable ($M = -3.96$) and important ($M = 8.59$), and four were relatively neutral ($M = 0.57$) and unimportant ($M = 5.16$). These attributes, shown in the top section of Table 3.1, were divided into two sets of six (two at each level of favorableness) and used to construct two stimulus replications. Each replication consisted of one pair of products with unique positive and common negative features, a second pair with unique negative and common positive features, and a third pair with all unique features. This was done in such a way that pooled over replications, all product features were represented an equal proportion of times in pairs pertaining to each stimulus type.
<table>
<thead>
<tr>
<th></th>
<th>Favorableness</th>
<th>Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Positive features (P)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High RAM (P1)</td>
<td>3.93</td>
<td>9.00</td>
</tr>
<tr>
<td>Good post purchase repair service (P1)</td>
<td>3.57</td>
<td>7.86</td>
</tr>
<tr>
<td>Stable operation (P2)</td>
<td>3.86</td>
<td>8.93</td>
</tr>
<tr>
<td>Two-year warranty with no extra cost (P2)</td>
<td>3.64</td>
<td>8.43</td>
</tr>
<tr>
<td><strong>Negative features</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insensitive mouse (N1)</td>
<td>-3.93</td>
<td>8.43</td>
</tr>
<tr>
<td>Low CPU speed (N1)</td>
<td>-4.21</td>
<td>9.21</td>
</tr>
<tr>
<td>Poor sound quality (N2)</td>
<td>-4.00</td>
<td>8.07</td>
</tr>
<tr>
<td>Low hard disk capacity (N2)</td>
<td>-3.71</td>
<td>8.64</td>
</tr>
<tr>
<td><strong>Neutral features</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recommended by friend (O1)</td>
<td>0.57</td>
<td>5.86</td>
</tr>
<tr>
<td>Installment payments (O1)</td>
<td>0.50</td>
<td>4.07</td>
</tr>
<tr>
<td>Sold in a reputable store (O2)</td>
<td>0.79</td>
<td>6.00</td>
</tr>
<tr>
<td>Keyboard with new design (O2)</td>
<td>0.42</td>
<td>4.71</td>
</tr>
</tbody>
</table>
B. Features Used to Construct Choice Alternatives

<table>
<thead>
<tr>
<th>Features Used to Construct Choice Alternatives</th>
<th>Replication 1</th>
<th>Replication 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unique positive/common negative features</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer A</td>
<td>P1, N1, O1</td>
<td>P2, N2, O2</td>
</tr>
<tr>
<td>Computer B</td>
<td>P2, N1, O2</td>
<td>P1, N2, O1</td>
</tr>
<tr>
<td>Unique negative/common positive features</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer A</td>
<td>P1, N1, O1</td>
<td>P2, N2, O2</td>
</tr>
<tr>
<td>Computer B</td>
<td>P1, N2, O2</td>
<td>P2, N1, O1</td>
</tr>
<tr>
<td>All unique features</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer A</td>
<td>P1, N1, O1</td>
<td>P2, N1, O2</td>
</tr>
<tr>
<td>Computer B</td>
<td>P2, N2, O2</td>
<td>P1, N2, O1</td>
</tr>
</tbody>
</table>

Thus, for example, consider pairs with unique positive and common negative features. In one replication, computer A was described by features labeled P1, N1 and O1, as shown in the bottom half of Table 3.1, and computer B was described by the features P2, N1 and O2. In the second replication, A was described by P2, N2 and O2 and B was described by P1, N2 and O1. Thus, pooled over the two replications, each of the 12 product features was used twice. Descriptions of pairs with unique negative and common positive features, and pairs whose features were all unique, were constructed in an analogous manner (see Table 3.1). Consequently, each of the 12 features was used the same number of times at each level of product similarity.
Procedure. Participants were informed that we were interested in how people make purchasing decisions on the basis of limited information about the products they consider. Then, in preference-first conditions, they received descriptions of two computers, A and B (which were presented sequentially on the same page), and indicated which one they would prefer if they had to decide between them. Then, on the next page of the form, participants under revocable decision conditions were told to assume that they could either decide to buy one of the two computers or could postpone their choice until they saw what else was available. They needed to indicate whether they would choose A, choose B or defer their choice. In irrevocable decision conditions, they were told to assume that these were the only computers available at a price they could afford and to decide whether they would choose A, choose B, or buy no computer at all. Finally all participants evaluated each product separately along a scale from –5 (dislike very much) to 5 (like very much).

In decision-first conditions, participants were asked at the outset to indicate whether they would choose “one of the computers” or not. Then, having done so, they reported their preference for A or B. Finally, all participants were asked to report their final decision to choose A, to choose B, or to choose neither (to defer a choice in revocable decision conditions, or to buy no computer at all in irrevocable decision conditions).

Results
Purchase likelihood. According to hypothesis 3.1, participants should be more willing to make a purchase if they have previously reported their preferences for the choice alternatives than if they have not. This hypothesis was supported. The top half of Table 3.2 summarizes the proportion of participants who indicated they would make a purchase in each order condition, pooled over three levels of feature similarity. (No effects involving the latter variable were significant, $p > .10$). Participants were generally more likely to make a purchase if they had stated their preference at the outset than if they had decided whether to buy at the outset (.47 vs. .17, Wald $\chi^2 = 10.59$, $p < .01$). This difference did not depend on whether the choice alternatives had positive, negative or no features in common ($p > .10$). However, the effect of reporting preferences had a greater effect when the decision was irrevocable (.70 vs. .21) than when it was not (.23 vs. .12). Although the difference in these effects was not significant ($p > .10$), it is worth noting in light of other results to be reported.
TABLE 3.2

LIKELIHOOD OF DECIDING TO PURCHASE AND PRODUCT EVALUATIONS

AS A FUNCTION OF PREFERENCE-DECISION ORDER AND DECISION

REVOCABILITY—EXPERIMENT 3.1

<table>
<thead>
<tr>
<th>Preference first</th>
<th>Decision first</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Likelihood of Deciding to Make a Purchase</strong></td>
<td></td>
</tr>
<tr>
<td>Revocable decision</td>
<td>0.23</td>
</tr>
<tr>
<td>Irrevocable decision</td>
<td>0.70</td>
</tr>
<tr>
<td><strong>Evaluations</strong></td>
<td></td>
</tr>
<tr>
<td>Revocable decision</td>
<td>0.25</td>
</tr>
<tr>
<td>Irrevocable decision</td>
<td>0.40</td>
</tr>
</tbody>
</table>

*Supplementary data.* Purchase decisions were greater under preference-first than under decision-first conditions when the decision not to buy was irrevocable. When the decision not to buy was revocable, however, inducing a which-to-buy mind-set had relatively little impact. However, the likelihood of deciding to make a purchase under revocable choice conditions was generally very low (.23 vs. .12 under preference-first and decision-first conditions, respectively; see Table 3.2). This suggests that when choice
alternatives were relatively unattractive, participants were generally reluctant to make a purchase if a decision could be deferred.

If this is so, however, making the choice alternatives more attractive should increase the overall likelihood of making a purchase and should make the effects of a which-to-buy mind-set more apparent. To examine this possibility, I constructed a partial replication of the study under revocable decision conditions in which the negative features “Low CPU speed” and “Poor sound quality” (see Table 3.1) were replaced by the less negative attributes “Little software included” and “Energy consuming”. This follow-up experiment was done under conditions in which all features were unique, thus providing the strongest test of our mind-set conceptualization. Eighty-nine additional participants were assigned randomly to either preference-first or decision-first conditions. As expected, the overall purchase likelihood increased from 19% in the main experiment (revocable/all-unique conditions) to 47% in the present follow-up study, confirming the assumption that purchase likelihood would be greater when the product attributes were more favorable. Furthermore, their likelihood of making a purchase was greater when they had reported preferences at the outset (.60) than when they had not (.34). This difference, which was reliable (Wald $\chi^2 = 5.85, p < .05$) contrasts with the difference obtained in the main experiment under all unique conditions (.20 vs. .18). Moreover, it is similar in magnitude to the difference observed under irrevocable choice conditions of the main experiment when features of the alternatives were all unique (.64 vs. .30). Thus, the difference strengthens our assumption that the effect of a which-to-buy mind-set generalizes over revocable and irrevocable choice conditions.
Discussion

The results of this experiment confirmed hypothesis 3.1. Therefore, they provided indirect support for the assumption that reporting preferences induces a which-to-buy mind-set that increases the willingness to make a purchase. The effect of preference-decision order on purchase likelihood was somewhat greater in the main experiment when the choice was irrevocable. As I noted, however, this difference is at least partially attributable to the fact that the choice alternatives employed in the main experiment were rather unfavorable. It seems reasonable to conclude that although reporting preferences at the outset produces a general increase in the willingness to make a purchase, the effect may be greater when the choice alternatives are relatively favorable.

Experiment 3.2

Although the results of Experiment 3.1 are consistent with our assumption that a which-to-buy mind-set underlies the effects of stating preferences on purchase likelihood, more direct evidence of such a mind-set is necessary. The next two studies provide this evidence, showing that which-to-buy mind-set developed in one situation can persist and influence thoughts or decisions in subsequent, unrelated situations.

Participants in Experiment 3.2 were instructed either to state their preferences for one product (without making purchasing decisions) or to decide whether to make a purchase at the outset (without stating preferences). Then, they were exposed to a second decision task involving the choice of two vacation packages. If reporting about computers induces a which-to-buy mind-set, and if this mind-set remains activated when participants
consider the vacation tasks, it should increase the willingness to choose a vacation package.

Method

One hundred MBA students in Shanghai University of Finance and Economics participated as part of a classroom exercise. Participants were asked to consider two computers (A and B) whose features were all unique. After reviewing the product descriptions, participants in decision-only conditions indicated whether they would want to choose one of the computers (either A or B), or defer making a choice. Participants in preference-only conditions stated their preference for the computers. Unlike previous experiments, however, evaluations of the computers were not assessed. (This was done to avoid possible contamination by factors other than the initial instructional manipulations.)

Participants then considered a second choice situation involving two equally attractive vacation packages. The descriptions used in the second task were based on materials used in earlier research (e.g., Houston and Sherman 1995, Dhar and Sherman 1996). Specifically, descriptions were constructed from a pool of six positive features (“beautiful scenery”, “plenty of nightspots,” etc.) and six negative features (“expensive”, “crowded,” etc.). Pairs of alternatives (A and B), each described by a unique set of three positive and three negative features, were constructed in a manner analogous to those used to construct computer descriptions. Participants read the two descriptions and then indicated whether they would want to choose vacation package A, to choose package B, or to defer making a choice.
Results and Discussion

I expected that participants would be more likely to choose a specific vacation package if they had stated their preference for the computers they considered in domain 1 than if they had considered whether to make a purchase in the first domain. This was the case. Specifically, 68% of the 47 participants in preference-only conditions chose one of the two vacation packages in domain 2, whereas only 42% of the 53 participants in decision-only conditions did so (Wald $\chi^2 = 6.90, p < .01$).

The results are also consistent with the conjecture concerning the conditions that underlie shopping momentum (Dhar et al., 2007). If making a tentative decision to purchase were sufficient to induce the implemental mind-set that leads to shopping momentum, participants in decision-only conditions should be more likely to choose a vacation package in domain 2 if they had reported being willing to purchase one of the computers in domain 1 than if they had decided to defer making a choice. In fact, however, they were equally likely to choose a vacation package in the former case (.42, N = 19) than in the latter (.41, N = 34). Thus, simply making an affirmative decision in the first step of deliberation was not sufficient to activate the implemental mind-set that underlies shopping momentum.
Experiment 3.3

The first two experiments are quite consistent with the assumption that stating preferences before making a purchase decision induces a which-to-buy mind-set that, once activated, increases the willingness to make a purchase in both the present product domain and other unrelated domains. In these studies, however, purchasing behavior was inferred from participants’ responses to hypothetical scenarios. To ensure the relevance of our findings to shopping behavior outside the laboratory, it is necessary to show that inducing a which-to-buy mind-set would influence actual purchasing behavior. Experiment 3.3 provided this evidence. In addition, it increased confidence in the generalizability of the findings by using a more direct induction of mind-set than that employed in other experiments.

Method

Sixty undergraduates in Hong Kong University of Science and Technology participated, in groups of 9-10 each. The study was conducted at the end of a one-hour experimental session in which a number of studies unrelated to purchasing behavior were performed. Participant groups were randomly assigned to one of two conditions. Participants in mind-set conditions were instructed that we wanted to pretest some materials to be used in another experiment concerning consumer preferences. On this pretense, they read descriptions of five pairs of products or services (vacation packages,
elective courses, mobile phones, restaurants and MP3 players) each described by 4-5 attributes, and indicated the item in each pair that they would prefer. Control participants did not complete this task.

The experimenter then announced that the experimental session was over. However, she went on to indicate that some Kit Kat chocolate bars and packages of M&Ms were left over from a previous experiment on food tasting, and that we were selling the unused items (each costing approximately $1.30 USD) at half price, and that they could purchase one upon leaving the experiment if they wished. The experimenter then presented a food container filled with both types of candies and asked participants individually if they wanted to purchase one of them. Participants who chose a candy paid about $0.65 USD).

Results

Eight of the 29 participants in mind-set conditions (28%) purchased one package of chocolates. However, only 2 of 31 participants in control conditions (6%) did so. The difference between these proportions was significant, Wald $\chi^2 = 4.13, p < .05$.

COMPARATIVE MIND-SETS

The three studies reported above provided convergent evidence that making preference judgments about products or services could give rise to a which-to-buy mind-set. Once activated, the mind-set not only increased consumers’ decision to make a
purchase in the current situation but also persisted to increase purchase intentions in
subsequent unrelated situations. In these studies, the which-to-buy mind-set was activated
by making preference judgments about products or services. Making these preference
judgments could exemplify a more general comparative judgment process. If comparing
two computers would increase consumers’ disposition to compare two vacation packages,
it was interesting to speculate that comparing two animals or two countries might produce
the similar effects.

Two bodies of theory and research noted in Chapter 2 suggest this possibility.
First, cognitive procedures, or sequences of goal-directed behavior, exist in memory as
conceptual units and can be called upon for use as a guide in performing actions to which
they are relevant (for alternative conceptualizations of the nature of goal-directed
cognitive representations in memory, see Kruglanski et al., 2002; Schank & Abelson,
1977; Smith, 1990, 1994; Wyer, 2004). These procedures, like concepts more generally,
can exist at several different levels of generality, perhaps being stored in memory
hierarchically in an associative network (Wyer & Srull, 1989). Just as one’s pet can be
conceptualized as a collie, a dog, or an animal, deciding which pair of socks to buy
exemplifies not only a procedure of comparing one pair of socks to another pair but also a
more general procedure of comparing one product to another and an even more general
comparison process that is not specific to any particular type of object or feature.

Second, if comparative judgment procedures exist in memory in an associative
network, their activation and use can be conceptualized in terms of research and theory
on construct accessibility (Förster & Liberman, 2007; Higgins, 1996; Wyer, 2008).
According to a spreading activation model of memory, for example (Collins & Loftus,
1975; Higgins, 1996; Wyer & Carlston, 1979), the use of a concept in performing one activity increases the accessibility in memory of other concepts with which it is associated, making these concepts more likely to be identified and used in subsequent situations in which they are applicable.

Thus, the process of making a domain specific comparative judgment could activate the more general comparative judgment procedure that it exemplifies and, as a result, could increase the accessibility of more specific exemplars of the procedure that are associated with it. Consequently, if one of these exemplars is involved in a later decision situation, it may come to mind more quickly than other component of the decision-making sequence, leading it to take priority over these less accessible components. This conceptualization could account for findings of the three experiments reported above. That is, stating preferences for products in one domain may increases the accessibility of the “which-to-buy” component of the three-stage decision process that is applied to purchases in a second domain, leading this stage of processing to be performed without considering the “whether to buy” step that normally precedes it.

This conceptualization has general implications. For one thing, it could potentially apply to several other types of decision phenomena. For example, it might affect the decision to choose which of two individuals to invite on a date without considering the possibility of not going out with either, or to decide which of two movies to see without contemplating the attractiveness of staying home and reading a good book. In addition, the conceptualization suggests that different kinds of comparative judgment task that people are likely to perform could have similar effects.
In the studies to be reported, I varied the nature of the comparison task that participants were asked to perform before being exposed to a decision task. Experiment 3.4 showed that people are more likely to decide to purchase a product not only if they have previously reported which of two quite different products they prefer but also if they have indicated which of the two products they dislike more. Experiment 3.5 demonstrated that similar effects on purchase decisions could be induced by asking participants not only to report the relative attractiveness of wild animals but also to compare the animals with respect to physical attributes that had few evaluative implications. Moreover, making comparative judgments about animals also influence real purchase decisions and decisions in social domain. Experiment 3.6 showed that asking participants to judge how similar one object was to another (which implicitly involves a comparison of their features) induced a comparative judgment mind-set that increased purchase intentions.

Experiment 3.4

Participants in this study received information about two vacation packages, A and B. In some cases, both vacations were described by predominately favorable attributes and in other cases, they were described by predominately unfavorable ones. Some subjects indicated which vacation they preferred. Others, however, indicated which vacation they disliked more. Then, both these participants and control participants (who had not been exposed to the vacation packages) received information about two computers and indicated whether they would want to purchase A, to purchase B, or to defer making a choice.
These manipulations helped to distinguish the present conceptualization from a plausible alternative. Shafir (1993) found that deciding which alternative one likes more could induce a bias to attend to positive features of the choice alternatives (which are normally the basis for liking). This bias could generalize to the subsequent choice situation, increasing attention to attractive features of the alternatives and, therefore, increasing the likelihood of purchasing one of them. Similar considerations, however, imply that determining which alternative one dislikes more would increase participants’ attention to unattractive features (which are the primary basis for disliking something), leading the alternatives they consider later to be seen as less attractive and decreasing their willingness to make a purchase. This is not the case, however, as will be seen.

Method

One hundred and twenty-six undergraduate students participated to fulfill a course requirement. They were randomly assigned to four experimental conditions and one control condition. The four experimental conditions were of a 2 (first judgment: preference vs. dislike) x 2 (favorableness of alternatives: favorable vs. unfavorable) between-subjects design.

Participants were told that the researcher was interested in studying how consumers make purchasing decisions on the basis of limited information about the products they are considering. In the experimental conditions, participants first read descriptions of two vacation packages, each described by six attributes. Depending on different manipulations, the two alternative vacation packages were either both favorable
or both unfavorable (See Appendix A). Each alternative in the favorable sets was described by four positive attributes and two negative attributes. Each alternative in the unfavorable sets was described by two positive attributes and four negative attributes. The two alternatives in each set were about equally attractive and shared no common attributes. After reading the descriptions of the two alternatives, participants were either asked to judge which alternative they preferred or asked to judge which alternative they disliked more.

All participants proceeded to the second task. They were told to imagine that they were planning to buy a computer and they had obtained information on two alternative models. Descriptions of two equally attractive alternative computers were then presented, each described by two positive attributes, two negative attributes and two neutral attributes (see Appendix A). After reading the descriptions, participants were asked to decide whether they would want to “choose computer A,” to “choose computer B,” or to “defer making a choice” by placing a check beside one of these alternatives. Finally, they evaluated each computer separately along a scale from -5 (dislike very much) to 5 (like very much). In the control condition, participants only completed the computer-judgment task.

Results

Purchase Likelihood. The proportion of participants in each condition who expressed a willingness to purchase one of the computers is shown in Table 3.3. Participants were more willing to purchase one of the two computers when they had
previously decided which of the two vacations they preferred (73%) than when they had not (50%), consistent with our earlier findings. However, participants who had previously indicated which vacation package they disliked more were also more likely to purchase a computer than control participants were (77% vs. 50%). The difference between the likelihood of making a purchase in the two experimental conditions and the likelihood of doing so in control conditions was significant, Wald $\chi^2 = 9.58$, $p < .05$. Furthermore, this difference was evident regardless of the favorableness of alternative vacation packages that participants had considered in the first task.

TABLE 3.3
LIKELIHOOD OF PURCHASING COMPUTERS—EXPERIMENT 3.4

<table>
<thead>
<tr>
<th></th>
<th>Preference Judgment</th>
<th>Dislike Judgment</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desirable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vacation Pair</td>
<td>.82 (n=17)</td>
<td>.72(n=18)</td>
<td></td>
</tr>
<tr>
<td>Undesirable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vacation Pair</td>
<td>.64 (n=22)</td>
<td>.82(n=27)</td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>.73 (n=39)</td>
<td>.77(n=45)</td>
<td>.50(n=42)</td>
</tr>
</tbody>
</table>

Product Evaluations  Participants’ overall evaluations of the choice alternatives provided evidence that the effects I observed were not influenced by selective attention to the type of attributes made salient by the initial judgment task. Participants evaluated both computers more favorably when the attributes of the vacation packages they had considered earlier were predominantly favorable ($M = 1.41$) than when they were
predominantly unfavorable ($M = 0.16$), $F(1, 114) = 9.76, p < .005$. Recipients’
evaluations of the computers under control conditions fell between these extremes ($M = 1.25$). Thus, the initial task did appear to induce selective attention to the attributes of the
computers they considered later. Nevertheless, their likelihood of making a purchase
decision did not depend on this difference in attention.

Experiment 3.5

If the effects of making choices in an initial task on purchase decisions in a later situation are the result of its activation of a comparative judgment mind-set, making any sort of comparative judgment might give rise to this mind-set regardless of whether the judgment pertains to products. Furthermore, this should be true regardless of whether the comparisons are evaluative or descriptive. Experiment 3.5 confirmed this conjecture.

Three experiments have been conducted, using the same manipulations of mind-set but different dependent decision tasks. To manipulate comparative mind-set, some participants were exposed to pairs of animals (e.g., elephants and hippos) and asked to indicate which animals in each pair they preferred. Other participants were asked to compare the animals with respect to a specific attribute (heaviness, jumping ability, eye sight, etc.). Then, both these participants and participants in the control group (i.e., those who did not make judgments of animals) made hypothetical purchase decisions about computers (experiment 3.5.1), made hypothetical decisions about choosing a mate (experiment 3.5.2), or made real purchase decisions about chocolate candies and other products (experiment 3.5.3), or I speculated that participants who made comparative
judgments about animals would be more willing to purchase a computer, more likely to make real purchases of various products, and more likely to choose one of the described person to be their potential mates than participants in control conditions.

Experiment 3.5.1

Method. Eighty-six undergraduate students participated to fulfill a course requirement. They were randomly assigned to two experimental conditions (preference-judgments vs. attribute-judgments) and one control condition.

Participants were told they would be participating in several experiments that were not related. To introduce the first task, participants in preference-judgment conditions were told that people often have different preferences for animals and that we were interested in whether college students’ preferences were similar to those of those in the general population. Ten pairs of animals (elephants vs. hippos, kangaroos vs. zebras, etc.) were presented and participants were asked to indicate which animal they preferred. In attribute-judgment conditions, participants were told we were interested in college students’ perceptions of animals and, on this pretext, received the 10 pairs of animals with instructions to compare them with respect to an attribute that differed over pairs (e.g., “Which are heavier, elephants or hippos?” “Which can run faster, kangaroos or zebras?”). Both groups of participants, along with a control group who had not been exposed to the animal judgment task, were then introduced to an ostensibly unrelated product judgment task identical to that employed in Experiment 3.4.


Results. The hypothetical purchase rate was reported in Table 3.4. Participants were more likely to indicate a willingness to purchase one of the two computers if they had either reported their preferences for the animals in the first task (64%) or had compared the animals with respect to physical attributes (68%) than they were under control conditions (40%). Purchase likelihood in the latter condition was significantly less than it was in the first two conditions, Wald $\chi^2 = 4.61, p < .04$, which did not differ from one another ($p > .10$). This difference occurred despite the fact that the overall evaluations of the computers did not differ over the three conditions (1.31, 1.01 and 1.16 under preference-judgment, attribute-judgment and control conditions, respectively).

TABLE 3.4

<table>
<thead>
<tr>
<th>CHOICE RATE AS A FUNCTION OF MIND-SETS—EXPERIMENT 3.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decision on Computers (Experiment 3.5.1)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Decision on Choosing a Mate (Experiment 3.5.2)</td>
</tr>
<tr>
<td>Decision on Real Purchase (Experiment 3.5.3)</td>
</tr>
</tbody>
</table>
This experiment was identical to Experiment 5 with the exception of the target task that participants performed. Rather than being asked to consider two computers as choice alternatives, they were asked to consider two alternative individuals as a dating partner.

**Method.** To select stimulus materials, I compiled two sets of six attribute descriptions (three favorable and three unfavorable), as shown in Appendix B. Thirty students who did not participate in the main experiment reported that they were equally willing to date a person described by each attribute set (5.73 vs. 5.63, along a scale from 0 to 10) and also to have them as a boyfriend/girlfriend (4.50 vs. 4.77).

Sixty-six participants in the main study were randomly assigned into the three conditions employed in Experiment 3.5.1. After making judgments about animals, participants in two experimental groups, along with participants in the control group, completed an unrelated survey that was ostensibly concerned with college students’ attitudes toward choosing a mate. On this pretense, they were exposed to the two sets of attribute descriptions and asked whether they would be willing to choose person A as a boyfriend/girlfriend, to choose B, or to choose neither.

**Results.** The proportions of participants who chose one of the two persons varied over conditions as expected and were summarized in Table 3.4. Specifically, 75% of the participants in preference-judgment conditions made a choice and 70% of the participants in attribute-judgment conditions did so, as compared to only 47% of the participants in control conditions. This proportion was less in control conditions than in the two
The previous two experiments found that inducing participants to report preferences in an experimental task increased their willingness to make an actual purchase of candies that were available after the experiment. To determine if comparing animals would have a similar impact, I exposed 119 participants at the end of a half-hour experiment to the three (preference-judgment, attribute-judgment and control) conditions employed in Experiment 3.5.1 and 3.5.2. Then, after being told that the experiment was over, they were given an opportunity to purchase one of four types of products that had ostensibly been left over from an earlier experiment (chocolate bars, potato chips, chewing gum and pens) at half price (about $1.30 USD).

Participants were more likely to make a purchase if they had either reported preferences for animals (51.3%) or compared their physical attributes (52.5%) than they were in control conditions (37.5%). A planned comparison of the likelihood of making a purchase in the first two conditions combined with the likelihood in control conditions was only marginally significant, \( z = 1.49, p < .07, 1\text{-tailed} \). Nonetheless, the consistency of this difference with the data obtained in other experiments is noteworthy.
In the preceding studies, participants were explicitly asked to make comparative judgments. Performing a task that implicitly requires these comparisons may have similar effects. For example, people often have occasion to estimate how similar one person or object is to another. These judgments often involve a comparison of the features of one object to those of the second (Tversky, 1977). If this is so, making similarity judgments could produce a comparative judgment mind-set effect of the sort I observed in earlier studies. A final experiment confirmed this possibility.

Method

Thirty-nine MBA students participated as a part of classroom exercise. They were randomly assigned to a similarity judgment condition and a control condition. In similarity-judgment conditions, participants were told that we were conducting research on college students' perceptions of persons and objects of the sort they see or hear about in the course of daily life, and that these perceptions are often reflected in judgments of similarity. On this pretext, they were given 20 randomly ordered pairs of objects in four different domains (countries, educational institutions, animals, and public figures) and asked to indicate the similarity of the first to the second (e.g., “How similar is Korea to China?” “…Stanford University to the University of Cambridge?” “…Adolph Hitler to Joseph Stalin?” etc.). Estimates were reported along a scale from 0 (not at all similar) to 10 (very similar).
Upon completion of the similarity judgments, participants performed the product decision task employed in Experiment 1. Participants in the control condition only completed the computer decision task.

Results

As I expected, making similarity judgments increased the likelihood of expressing a willingness to purchase a computer from 50% to 85%, Wald $\chi^2 = 4.90, p < .03, p_{pre} = 0.913$. This was true despite the fact that participants’ overall evaluations of the two computers did not differ (0.75 vs. 0.61, respectively)$^1$.

SUMMARY

Six experiments reported in this chapter indicate that the disposition to make a purchase can be affected by 1) stating a preference for alternatives in a quite different product domain; 2) expressing one’s relative dislike for these products; 3) comparing the attractiveness of animals; 4) comparing animals with respect to physical attributes, and 5) estimating how similar one is to the other, can have similar effects. Thus, the comparative

$^1$ Some caution should be taken in overgeneralizing these conclusions. Not all similarity judgments may involve a comparison process. For example, suppose people are asked to assess the overall similarity of two objects rather than to judge how similar one object is to the other. Although the two tasks appear to be similar on the surface, the first task may be performed by extracting the proportion of features that the two objects have in common without making a direct comparison. In this case, the effects we observed would not be evident.
judgment processes that induce a comparative judgment mind-set can be activated by experiences that are quite unrelated to purchase decisions.

The results confirmed the assumption that individuals who perform an activity that is part of a sequence of goal-directed actions are more likely to progress forward in the sequence rather than backward. This tendency could occur despite the fact that the later steps potentially depend on outcomes of the earlier ones. Several studies by Bargh and his colleagues (Bargh, Green, & Fitzsimons, 2007; Chartrand & Bargh, 1996, 2002) have shown that people often engage in goal-directed activity without conscious awareness of the goal’s influence. The research reported here implies that nonconscious goal-directed operations, activated in one domain, can generalize to other domains that require similar types of cognitive deliberation. A “mind-set” conceptualization of this possibility may be fruitful.

An interesting speculation derived from our conceptualization suggests that the consumption of material goods may be greater during election years, when citizens are continually being asked which of two political candidates they prefer, than in off-election years. Preliminary data bearing on the latter speculation are suggestive. An analysis of the U. S. Personal Consumption Expenditures between 1929 and 2002 (converted to real 1996 dollars) revealed that the average expenditure during presidential election years was 2.2% greater than the average expenditure in the years immediately preceding and immediately following them ($2458 billion vs. $2406 billion). More strikingly, an analysis of total retail store sales during the three months prior to the election (August, September and October) was 9.4% higher during the election years between 1953 and 2000 than it was during comparable periods of the years before and after the election.
($285 billion vs. $260 billion). Although these differences were not statistically significant, their consistency with expectations is provocative.
Persuasion is and always has been a fundamental social psychological concern (Chaiken, Wood, & Eagly, 1996). The factors that influence the effectiveness of a persuasive communication have been investigated extensively (for reviews, see Brinol & Petty, 2005; Johnson, Miao, & Smith-McLallen, 2005). Lasswell (1948) observed that in order to understand the effectiveness of communication, one must know “Who says what in which channel to whom with what effect.” In other words, one must know the source of message, the message itself, and the intended audience (Maio & Haddock, 2007). Numerous studies have explored how characteristics of the source, the message, and message recipients can influence the effectiveness of persuasive communication. However, relatively little research has investigated how the effectiveness of a persuasive communication is influenced by cognitive experiences that recipients have had before they are exposed to this communication.

My conceptualization of mind-sets, however, suggests that the information strategies that are activated in a prior situation may influence how people process persuasive messages that they encounter later. The studies proposed in this chapter will evaluate this possibility. Specifically, I plan to investigate whether making supportive elaborations or counterarguments in a prior situation give rise to different mind-sets that influence people’s disposition to either elaborate or argue against the persuasive messages they receive later on totally irrelevant topics.
In the remainder of this chapter, I first briefly review the previous research on the factors that influence effectiveness of persuasion and illustrate the contribution of the present research to both literature on persuasion and literature on mind-set effects. I then describe four studies that demonstrate the influence of mind-sets on persuasion effectiveness and their boundary conditions.

THEORETICAL CONSIDERATIONS

Situational and Individual Differences in Persuasion

The effectiveness of a message can depend on both its source and its content. The effects of source characteristics are summarized by Johnson et al. (2005). These characteristics include the source’s prestige (Walster, Aronson, & Abrahams, 1966), expertise (Chaiken, 1987; Cialdini, 1993), physical attractiveness (Cialdini, 1993), and similarity to oneself (Emswiller, Deaux, & Willits 1971). In addition, individuals are typically more influenced when the arguments contained in a message are strong than when they are weak (Petty & Cacioppo, 1984). This is presumably because recipients can generate counterarguments more easily in the second case than in the first. Moreover, two-sided messages may be more effective than one-sided messages because two-sided message may decrease perceptions of bias, and reduce counterarguing for this reason (Etgar & Goodwin, 1982; Kamin, Brand, Hoeke, & Moe, 1989).

Factors that influence people’s motivation and ability to process the message content can also play a very important role by influencing the information processing
strategies that they adopt. Petty and Cacioppo (1981, 1986) suggest that when recipients are both able and motivated to evaluate the position advocated in a persuasive message, they think carefully about the implications of the message content. If their motivation and ability are low, however, they may use simpler, heuristic criteria that are less cognitively demanding. The tendency to evaluate a message’s content may be influenced by people’s background knowledge about the persuasion topic, its personal relevance, and situational distraction. Chaiken (1987) posits that people use heuristic processing and systematic processing strategies sequentially. If results of the less effortful heuristic processing yield a conclusion that recipients believe to be valid with some minimal degree of confidence, they may accept this conclusion without engaging in further processing. If their confidence is below this threshold value, however, they consult and evaluate implications of the message content.

Effects of Past Experience

The research summarized in the previous section focused on factors that are directly relevant to the communication being presented. However, past experiences that people have had can also have an impact. William McGuire’s (1964) research on inoculation effects shows that exposure to mild arguments against a proposition whose validity has never before been questioned (i.e. Truisms, such as “Mental illness is not contagious”) can stimulates people to counterargue, and the practice they acquire in doing so increases their ability to refute stronger attacks on the proposition’s validity that they encounter later.
In a particularly provocative study, McGuire (1961a) exposed participants to a truism, followed by a mild attack on its validity. Then, participants in some conditions wrote a paragraph refuting the attacks. These participants along with a control group were then exposed to an attack on the same truism consisting of either stronger versions of the same arguments considered in the initial stage or different ones. Participants who had written refutations against the mild attack were less influenced by the later strong attack, and this was true even when the arguments contained in the strong attack were different from those that they had attempted to refute earlier.

In the above experiment, two possible explanations could account for the efficacy of immunizing effects. First, practice in counterarguing against mild attacks in the immunizing stage could increase people’s ability to argue against strong attacks that they were exposed to later, and therefore, decrease the effectiveness of subsequent persuasion. Second, exposure to mild attacks could increase participants’ motivation to counterargue, independently of their ability. Subsequent studies manipulated the motivation to counterargue and ability to counterargue independently. In one study (McGuire, 1964), motivation to counterargue and practice counterarguing were manipulated orthogonally. Specifically, the motivation to counterargue was manipulated by exposing participants to either highly threatening attacks (4 arguments in the attacks) or nonthreatening attacks (2 arguments in the attacks), and the ability to counterargue was manipulated by giving them the opportunity to read refutations against those mild attacks or not. Both the motivation to counterargue and the ability to do so apparently increased resistance to influence. Interestingly, when participants had been exposed to highly threatening attacks in the initial stage, they were resistant to subsequent persuasion even though they were
not given the opportunity to read refutations. That is, they may have been motivated to bolster their defenses and, therefore, spontaneously practiced refuting the attacks without being explicitly told to do so.

McGuire’s research was restricted to situations in which the mild attacks to which individuals were initially exposed and the attacks they encountered later pertained to the same topic. Exposing persons to mild attacks could motivate them to counterargue spontaneously regardless of whether they had a chance to practice doing so. Therefore, the influence of practice and the effect of motivation to counterargue could not be separated. In the present research, however, participants received persuasive messages on topics that were totally irrelevant to those they considered earlier, and so motivational influences could be controlled.

The Present Conceptualization

People who encounter a persuasive communication might either (a) elaborate the contents of the communication and generate thoughts that support the communicator’s point of view or (b) attempt to refute the implications of the communication and the validity of the communicator’s standpoint. These dispositions can depend on individuals’ a priori agreement or disagreement with the point of view expressed. However, it could also be influenced by a mind-set that is induced by an experience that occurred before the persuasive communication is encountered.

Making supportive elaborations in an earlier situation would activate a general procedure of generating supporting arguments, giving rise to a bolstering mind-set. Once
activated, this mind-set will increase people’s disposition to make supportive elaborations of a message they receive later even though this message pertains to a quite unrelated topic. To this extent, they may be more persuaded by the information than they otherwise would be. In a similar vein, generating opposing arguments in an earlier situation could give rise to a counterarguing mind-set that decreases the likelihood of being persuaded by information that the individuals encounter later. The procedure of making supportive elaborations and the procedure of making counterarguments are not mutually exclusive, of course. However, the mind-set activated by past experience may determine which processing strategy predominates. To formalize the hypotheses:

**H4.1**: Making supportive elaborations in one situation will dispose people to generate supportive arguments in response to an unrelated communication that they encounter later. As a result, they will be more likely to be persuaded by this communication than they otherwise would be.

**H4.2**: Making counterarguments in one situation will dispose people to generate opposing thoughts in response to an unrelated communication that they encounter later. As a result, they will be less likely to be persuaded by the communication than they otherwise would be.

In the remainder of the chapter, I first describe two studies that provide support for H4.1 and H4.2. A third study tested the boundary conditions of the proposed mind-set effects and a fourth study tested the spontaneous activation of mind-sets without overt practice.
EXPERIMENT 4.1

A pilot study was conducted to test whether making supportive elaborations or counterarguments in one situation gives rise to different mind-sets that can influence consumers’ response to a commercial ad that they encounter later. Mind-sets were induced by asking participants to express their opinions about a series of propositions with which they either agree or disagree, respectively.

Method

Subjects and Design. Sixty-seven undergraduate students at the Hong Kong University of Science and Technology were randomly assigned into either the bolstering mind-set condition or the counterarguing mind-set condition.

Procedure. In both conditions, participants first took part in a survey that was ostensibly interested in understanding college students’ ability to express their opinions on various topics. Three propositions were presented on separated pages of the survey booklet. Participants were instructed to think about whether they were in agreement with the statement and to write down a short essay providing arguments for why they either agreed or disagreed with this statement. The instructions used in the bolstering mind-set condition and the counterarguing mind-set condition were identical. However, participants in the bolstering mind-set condition generated thoughts about propositions such as “Reading enriches the mind”, “Beijing should exercise little control over Hong Kong”, etc., which participants typically agreed with. In contrast, participants in
counterarguing mind-set conditions generated thoughts about negations of these propositions (e.g., “Reading does not enrich the mind”, “Beijing should exercise greater control over Hong Kong”, etc.). Thus, although participants in the two conditions generated thoughts with similar implications, the thoughts constituted supportive elaborations in the first case but counterarguments in the second.

Participants had 15 minutes to complete this task. They then went on to an ostensibly different study on the effectiveness of commercial advertisements. All participants read a print advertisement about Igloo hotels in Switzerland (See Appendix C). The ad described various features of the hotel such as accommodations, food, drinks, and entertainment facilities, etc. Two pictures of the hotel were presented along the verbal descriptions. After reading the ad, participants rated the attractiveness of the vacation spot, the persuasiveness of the ad, and the appeal of the ad along scales from 0 (not at all) to 10 (very).

Results and Discussion

Participants considered the vacation spot to be more attractive when they made supportive elaborations in prior situations \( (M = 8.88) \) than when they made counterarguments before \( (M = 8.06; F (1, 65) = 3.76, p < .06) \). Ratings of the ad’s persuasiveness and appeal were averaged to form a single measure of the ad’s persuasion effectiveness \( (\alpha = .70) \), which was analyzed as a function of mind-set. The results revealed that the ad was more effective when participants made supportive elaborations
in prior situations ($M = 7.80$) than when participants made counterarguments before ($M = 6.90$; $F (1, 65) = 4.87$, $p < .05$.

**EXPERIMENT 4.2**

Experiment 4.1 provided initial evidence that making supportive elaborations or counterarguments in one situations can give rise to different mind-sets. However, it did not have a control condition in which no mind-set was manipulated. It is therefore unclear whether the bolstering mind-set increased the effectiveness of the ad, a counterarguing mind-set decreased its effectiveness, or both. Furthermore, direct evidence of the types of thoughts that participants generated was not obtained. Experiment 2 accomplished this. Moreover, the favorableness of the vacation spots was manipulated as a between-subject variable. One ad was highly favorable and the other was moderately favorable.

Method

**Subjects and Design.** Seventy-six undergraduate students at the University of Illinois participated to fulfill a course requirement. This experiment employed a 3 (mind-set: bolstering vs. counterarguing vs. control) x 2 (favorableness of vacation spot: high vs. moderate) between-subject design.

**Procedure.** Participants in the bolstering mind-set conditions and those in the counterarguing mind-set conditions first wrote essays to express their opinions about three propositions under instructions similar to those given in Experiment 4.1. In the
bolstering mind-set condition, participants generated thoughts about propositions such as “Reading enriches the mind”, “The University of Illinois should not increase tuition fees in the next academic year”, etc., which participants typically agreed with. However, participants in counterarguing mind-set conditions generated thoughts about negations of these propositions, which participants typically disagreed with (e.g., “Reading does not enrich the mind”, “The University of Illinois should increase tuition fees in the next academic year”, etc.). In control conditions, participants were asked to write three short essays to show their knowledge of the pyramids of Egypt, lunar eclipses, and American War of Independence.

After completing the first task, participants were asked to take part in an ostensibly different study on the effectiveness of commercial advertisements. All participants read either the advertisement for Igloo hotels employed in experiment 4.1 or an ad for the Milwaukee Art Museum, describing its history and collections as well as the musical activities that tourists may attend in the city ((See Appendix C for the stimulus materials). After reading the ad, participants indicated how attractive the vacation spot was, how persuasive the ad was, and how appealing the ad was along scales from 0 (not at all) to 10 (very). In addition, they were instructed to write down the thoughts that they had toward the ad. Finally, participants reported their mood along a scale from -5 (sad) to 5 (happy). They also indicated how motivated they were to do well in the survey along a scale from 0 (not at all) to 10 (very).

Results
Mood and Motivation Check. Reported mood and motivation to do well in the survey were analyzed as a function of the favorableness of the ad and mind-set conditions. No effects were significant in either analysis ($p > .10$).

Attractiveness of Vacation Spot. Mean ratings on the attractiveness were summarized in Table 4.1 as a function of favorableness of vacation spot and mind-set conditions. Participants rated the Igloo hotels in Switzerland to be more attractive than the Milwaukee Art Museum ($6.57$ vs. $5.20$; $F (1, 70) = 8.43, p < .005$). Moreover, the effect of mind-set was also significant ($F (2, 70) = 5.35; p < .01$) and did not depend on the favorableness of the vacation spot ($F < 1$). Vacation spots were perceived to be less attractive in the counterarguing mind-set condition ($M = 4.92$) than in control conditions ($M = 5.94$; $F (1, 70) = 2.96, p < .09$), and to be more attractive in the bolstering mind-set condition ($M = 6.80$) than in control conditions ($M = 5.94$), even though the differences were not reliable ($p > .10$).

Ad effectiveness. Ratings of the ad’s persuasiveness and appeal were averaged to form a single measure of the ad’s effectiveness ($\alpha = .89$). These data were analyzed as a function of favorableness of vacation spot and mind-set. As shown in Table 4.1, the ad was more effective when the vacation spot was highly favorable ($M = 6.45$) than when it was moderately favorable ($M = 5.27$; $F (1, 70) = 7.36, p < .005$). The main effect of mind-set was significant, $F (2, 70) = 4.18, p < .02$, and did not depend on the favorableness of the vacation spot ($F < 1$). The ad was judged to be less effective in the counterargument conditions ($M = 4.96$) than in the control conditions ($M = 6.27$; $F (1, 70) = 5.75, p < .02$). However, the ad was not more effective in the bolstering mind-set condition than in the control condition ($6.37$ vs. $6.27$; $F < 1$).
### Table 4.1

<table>
<thead>
<tr>
<th>Spot Attractiveness</th>
<th>Ad Effectiveness</th>
<th>Thought Favorableness*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Igloo</td>
<td>Museum</td>
<td>Igloo</td>
</tr>
<tr>
<td>Counterarguing</td>
<td>5.30</td>
<td>4.54</td>
</tr>
<tr>
<td>Control</td>
<td>6.73</td>
<td>5.14</td>
</tr>
<tr>
<td>Bolstering</td>
<td>7.67</td>
<td>5.92</td>
</tr>
</tbody>
</table>

*Thought Favorableness = Number of Positive Thoughts – Number of Negative Thoughts.

**Thought generation.** Analyses of the total number of thoughts that participants generated about the ad and the vacation spot as a function of vacation type and mind-set conditions yielded no significant effects ($p > .10$). All thoughts were coded as positive, negative or neutral, and the difference between the number of positive and the number of negative thoughts generated was computed for each participant. And the scores were summarized in Table 4.1 as a function of the favorableness of vacation spot and mind-set conditions.

Participants generated more positive thoughts than negative thoughts when the vacation spot they considered was highly favorable ($M = 0.35$), whereas they generated more negative thoughts than positive thoughts when it was moderately favorable ($M = -0.72$; $F (1, 70) = 10.24, p < .005$). More important, the main effect of mind-set was
significant \( (F(2, 70) = 5.67, p < .01) \) and indicated that the relative number of positive thoughts that participants generated was nonsignificantly greater in bolstering mind-set conditions than in control conditions, \( (0.39 \text{ vs. } 0.02; F < 1) \) and significantly less in counterargument mind-set conditions than in control conditions \( (-.97 \text{ vs. } .02; F(1, 70) = 5.41; p < .05) \).

Mediation. A mediation analysis was conducted to test whether thought difference mediate the effect of mind-set manipulations on the effectiveness of the ad. Although mind-sets influenced the effectiveness of the ad \( (\beta = .30; t = 2.73, p < .005) \), thought differences also predicted the ad’s effectiveness \( (\beta = .64; t = 7.07, p < .001) \); and introducing this factor into the regression model reduced the effect of mind-set to nonsignificance \( (t < 1) \). Sobel test also confirmed that the thoughts that participants generated mediated the influence of mind-sets on the effectiveness of ad \( ( \text{Sobel statistic} = 2.98, p < .005 ) \).

Discussion

Experiment 4.2 showed that generating counterarguments in one situation induced a mind-set that disposed participants to generate more negative thoughts and fewer positive thoughts about the commercial ad that they encountered later. Consequently, they formed less favorable attitudes towards the product and the ad than those in the control condition. Although the effects of bolstering were in the expected direction, they were not significant. Perhaps making supportive elaborations was the
default strategy that participants used to process the ad messages they received. As a result, a situationally induced manipulation of mind-set had limited additional effect.

EXPERIMENT 4.3

Experiment 4.2 confirmed the influence of a counterarguing mind-set on the effectiveness of a persuasive message. However, this effect may occur only when the subsequent persuasion is relatively easy to argue against. If the subsequent persuasion is too strong to be refuted, a counterarguing mind-set might have a rebound effect, leading to greater effectiveness of persuasion. Rucker and Petty (2004) found in a series of experiments that instructing participants to refute very strong arguments led to stronger attitudes than instructing them to think freely. The generation of counterarguments was apparently difficult, leading participants to infer that the position advocated was very likely to be correct. Thus, although both groups of participants held equally favorable attitudes towards the issue, those who were instructed to generate negative thoughts held the attitudes with greater certainty and their attitudes were more predictive of subsequent behavioral intentions.

In the following experiment, a counterarguing mind-set was activated by performing a previous task. I assumed that practice in counterarguing in the first task would activate a counterarguing mind-set and, therefore, would increase people’s disposition to counterargue the persuasive message that they encounter later. If the latter message is relatively easy to refute, a counterarguing mind-set should increase the number of negative thoughts that people generate in response to this message and,
therefore, should decrease persuasion effectiveness. However, suppose the persuasion message in the second task is very difficult to refute. Then, a counterarguing mind-set may increase participants’ awareness of the difficulty of refuting the message and increase perceptions of its validity. Thus, it may increase the likelihood of accepting its implications. However, when the persuasive message is strong, elaboration should be the default processing strategy, and so inducing a bolstering mind-set should have little additional influence.

Experiment 4.3 tested these possibilities. In this experiment, the persuasive communication that participants receive was a donation appeal. I assumed that because donation appeals usually urge individuals to engage in altruistic behaviors that have socially desirable implications, people find it more difficult to generate reasons to refute their validity than to refute the validity of advertisements for a product. To this extent, a counterarguing mind-set might actually convince products of the validity of the appeal and could consequently have a boomerang effect on its effectiveness. This was in fact the case.

Method

Subjects and Design. One hundred forty-three undergraduate students in University of Illinois will take part in the study to fulfill a course requirement. They were randomly assigned to one of the six conditions of a 3 (mind-set: bolstering vs. counterarguing vs. control) x 2 (awareness of charitable organizations: known vs. unknown) design.
Procedure. Mind-sets were manipulated using the procedures employed in experiment 4.2. Upon completing the mind-set manipulation task, participants read an appeal to support either (a) the United Nations Children's Fund (UNICEF), a well-known charitable organization, or (b) Advocates for Children, which was unknown to participants. Both donation appeals emphasized the importance of helping children get education, explained the missions of the charitable organizations, set the goal of current donation campaign, and specified how the donated money could be used (See Appendix D for the stimulus materials). After doing so, participants reported their willingness to make a donation along a 5-point scale from 1 (definitely won’t) to 5 (definitely will). They also indicated how much money they would be willing to give if they had $100 in their pocket. Finally, they listed the thoughts that they had when reading the donation appeal.

Results.

Donation Intentions. Participants’ ratings of their donation intentions are summarized in the first section of Table 4.2 as a function of mind-set conditions and the charitable organization. The main effect of mind-set was significant, $F (2, 137) = 3.05, p = .05$. Planned comparisons indicated that a counterarguing mind-set increased participants’ intentions to make a donation (3.27 vs. 2.75, under counterarguing mind-set vs. control conditions, respectively), $F (1, 137) = 4.81, p < .05$. Thus, as I speculated, counterarguing the appeal had a boomerang effect. However, a bolstering mind-set did not influence participants’ donation intentions (2.80 vs. 2.75 under bolstering mind-set vs.
control conditions, respectively). This difference did not depend on whether the charitable organization was well-known or (UNICEF) or not (AFC) ($F < 1$).

**TABLE 4.2**

**DONATION INTENTIONS, AMOUNT OF DONATIONS AND THOUGHT FAVORABLENESS AS A FUNCTION OF MIND-SETS AND ORGANIZATION TYPE**

<table>
<thead>
<tr>
<th></th>
<th>Donation Intentions</th>
<th>Amount of Donations</th>
<th>Thought Favorableness*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>UNICEF</td>
<td>AFC</td>
<td>UNICEF</td>
</tr>
<tr>
<td>Counterarguing</td>
<td>3.43</td>
<td>3.12</td>
<td>$27.14</td>
</tr>
<tr>
<td>Control</td>
<td>2.92</td>
<td>2.56</td>
<td>$12.28</td>
</tr>
<tr>
<td>Bolstering</td>
<td>2.65</td>
<td>2.96</td>
<td>$11.39</td>
</tr>
</tbody>
</table>

*Thought Favorableness = Number of Positive Thoughts – Number of Negative Thoughts.

*Amount of Donations.* Reported amount of donations are summarized in the second section of Table 4.2. Participants estimated that they would donate more money when the charitable organization was well-known ($M = 16.94$) than when it was not ($M = 11.94$), $F (1, 137) = 3.89, p = .05$. More important, the main effect of mind-set was significant, $F (2, 137) = 7.54, p < .001$, and is attributable to the fact that participants who developed a counterarguing mind-set donated more money ($M = 21.00$) than those in the control condition ($M = 11.96$), $F (1, 137) = 6.58, P < .02$. In contrast, a bolstering mind-set did not influence the amount of money that participants decided to donate relative to control conditions ($10.98$ vs. $11.96, p > .10$).
Thought generation. Analyses of the total number of thoughts that participants generated about the donation appeal as a function of organization awareness and mind-set conditions yielded no significant effects ($F < 1$). All thoughts were coded as positive, negative, or neutral, and the difference between the number of positive and the number of negative thoughts generated was computed for each participant. These differences, summarized in the third section of Table 4.2, indicate that participants generated more positive thoughts than negative thoughts when the charitable organization was well-known ($M_{\text{difference}} = 0.47$), whereas they generated more negative thoughts than positive thoughts when the organization was unknown ($M_{\text{difference}} = -0.73$). However, no effects involving mind-set were significant. Thus, participants did not generate more negative thoughts than positive thoughts even when a counterarguing mind-set was activated in the previous task.

Discussion

Experiment 4.3 showed that when the subsequent persuasive message had socially desirable implications and it would be difficult to generate opposing thoughts. In this case, even though developing a counterarguing mind-set increased participants’ inclination to generate more opposing thoughts, they might ultimately fail to do so. That’s why these participants did not generate more negative thoughts about the donation appeal than control participants did. However, those who attempted to counterargue, due to an activated counterarguing mind-set, would conclude that the persuasive messages were difficult to be refuted and would be more likely to accept its implications. Therefore,
manipulating a counterarguing mind-set increased both participants’ donation intentions and the amount of money that they would like to donate. In contrast, the influence of a bolstering mind-set was minimal.

EXPERIMENT 4.4

In previous experiments, mind-sets were induced by stimulating participants to explicitly engage in either elaborating or counterarguing. However, overt practice may not be necessary in order to activate these mind-sets. If exposure to messages with which people disagree (or agree) motivates them to argue spontaneously for or against the message, this may be sufficient to activate a general disposition to elaborate or counterargue. Experiment 4.4 evaluated this possibility. In addition, it determined whether individuals’ priori belief in the position advocated influenced their disposition to respond by bolstering or counterarguing the message contents.

In this experiment, Democrats, Republicans, and individuals who were not affiliated with any political party were randomly assigned to one of three conditions. In the speech condition, participants were first asked to watch a 10-minute video of Barack Obama’s speech on his economic rescue plan in the 2008 presidential campaign (http://www.youtube.com/watch?v=bUcTDM5pUww&feature=related). In the debate condition, participants watched a 10-minute video of the third Presidential Debate between John McCain and Barack Obama on their proposed economic plans (http://www.youtube.com/watch?v=uvqpTIKEjNQ&feature=related). In the control condition, participants were not exposed to either video. Then, all participants watched a
speech video of the president of Toyota concerning the need to recall Toyota automobiles (http://www.youtube.com/watch?v=ZZeID2-Rbg4&feature=related) and a Toyota advertisement that was launched to increase consumers’ confidence in Toyota products’ safety after the Toyota car accident in San Diego on August 28th, 2009 (http://www.youtube.com/watch?v=XZoBfpm1zHg). Finally, participants reported their attitudes toward Toyota.

When participants had no party affiliations and thus have no prior attitude toward either candidate, I expected them to elaborate the message content when they listened to Obama’s speech and, therefore, to develop a bolstering mind-set that would increase their subsequent evaluations of Toyota. When they listened to the presidential debate, however, I expected them to follow the two candidates’ arguments against one another’s position. To this extent, they should develop a counterarguing mind-set that would decrease their subsequent evaluations of Toyota.

Different predictions were made for participants with a strong a priori attitude toward Obama or McCain. These participants should be highly motivated to support their favorite candidate when watching the presidential debate and, therefore, should acquire a bolstering mind-set. When they watch Obama’s speech, however, Republicans will be more likely to make counterarguments whereas Democrats will be more likely to make supportive elaborations. All the predictions were summarized in Table 4.3.
### TABLE 4.3

PREDICTED EFFECTS OF PARTY AFFILIATION AND TYPE OF TV PROGRAM ON MIND-SET ACTIVATION—EXPERIMENT 4.4

<table>
<thead>
<tr>
<th></th>
<th>Speech</th>
<th>Debate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independents</td>
<td>Bolstering</td>
<td>Counterarguing</td>
</tr>
<tr>
<td>Republicans</td>
<td>Counterarguing</td>
<td>Bolstering</td>
</tr>
<tr>
<td>Democrats</td>
<td>Bolstering</td>
<td>Bolstering</td>
</tr>
</tbody>
</table>

Method

**Subjects and Design.** This experiment employed a 3 (Political TV Program: Speech vs. Debate vs. Control) x 3 (Party affiliation: Republican vs. Democrats vs. Control) between-subject design. One hundred thirty-two undergraduate students at University of Illinois participated in the experiment to fulfill a course requirement. They were randomly assigned to one of the three TV Program conditions and were self-selected into one of the three party affiliation conditions.

**Procedure.** Participants in the two experimental conditions were instructed to take part in an opinion survey that was ostensibly interested in college students' opinions toward TV programs on political campaigns. Then they watched a 10-minute TV clip of either Obama’s speech on his economic rescue plan or the third Presidential
Debate, the topic of which was “Why is your economic plan better than your opponent’s?” After watching the TV clip, participants were informed that it would took time for their impression of the TV program to “settle” and, on this pretense, they were asked to respond to a survey on consumers' attitudes towards Toyota.

All participants then watched a video clip of a speech made by Toyota's president Aiko Toyoda and a commercial ad. In his speech, President Toyoda apologized for the car accident that occurred in San Diego and explained Toyota’s recall plans and the corporation’s plan to improve the quality of Toyota products. The commercial ad featured Toyota’s long history of producing safety cars and its effort to rebuild customers’ confidence in the Toyota cars. After watching the video clips, participants rated how much they liked the brand Toyota along a scale from -3 (dislike very much) to 3 (like very much), and indicated how confident they were about Toyota's ability to improve the safety of its cars along a scale from 0 (not at all confident) to 7 (very confident).

Upon completion of the consumer survey, participants answered several filler questions about the TV programs that they watched earlier on political campaign. Specifically, they evaluated how much they liked the TV program along a scale from -3 (dislike very much) to 3 (like very much) and recalled the main points made in the TV program. Finally, they reported their party affiliations.

Results

*Overall Evaluations of Toyota.* Mean evaluations of the brand Toyota were summarized in Table 4.4, and the mean differences between experimental and control conditions were summarized in Table 4.5, as a function of the political TV program that
they watched prior to the consumer survey and their party affiliation. The interaction of these variables on overall evaluation of the brand Toyota was significant, $F (4, 123) = 4.85, p < .001$. When participants were not affiliated with any political parties, watching the presidential debate decreased their evaluations of Toyota relative to control conditions (0.36 vs. 1.35, respectively; $M_{\text{difference}} = -.99$), $F (1, 123) = 6.06, p < .02$. However, watching the speech nonsignificantly increased these evaluations (1.55 vs. 1.35 under speech vs. control conditions respectively; $M_{\text{difference}} = .20$). When participants were affiliated with the Republican Party, watching the presidential debate did not influence their evaluations of Toyota relative to control conditions (0.67 vs. 0.57, for debate and control conditions respectively; $M_{\text{difference}} = .10$). However, watching Obama’s speech decreased these evaluations (-0.14 vs. 0.57 under speech and control conditions respectively; $M_{\text{difference}} = -.71$), $F (1, 123) = 3.00, p < .09$. When participants were affiliated with the Democratic Party, watching the debate increased their evaluation of Toyota (1.87 vs. 1.24 for debate and control conditions respectively; $M_{\text{difference}} = .63$), $F (1, 123) = 2.91, p < .09$. However, watching the speech decreased participants’ evaluation of Toyota (0.43 vs. 1.24 for Speech and Control conditions respectively; $M_{\text{difference}} = -.81$), $F (1, 123) = 4.62, p < .05$. 83
### TABLE 4.4

EFFECTS OF PARTY AFFILIATIONS AND TYPE OF TV PROGRAMS ON CONSUMERS’ OVERALL EVALUATION OF THE BRAND TOYOTA AND THEIR CONFIDENCE IN TOYOTA’S ABILITY TO IMPROVE THE SAFETY OF ITS CARS

<table>
<thead>
<tr>
<th></th>
<th>Speech</th>
<th>Debate</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Evaluations</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Independents</td>
<td>1.55</td>
<td>0.36</td>
<td>1.35</td>
</tr>
<tr>
<td>(n=11)</td>
<td>(n=11)</td>
<td>(n=23)</td>
<td></td>
</tr>
<tr>
<td>Republicans</td>
<td>-0.14</td>
<td>0.67</td>
<td>0.57</td>
</tr>
<tr>
<td>(n=14)</td>
<td>(n=9)</td>
<td>(n=14)</td>
<td></td>
</tr>
<tr>
<td>Democrats</td>
<td>0.43</td>
<td>1.87</td>
<td>1.24</td>
</tr>
<tr>
<td>(n=14)</td>
<td>(n=15)</td>
<td>(n=21)</td>
<td></td>
</tr>
</tbody>
</table>

| **Confidence**     |        |        |         |
| Independents       | 5.64   | 4.73   | 5.52    |
| Republicans        | 4.50   | 5.78   | 5.29    |
| Democrats          | 4.71   | 5.80   | 5.48    |
TABLE 4.5

EFFECTS OF WATCHING THE SPEECH AND DEBATE ON EVALUATIONS
OF TOYOTA AND CONFIDENCE RELATIVE TO CONTROL CONDITIONS

<table>
<thead>
<tr>
<th></th>
<th>Speech</th>
<th>Debate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Independents</td>
<td>0.20</td>
<td>-0.99**</td>
</tr>
<tr>
<td>Republicans</td>
<td>-0.71*</td>
<td>0.10</td>
</tr>
<tr>
<td>Democrats</td>
<td>-0.81**</td>
<td>0.63*</td>
</tr>
<tr>
<td>Confidence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Independents</td>
<td>0.12</td>
<td>-0.79**</td>
</tr>
<tr>
<td>Republicans</td>
<td>-0.79*</td>
<td>0.49</td>
</tr>
<tr>
<td>Democrats</td>
<td>-0.77**</td>
<td>0.32</td>
</tr>
</tbody>
</table>

**p < .05
*p < .10

There was also an unexpected main effect of party affiliations on the evaluations of Toyota, $F (2, 123) = 6.39$, $p < .002$. Planned contrast showed that Republicans evaluated Toyota less favorably than Democrats and Independents did (4.32 vs. 5.18 for Republicans and the average of Democrats and Independents, $F (1, 130) = 14.36$, $p < .001$). The latter two groups did not differ from each other ($F < 1$). The reason for this difference bears further investigation.

Confidence in Toyota’s Ability to Improve the Safety of Cars. Mean confidence ratings were summarized in Table 4.4, and mean differences between experimental and
control conditions were summarized in Table 4.5, as a function of the political TV program that they watched prior to the consumer survey and their party affiliations. The interaction of these variables on participants’ confidence in Toyota was significant, $F(4, 123) = 3.62, p < .01$. Planned comparisons revealed that when participants were not affiliated with any political parties, watching the debate decreased their confidence in Toyota (4.73 vs. 5.52 under debate vs. control conditions, respectively; $M_{\text{difference}} = -.79$) $F(1, 123) = 4.05, p < .05$. However, watching Obama’s speech nonsignificantly increased their confidence (5.64 vs. 5.52 for speech and control conditions respectively; $M_{\text{difference}} = .12$). When participants were affiliated with either the Republican Party or the Democratic Party, watching the debate nonsignificantly increased their confidence in Toyota relative to control conditions (5.79 vs. 5.39, for debate and control conditions respectively, averaged over Republicans and Democrats) $F_{\text{dir}}(1, 123) = 1.88, p < .09^2$, whereas watching the speech decreased participants’ confidence in Toyota (4.61 vs. 5.39, for Speech and Control conditions respectively, averaged over Republicans and Democrats), $F(1, 123) = 8.43, p < .005$.

Discussion

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2 Here and elsewhere, predicted effects were evaluated on the basis of a directional $F$-test ($F_{\text{dir}}$). These tests, which involve a comparison of half of the cells of the design with the mean of the other half, are equivalent to a one-tailed t-test, where $F = t^2$ (for further discussion, see Keppel 1991, pp. 122-123).
When participants watched two different TV programs, the first political program they watched influenced the effectiveness of information that they received later about Toyota. The nature of the influence depended on participants’ prior attitudes toward the politicians shown in the political program and thus their acceptance of the positions they espoused. Specifically, when participants were not affiliated with any political parties, and so did not have a strong prior attitude supporting or opposing Obama or McCain, watching the debate activated a counterarguing mind-set that decreased the effectiveness of persuasion that they received later. Therefore, they evaluated the brand Toyota less favorably and reported lower confidence in the brand’s ability to improve the safety of its cars. However, watching the speech stimulated them to elaborate the content of speech. The influence of a bolstering mind-set was much weaker than the influence of a counterarguing mind-set. This could indicate that elaboration is a default processing strategy that people use when they receive a persuasive communication, and so factors that induce a bolstering mindset have little additional impact.

When participants were affiliated with either the Democratic Party or the Republican Party, they had a strong prior attitude supporting or opposing each candidate and they were strongly motivated to elaborate their favorite candidate’s point of view in a debate. Consequently, a strong bolstering mind-set was activated, leading to greater elaborations of messages from Toyota and more positive evaluations of Toyota. However, these participants counterargued more when they watched the speech. Consequently, a counterarguing mind-set was activated, leading to more negative evaluations of Toyota. The indication that Republicans were motivated to make counterarguments when they watched Obama’s speech is consistent with expectations. Unexpectedly, however,
Democrats also made counterarguments when they watched Obama’s speech. The reason for this is unclear.

SUMMARY

The studies reported in this chapter examined the mechanism through which mind-sets influence people’s subsequent behavior. I proposed that engaging in one behavior may activate mind-sets that change the thoughts that people generate in response to information that they receive later. I tested this mechanism in the context of understanding the influence of making supportive elaborations or counterarguments in one situation on the effectiveness persuasion that people are exposed to in the subsequent situation. Experiments 4.1 and 4.2 found that making supporting elaborations in one situation activated a bolstering mind-set that disposed people to generate more supportive thoughts and fewer opposing thoughts towards subsequent, unrelated persuasive communication. Consequently, they were more likely to be persuaded than otherwise. However, generating opposing arguments in one situation disposed people to generate more opposing thoughts and fewer supportive thoughts towards subsequent persuasion. Consequently, they were less likely to be persuaded than otherwise. Because elaboration may be the default information processing strategy that people employ in response to persuasive messages, the effect of a bolstering mind-set is weaker than the effect of a counterarguing mind-set.

Experiment 4.3 identified a boundary condition of the counterarguing mind-set and showed that when subsequent persuasive messages had socially desirable
implications and were difficult to be refuted, activating a counterarguing mind-set actually increased the effectiveness of persuasion.

Experiment 4.4 tested whether bolstering and counterarguing mind-sets could be activated without overt practice. I tested this possibility by showing participants different types of TV programs that would motivate them to either elaborate or counterargue the content of the TV program, depending on their prior attitudes toward the speakers and the positions being advocated. When participants were not affiliated with any political parties and had no strong prior attitudes toward the speakers, watching the video of Obama’s speech led them to elaborate its content, inducing a bolstering mindset. Therefore, they were more likely to elaborate the persuasive communication from Toyota and evaluated Toyota more favorably. However, watching the video of presidential debate between Obama and McCain led them to follow each candidate’s arguments against the other candidate. Consequently, the procedures of counterarguing were activated and they were more likely to argue against the persuasive communication from Toyota and evaluated Toyota less favorably. Interestingly, when participants were affiliated with either the Democratic Party or the Republican Party, they were more likely to support their favorite candidate and elaborate one candidate’s arguments. Consequently, they acquired a bolstering mindset that led them to elaborate the persuasive messages from Toyota and to evaluate Toyota more favorably.
CHAPTER FIVE

AN ACQUISITION MIND-SET: COGNITIVE CONSEQUENCES

APPETITIVE MOTIVATION

Research on the consequences of goal activation suggested that activating a goal may increase the accessibility of knowledge that related to attainment of the goal (for a review, see Fishbach & Ferguson, 2007). For example, Aarts, Dijksterhuis, and De Vries (2001) manipulated participants’ thirst by asking some of them to eat salty snacks. Participants then completed a lexical decision task in which some of the words were beverages or items used to drink beverages (e.g., juice, soda, and bottle). Compared with participants in the control group, participants who were induced to feel thirsty showed greater accessibility of drinking-related words.

However, activating a goal can also activate the procedures that are used in order to pursue the goal. Therefore, activating the motivation to pursue a goal may also activate a cognition-based mind-set that may influence people’s response to objects that are irrelevant to the pursuit of this goal. The studies reported in this chapter explored this possibility. Specifically, I investigated the influence of appetitive motivation on people’s reactions to food and non-food. After reviewing the literature on the influence of goal activation on response to different objects, I propose three hypotheses and report four experiments that evaluated their validity.

The Influence of Goal Activation on People’s Responses to Stimuli
A goal is defined as a cognitive representation of a desired endpoint that impacts evaluations, emotions and behaviors (Fishbach & Ferguson, 2007). Once a goal is activated, it may influence people’s responses to stimuli they encounter. Lewin (1935) noted that the valence of an object usually derives from the fact that the object is a means to the satisfaction of a goal. Specifically, people evaluate an object more positively if the object can help them fulfill the activated goal, whereas they evaluate an object more negatively if the object could prevent them from pursuing the activated goal (for a review, see Fishbach & Ferguson, 2007; Markman & Brendl, 2000). For example, people who are thirsty may perceive water to be more desirable because it can alleviate their thirst, whereas they may perceive salty things that can increase their thirst to be undesirable (see Fishbach & Ferguson, 2007).

Empirical research has investigated the influence of goal activation on the evaluation of objects. Sherman and his colleagues (2003) found that chronic cigarette smokers automatically evaluate smoking-related stimuli more positively when they feel the urge to smoke than when they have just recently smoked. In another study, Ferguson and Bargh (2004b) used implicit evaluation measures and found that participants who were thirsty evaluated thirst-quenching products (e.g., water and juice) more favorably than participants who had been thirsty but had just had something to drink. However, the thirsty participants did not evaluate unrelated objects (e.g., chair) more favorably.

There is also evidence that the activation of a goal can lead to more negative evaluations of stimuli that undermine the achievement of the goal (Fishbach, Zhang, & Trope, 2010). For example, participants who were primed with a goal (e.g., academic
achievement) generated negative evaluations of words that were related to a different goal (e.g., social life) that might undermine the fulfillment of the primed objective.

The Influence of Appetitive Motivation on Evaluations of Food and Non-food

Particularly relevant to the present research was the influence of appetitive motivation on evaluations of food and non-food. Research on this topic has yielded mixed results. Nisbett and Kanouse (1969) suggested that appetitive motivation could increase the attractiveness of food. They found that normal weight consumers spent increasing amounts of time and money on buying food as their state of food deprivation increased. Brendl, Markman, and Messner (2003) manipulated appetitive motivation by asking participants to taste a small quantity of popcorn (see Cornell, Rodin, & Weingarten, 1989 for justifications of this manipulation). However, they found that although appetitive motivation decreased participants’ evaluations of non-food products, it had no effect on participants’ evaluations of food. Based on this observation, the authors argued that activating a focal need (e.g., to eat) makes objects that are unrelated to the need (i.e., non-food products) seem less valuable. Finally, Wadhwa, Shiv, and Nowlis (2008) found that sampling a tasty drink increased participants’ evaluation of hedonic food and non-food items but did not influence participants’ evaluations of utilitarian foods or non-foods.

These seemingly inconsistent findings may due to different manipulations of appetitive motivation. Nisbett and Kanouse (1969) used the number of hours of food deprivation as indications of strength of appetitive motivation. However, Brendl et al.
(2003) and Wadhwa et al. (2008) manipulated appetitive motivation by giving participants a small quantity of food or drink to sample. These different manipulations could have different consequences. First, food deprivation obviously increases participants’ physiological need to eat, and directly increases appetitive motivation. However, sampling food may increase participants’ perception of their hunger but does not influence their physiological need to eat.

Second, the food and drink used to manipulate hunger in the studies reported by Wadhwa et al. (2008) were hedonic in nature. Wadhwa et al. (2008) showed that their manipulation only increased participants’ evaluations of hedonic foods but did not influence their evaluations of utilitarian foods. It therefore seems unlikely that appetitive motivation drove the effects. Rather, sampling a small quantity of a tasty drink could influence other motives (i.e., motivation to seek rewards) that might have influenced their results.

In the present research, I was interested in the influence of physiological hunger on people’s evaluations of food and non-food products. Consistent with research on the influence of goal activation on object evaluation, I assumed that when people are hungry, they perceive foods as more attractive because foods could facilitate their pursuit of the activated goal (i.e., eating). However, even though non-foods are irrelevant to the goal of eating, they may not undermine the pursuit of this goal. Therefore, hunger may not affect the attractiveness of non-food items.
**H5.1:** Appetitive motivation produced by physiological hunger will increase the attractiveness of food items. However, this motivation may not influence the attractiveness of non-food items.

Appetitive Motivation and an Acquisition Mind-set

Recent research investigated the influence of appetitive motivation on people’s behavior that is not directly related to the consumption of food. Briers, Pandelaere, Dewittee, and Warlop (2006) found that hungry participants were less willing than non-hungry participants to donate to charities or share money with the others. Furthermore, the effects of hunger and desire for money were reciprocal. That is, participants who were motivated to get a large reward in a lottery ate more chocolate candies than others did.

To account for these findings, the authors proposed that financial and caloric resources are closely intertwined. Thus, cues that signal scarcity in one domain can motivate people to acquire or maintain resources in the other. These effects might reflect the influence of a mind-set of the sort to be proposed. That is, scarce resources in one domain might increase people’s intention to acquire these resources and thus might activate a general acquisition-related procedure. This procedure could induce a mind-set that increases people’s dispositions to acquire resources in general.

Thus, in Briers et al.’s (2006) research, appetitive motivation may have increased participants’ tendency to acquire food, activating a general acquisition-related mind-set that influenced their later disposition to acquire money. On the other hand, the motivation
to acquire money may also have given rise to an acquisition mind-set that increased the later tendency to acquire and eat more food.

This effect of a mind-set differs from the direct influence of appetitive motivation in two respects. First, appetitive motivation may increase the attractiveness of foods and enhance people’s intention to obtain food products. However, if appetitive motivation activates a cognition-based acquisition mind-set, the mind-set may increase people’s disposition to acquire non-food objects that are irrelevant to the goal of eating. Second, once a mind-set is activated, it may persist for a period of time. Because the mind-set is based on activation of cognitive procedures, the effect of increasing the accessibility of those procedures should be independent of whether the appetitive motivation is satiated or not. Therefore, if appetitive motivation activates a cognition-based acquisition mind-set, the effects of this mind-set may persist to influence people’s acquisition dispositions for non-food even when the motivation that gave rise to it is satiated by eating. To summarize these possibilities:

**H5.2:** Appetitive motivation may increase people’s disposition to acquire food items, thus activating an acquisition-related mind-set. Once activated, this mind-set increases people’s disposition to acquire non-food items as well.

**H5.3:** The influence of an acquisition mind-set may persist even though appetitive motivation is satiated by eating.

Note that this prediction distinguishes the influence of an acquisition mind-set from the direct influence of appetitive motivation, which is basically reflected in product evaluations. Consistent with Ferguson and Bargh (2004b)’s findings that thirst increased participants’ evaluations of thirst-quenching products (e.g., water and juice) but not
unrelated objects, appetitive motivation was predicted to increase people’s evaluations of food but not non-food.

Four experiments were conducted. Experiment 5.1 manipulated appetitive motivation by having participants take part in the study either after lunch or before dinner. Appetitive motivation only increased participants’ evaluations of food products and did not influence their evaluations of non-food. However, appetitive motivation increased participants’ dispositions to obtain both food and non-food products.

In Experiment 5.2, I activated acquisition-related procedures using a cognitive priming task. Participants were primed of acquisition-related concepts, semantic concepts of hunger, or control words. Compared to control conditions, priming acquisition-related concepts increased participants’ dispositions to acquire both food and non-food. However, this priming task did not influence participants’ evaluation of either food or non-food.

Experiment 5.3 confirmed the prediction that if appetitive motivation activates a cognition-based acquisition mind-set, the mind-set persists even though the appetitive motivation is satiated by eating.

Experiment 5.4 provided evidence of the different effects of an acquisition mind-set and general motivation. Achievement motivation was induced by leading participants to expect they would take an intelligence test. Before taking the test, however, participants reported their dispositions to acquire one set of products and their evaluations of a second set of products. As expected, achievement motivation influenced participants’ evaluations of both food and non-food but did not influence participants’ acquisition dispositions.
EXPERIMENT 5.1

Experiment 5.1 aimed to test whether physiological hunger influences (1) people’s evaluations of food and non-food products, and (2) their dispositions to acquire food and non-food products.

Method

Forty-one undergraduates at the Hong Kong University of Science and Technology participated to fulfill a course requirement. They were assigned to two half-hour sessions a week apart. Three within-subject factors were manipulated in a latin square design: the time of the session (2 pm vs. 6 pm), the set of products rated, and the type of rating that participants were asked to make (liking for the products or how much they would like to have it).

**Stimulus Materials.** Two sets of products were constructed, each containing four food products (e.g., seafood, noodles, juice, etc.) and 8 non-food products (e.g., MP3 players, jeans, shoes, etc.). The products contained in the two sets were different. Each set of products was used to construct two survey questionnaires. In one questionnaire, participants reported how much they would like to have the products listed in the questionnaire (i.e., acquisition dispositions) along scales from 0 (not at all) to 10 (very much). In the other questionnaire, participants judged the favorableness of their reactions to the products listed in the questionnaire (i.e. product evaluations) along scales from -5 (unfavorable) to 5 (favorable). (All questionnaires had the title of “Personal Attitude
Survey.” However, in describing the studies, I refer to the former questionnaire as an Acquisition Survey and to the latter as an Evaluation Survey.)

Procedure. Each participant took part in two half-an-hour sessions a week apart. One group of participants took part in the first session at 2:00 p.m. and in the second session at 6:00 p.m. The other group of participants took part in the first session at 6:00 p.m. and in the second session at 2:00 p.m. Participants were informed that they were going to take part in a Personal Attitude Survey that aimed to understand consumers’ reactions to different kinds of products. The sequence in which participants completed the Acquisition Survey and Evaluation Survey were counterbalanced. All participants rated product set A first and rated product set B second. Specifically, Participants were assigned to one of four groups presented in Table 5.1.

### TABLE 5.1
DESIGN OF EXPERIMENT 5.1

<table>
<thead>
<tr>
<th>Group</th>
<th>Session 1</th>
<th>Session 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Product Set A</td>
<td>Product Set B</td>
</tr>
<tr>
<td>Group 1</td>
<td>2:00 p.m.</td>
<td>6:00 p.m.</td>
</tr>
<tr>
<td></td>
<td>Acquisition Survey</td>
<td>Evaluation Survey</td>
</tr>
<tr>
<td>Group 2</td>
<td>2:00 p.m.</td>
<td>6:00 p.m.</td>
</tr>
<tr>
<td></td>
<td>Evaluation Survey</td>
<td>Acquisition Survey</td>
</tr>
<tr>
<td>Group 3</td>
<td>6:00 p.m.</td>
<td>2:00 p.m.</td>
</tr>
<tr>
<td></td>
<td>Acquisition Survey</td>
<td>Evaluation Survey</td>
</tr>
<tr>
<td>Group 4</td>
<td>6:00 p.m.</td>
<td>2:00 p.m.</td>
</tr>
<tr>
<td></td>
<td>Evaluation Survey</td>
<td>Acquisition Survey</td>
</tr>
</tbody>
</table>

Non-food products were presented before food products in all questionnaires. At the end of each survey, participants were asked answer several questions in a separate
section on personal information in which the manipulated check measure was embedded. Specifically, they reported their gender and then indicated how happy, relaxed, hungry and calm they were along scales from 0 (Not at all) to 10 (Very much).

**Result**

*Manipulation check.* Participants reported being hungrier at 6:00 p.m. than at 2:00 p.m. (4.36 vs. 3.08; $F(1, 39) = 7.21, p < .01$) and this was true regardless of whether the order in which they participated in the two experimental sessions.

*Acquisition Dispositions and Product Evaluations.* I hypothesized that appetitive motivation not only motivated people to acquire food but also increased estimates of its attractiveness. However, this motivation should not increase the attractiveness of non-food products. However, because people who are motivated to acquire food may activate acquisition-related procedures, these procedures may give rise to a mind-set that increases people’s dispositions to acquire non-food products even though they do not perceive these products to be more attractive.

These expectations were confirmed. Ratings of the four food products in each set were averaged to form single measures of acquisition intentions and evaluations. Ratings of the eight non-food items in each set were similarly averaged. To facilitate analysis, Group 1 and Group 4 were combined to form a larger group (A), in which participants completed acquisition survey at 2:00 p.m. and evaluation survey at 6:00 p.m. Group 2 and Group 3 were combined to form a larger group (B), in which participants completed evaluation survey at 2:00 p.m. and completed acquisition survey at 6:00 p.m. (The
purpose of doing so will be explained shortly.) The ratings were then analyzed as a function of judgment type (acquisition dispositions vs. product evaluations), product type (food vs. nonfood), group (A vs. B) and the sequence of completing the acquisition survey and evaluation survey (acquisition survey first vs. evaluation survey first). (The first two variables were within-subject.) As shown in table 5.2, the interactive effect of judgment type and large groups can be interpreted as the main effect of time.

TABLE 5.2
INTERPRETATIONS FOR COMBINING GROUPS—EXPERIMENT 5.1

<table>
<thead>
<tr>
<th></th>
<th>Acquisition Ratings</th>
<th>Evaluation Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>2:00 p.m.</td>
<td>6:00 p.m.</td>
</tr>
<tr>
<td>(Group 1 + Group 4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group B</td>
<td>6:00 p.m.</td>
<td>2:00 p.m.</td>
</tr>
<tr>
<td>(Group 2 + Group 3)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mean ratings of both acquisition dispositions and product evaluations are presented in Table 5.3.

TABLE 5.3
MEAN RATING OF ACQUISITION DISPOSITIONS AND PRODUCT EVALUATIONS AS A FUNCTION OF TIME, JUDGMENT TYPE, AND PRODUCT TYPE

<table>
<thead>
<tr>
<th>Time</th>
<th>Evaluation of Food</th>
<th>Acquisition of Food</th>
<th>Evaluation of Non-food</th>
<th>Acquisition of Non-food</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:00 p.m.</td>
<td>1.29</td>
<td>5.67</td>
<td>2.91</td>
<td>6.56</td>
</tr>
<tr>
<td>6:00 p.m.</td>
<td>1.88</td>
<td>6.18</td>
<td>2.83</td>
<td>7.54</td>
</tr>
</tbody>
</table>
Participants reported generally greater dispositions to acquire non-food items than food items (7.05 vs. 5.93) and evaluated non-food more favorably than food (2.87 vs. 1.59). The main effect of product type was significant, $F(1, 37) = 53.51, p < .001$. Of greater relevance to my hypothesis, however, is the interaction of time, judgment type, and product type, which was marginally significant, $F(1, 37) = 3.02, p < .10$.

Analyses of responses to food items alone indicated that hungry participants not only reported greater dispositions to acquire food than non-hungry participants did (6.18 vs. 5.67, respectively) but also evaluated food more favorably (1.88 vs. 1.29, respectively). The main effect of hunger on judgments was significant ($F(1, 37) = 4.52, p < .05$) and did not interact with judgment type ($F < 1$).

Analyses of responses to non-food items indicated that hungry participants reported greater dispositions to acquire non-food items than non-hungry participants did (7.54 vs. 6.56; $F(1, 37) = 8.78, p = .005$). However, both groups of participants evaluated these items similarly (2.83 vs. 2.91; $F < 1$). The differential influences of appetitive motivation on acquisition dispositions and product evaluations were evidenced by the time by judgment type interaction ($F(1, 37) = 4.41, p = .04$).

EXPERIMENT 5.2

Experiment 5.1 suggested that appetitive motivation increased participants’ evaluations of food items and also increased their dispositions to acquire food. Moreover, hunger also induced an acquisition mind-set that influenced participants’ dispositions to acquire non-food products. However, this mind-set did not influence participants’
evaluations of non-food. Thus, the effect of hunger on the activation of a mind-set was separated from its motivational influence. Experiment 5.2 provided further evidence of this separation. If a mind-set mediates the influence of appetitive motivation on people’s reactions to non-food, a direct manipulation this mind-set by priming acquisition-related procedures should have an impact similar to that of a mind-set induced by appetitive motivation (Spencer, Zanna, & Fong, 2005).

Method

Subjects and Design. Eighty-two undergraduates at the Hong Kong University of Science and Technology participated to fulfill a course requirement. They were randomly assigned to three priming conditions (acquisition prime vs. hunger prime vs. control).

Procedure. Participants first performed a sentence construction task consisting of 17 problems (See Appendix E). In each case, participants were asked to underline the words that could construct a meaningful sentence and then write down the sentence. They were instructed to complete the task as quickly as possible. In the acquisition-prime condition, 9 of the 17 sentences pertained to the behavior of acquiring things (e.g., “The museum acquired a painting,” “He obtained two concert tickets,” “He received a huge heritage,” etc.), and the rest were controls. In the hunger-prime condition, 9 out of 17 sentences pertained to hunger and thirst (e.g., “The children are hungry,” “People starved to death,” “Plums can reduce thirst,” etc.), and the rest were controls. In the control condition, only control sentences were used.
After completing the sentence construction task, participants completed a personal attitude survey. In one part of the survey, participants were asked to report how much they would like to have a series of 20 products and experiences along scales from 0 (not at all) to 10 (very much). In the other part, participants were instructed to evaluate the favorableness of a second series of 20 products or experiences along scales from -5 (unfavorable) to 5 (favorable). The items in each part included 8 food items (e.g., chocolates, sushi, vegetable salad, etc.) and 12 non-food items (e.g., laptop, suits, electronic toothbrush, etc.) or experiences (e.g., watching a romantic movie, having a vacation in Hawaii, etc.). Different items were used in each part of the questionnaire. The items in each part of the survey were ordered randomly, and the order of completing the acquisition part and the evaluation part was counterbalanced within each priming condition. At the end of the questionnaire, participants reported their mood along a scale from -5 (sad) to 5 (happy), and reported how hungry they were and how hard they had tried to make accurate judgments in the survey along scales from 0 (not at all) to 10 (very). (Participants also answered filler questions such as their gender, how relaxed and calm they were, etc.)

Results

Acquisition Dispositions and Product Evaluations. Reported dispositions to acquire the eight food items in each set were averaged to form a single measure of acquisition dispositions for food. Dispositions to acquire the 12 non-food products or experiences in each set were likewise averaged. Similarly, evaluations of the eight food
items in each set and evaluations of the 12 non-food items or experiences in each set were averaged to form single measures of evaluation.

Responses were analyzed as a function of judgment type (acquisition dispositions vs. product evaluations), type of product (food vs. nonfood), priming conditions, order of presentation (acquisition first vs. evaluation first) and product set (set A first vs. set B first). No effects involving presentation order and product set were significant (\( p > .10 \)). Judgments are shown as a function of the first three variables in Table 5.4.

**TABLE 5.4**

<table>
<thead>
<tr>
<th></th>
<th>Acquisition of Food</th>
<th>Evaluation of Food</th>
<th>Acquisition of Non-food</th>
<th>Evaluation of Non-food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquisition Prime</td>
<td>6.12</td>
<td>1.67</td>
<td>6.94</td>
<td>2.01</td>
</tr>
<tr>
<td>Hunger Prime</td>
<td>5.97</td>
<td>1.89</td>
<td>5.80</td>
<td>2.05</td>
</tr>
<tr>
<td>Control</td>
<td>5.53</td>
<td>1.39</td>
<td>6.15</td>
<td>1.73</td>
</tr>
</tbody>
</table>

I predicted that priming an acquisition mind-set would increase participants’ dispositions to acquire both food and non-food items, but that this mind-set would not influence the attractiveness of either type of item. In contrast, priming hunger-related concepts are more likely to influence people’s reactions (i.e., both acquisition dispositions and evaluations) to food items may have little impact on their reactions to non-food.
This was in fact the case. Participants made generally higher ratings of non-food 
\((M = 4.13)\) than food \((M = 3.76)\), \(F (1, 70) = 9.17, p < .01\). More important, the priming 
by judgment type interaction was significant \(F (2, 70) = 4.16, p < .02\), and was qualified 
by a three-way interaction of priming, judgment type and product type, \(F (2, 70) = 3.76, 
\(p < .03\). Analysis of responses to non-food items revealed that participants reported 
greater dispositions to acquire non-food products or experiences when they were primed 
with acquisition-related concepts \((M = 6.94)\) than when they were primed with either 
hunger-related concepts \((M = 5.80)\), or neither \((M = 6.15)\). The ratings in the latter two 
conditions did not differ \((F < 1)\). In contrast, priming had no effect on evaluations of non-
food products \((F < 1)\). The interaction of prime and judgment type was significant, \(F (2, 
79) = 6.73, p < .002\).

Analysis of responses to food items showed that priming acquisition-related and 
hunger-related concepts had different effects on participants’ acquisition dispositions and 
evaluations of food. Although the interactive effect of prime and judgment type was not 
significant, \(F (2, 79) = 1.86, p > .10\), planned comparisons involving each type of 
judgment separately were consistent with expectations. Specifically, hunger-prime 
increased participants’ dispositions to acquire food \((5.97 \text{ vs. } 5.53 \text{ under hunger-prime and 
control conditions respectively})\) and also increased their evaluations of food \((1.89 \text{ vs. } 1.39 
\text{ for hunger-prime vs. control conditions, respectively})\), \(F_{dir} (1, 79) = 3.04, p < .05\). 

However, acquisition-priming had different effects than hunger-priming did. Specifically, 
acquisition priming increased participants’ dispositions to acquire food \((6.12 \text{ vs. } 5.53 \text{ for 
acquisitioning prime vs. control conditions, respectively})\); \(F_{dir} (1, 79) = 2.79, p < .05\), but
did not influence their evaluations of food (1.67 vs. 1.39 for acquisition priming vs. control conditions, respectively; $F < 1$).

**Mood, Motivation, and Hunger Level.** Participants’ reported mood, their motivation to make accurate judgment in the survey, and their level of hunger were each analyzed a function of priming conditions. Priming had no effect on either participants’ mood or their motivation to make accurate judgments in the survey ($p > .10$). However, the main effect of priming on reported hunger was marginally significant ($F(2, 79) = 2.44, p < .10$). That is, priming hunger-related concepts reduced the hunger that participants reported relative to control conditions (2.68 vs. 4.25, respectively; $F(1, 79) = 4.66, p < .04$). This difference occurred despite the fact that hunger priming increased both dispositions to acquire food and evaluations of food. The decrease in reported hunger may due to a contrast effect. That is, exposure to concepts conveying extreme degrees of hunger (e.g., “starvation”) may have led participants to report their hunger more conservatively.

Discussion

Experiment 5.2 showed that priming acquisition-related procedures increased participants’ dispositions to acquire both food and non-food. However, their evaluations of both food and non-food were unaffected. Moreover, priming hunger-related concepts increased both participants’ dispositions to acquire food and their evaluations of food, but had no influence on their reactions to non-food. Therefore, these results provided
evidence that the activation of an acquisition mind-set may mediate the influence of appetitive motivation on people’s reactions to non-food. Moreover, appetitive motivation differs from priming hunger-related concepts in that appetitive motivation may stimulate consumers to acquire food, and this, in turn, may activate acquisition-related procedures. However, activating hunger-related concepts alone is not sufficient to activate these procedures.

EXPERIMENT 5.3

I assumed that appetitive motivation may activate acquisition related procedures, giving rise to a cognition-based acquisition mind-set. Once activated, this mind-set may influence participants’ reactions to non-food products independently of their motivation per se. If this is so, the influence of the mindset may persist even when hunger has been satiated by eating. Experiment 5.3 confirmed this possibility.

Method

Subjects and Design. Ninety-five undergraduate students at University of Illinois participated in the study to fulfill a course requirement. Appetitive motivation and satiation were manipulated in three conditions: no appetitive motivation vs. appetitive motivation without satiation vs. appetitive motivation with satiation.

Procedure. Appetitive motivation was manipulated by varying the time that participants took part in the study, as in Experiment 5.1. That is, participants took part in
a Personal Attitude Survey at either 2 p.m. (after lunch) or 6:00 p.m. (just before dinner). Among participants who participated at 6:00 p.m., satiation of appetitive motivation was also manipulated. In satiation conditions, participants were invited to take part in a blind taste test before completing the product rating task. Specifically, participants were informed that they would take part in several different studies in the experimental session. The first study was a blind taste test. Instructions to this test explained that

“...In marketing, a blind taste test is often used as a tool for companies to compare their brand to another. For example, the “Pepsi Challenge” is a famous taste test that has been run by Pepsi since 1975 as a way to show their superiority. Taste tests are also used by companies to develop their brand or new product.”

The instructions went on to indicate that in this particular test, researchers were interested in understanding how much consumers liked each brand of crackers without seeing the brand. Then, participants were instructed to taste ten brands of crackers and to report how much they liked each brand along scales from -5 (dislike very much) to 5 (like very much). Each brand was assigned a number, which corresponded to the number of the evaluation form. Participants were told that they could eat as many crackers as they want before making an accurate evaluation. They were also provided with water.

Participants took about 15 minutes to complete the blind taste test. Then, both these and unsatiated participants moved on to an ostensibly unrelated study and completed the personal attitude survey, which was composed two parts. In one part, participants reported how much they would like to have a series of items and experiences along scales from 0 (not at all) to 10 (very much). In the other part, participants
evaluated a second series of stimuli along scales from -5 (unfavorable) to 5 (favorable). The items varied in terms of both type (food vs. non-food) and judgment criterion (hedonic vs. utilitarian). Specifically, each part of the survey contained 20 items pertaining to three utilitarian foods (e.g., oatmeal, whole wheat bread, noodles, etc.), three hedonic foods (desserts, juicy steak, potato chips, etc.), seven utilitarian non-food items (e.g., desktop computers, USB flash drive, a summer internship, etc), and seven hedonic non-food items (e.g., Wii game player, BMW sports car, watching a romantic movie, etc). Items were ordered randomly, and the order of administering the two parts (acquisition dispositions vs. product evaluations) was counterbalanced within each experimental condition. After making product ratings, participants reported their mood along a scale from -5 (sad) to 5 (happy), and reported how hungry they were and how hard they had tried to make accurate judgments in the survey along scales from 0 (not at all) to 10 (very).

Results

Manipulation Check. Participants reported being hungrier when they took part in the study at 6:00 p.m. (without eating) than when they took part in the study at 2:00 p.m. (6.57 vs. 2.97; F (1, 92) = 26.29, p < .001). However, participants who took part at 6 pm reported being less hungry if they had eaten crackers in the blind taste test than if they had not (3.91 vs. 6.57; F (1, 92) = 14.96, p < .001). In addition, the hunger that participants reported after eating crackers did not differ from the hunger reported by
participants who took part in the study at 2:00 (3.91 vs. 2.97; \( p > .10 \)), indicating that eating crackers successfully satiated participants’ appetitive motivation.

Participants’ mood and their motivation to make accurate judgments in the survey were not influenced by the manipulation of appetitive motivation and satiation (\( p > .10 \)).

*Acquisition Dispositions and Product Evaluations.* Product ratings were averaged over products in each of the four categories (hedonic foods, utilitarian foods, hedonic non-foods, and utilitarian non-foods and were analyzed as a function of judgment type (acquisition dispositions vs. product evaluations), product type (food vs. nonfood), product rating criterion (hedonic vs. utilitarian), experimental conditions, order of presentation (acquisition first vs. evaluation first) and product set (set A first vs. set B first). No results involving the latter two variables were reliable (\( p > .10 \)). Data are summarized as a function of the first three variables in Table 5.5.

Participants not only reported greater dispositions to acquire non-food products than food items (6.26 vs. 5.75, respectively) but evaluated the former products more favorably (2.23 vs. 1.93). The main effect of product type was significant \( (F(1, 83) = 12.06, p < .001) \). Moreover, participants reported greater dispositions to acquire hedonic items than utilitarian ones (6.63 vs. 5.38) and evaluated hedonic products more favorably than utilitarian ones (2.54 vs. 1.62). The main effect hedonic character was significant \( (F(1, 83) = 90.21, p < .001) \).
TABLE 5.5

ACQUISITION DISPOSITIONS AND PRODUCT EVALUATIONS AS A FUNCTION OF CONDITIONS, PRODUCT TYPE, AND HEDONIC VS. UTILITARIAN DISTINCTION—EXPERIMENT 5.3

<table>
<thead>
<tr>
<th>Acquisition Dispositions</th>
<th>Food</th>
<th>Non-food</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hedonic</td>
<td>Utilitarian</td>
</tr>
<tr>
<td>2:00</td>
<td>5.60</td>
<td>4.54</td>
</tr>
<tr>
<td>6:00</td>
<td>5.96</td>
<td>6.03</td>
</tr>
<tr>
<td>6:00 &amp; Satiation</td>
<td>6.43</td>
<td>5.91</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Product Evaluations</th>
<th>Food</th>
<th>Non-food</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hedonic</td>
<td>Utilitarian</td>
</tr>
<tr>
<td>2:00</td>
<td>1.94</td>
<td>1.40</td>
</tr>
<tr>
<td>6:00</td>
<td>2.42</td>
<td>1.93</td>
</tr>
<tr>
<td>6:00 &amp; Satiation</td>
<td>2.17</td>
<td>1.72</td>
</tr>
</tbody>
</table>

I predicted that appetitive motivation may activate an acquisition mind-set that could influence participants’ intentions to acquire non-food items. I further expected this tendency to be evident even if the appetitive motivation has been satiated by eating.
Consistent with this prediction, the interaction of hunger conditions and the type of judgment was significant, $F(2, 83) = 3.63, p < .04$, and was independent of both the type of product being judged and its hedonic character (in each case, $p > .10$). Separate analyses of each type of judgment indicated that acquisition dispositions varied significantly over the three hunger conditions, $F(2, 92) = 6.63, p < .005$. Participants reported stronger dispositions to acquire products when they were hungry than when they were not (6.18 vs. 5.53; $F(1, 92) = 8.03, p < .01$), and this was true for both food (6.00 vs. 5.07) and non-food (6.37 vs. 5.99). More important, the influence of appetitive motivation on acquisition dispositions persisted even when the motivation was satiated by eating; acquisition judgments in the satiation conditions were virtually identical to acquisition judgments under hunger conditions (6.29 vs. 6.18, respectively) and were significantly greater than acquisition judgments under no-hunger conditions (6.29 vs. 5.53, respectively; $F(1, 92) = 11.65, p < .005$). This difference was also evident for both food (6.17 vs. 5.07) and non-food (6.41 vs. 5.99).

In contrast, the effect of experimental conditions on product evaluations was not significant $F(2, 92) = 2.03, p > .10$). Although hunger increased participants’ evaluations of food (2.18 vs. 1.67; $F(1, 92) = 3.15, p < .08$), eating crackers reduced these evaluations to a level ($M = 1.95$) that did not differ from evaluations in no-hunger conditions ($M = 1.67$) ($F < 1$). Moreover, as predicted, appetitive motivation did not influence participants’ evaluations of non-food items at all ($p > .10$).

Discussion
Experiment 5.3 replicated the findings of experiment 5.1 and showed that appetitive motivation increased participants’ dispositions to acquire both food items and non-food items. However, although it increased participants’ evaluations of food items, it had no impact on their evaluations of non-foods. Furthermore, although eating crackers reduced participants’ feelings of hunger and reduced their evaluations of food, it did not affect their dispositions to acquire either food or non-food.

This experiment provided additional evidence that appetitive motivation gives rise to an acquisition mind-set that increases participants’ dispositions to acquire non-food items as well as food items. Furthermore, this mind-set persists even after the appetitive motivation that led to its activation is satiated by eating.

EXPERIMENT 5.4

The previous three experiments provided support for the hypothesis that appetitive motivation to eat could activate a mind-set that increased participants’ inclination to acquire both food and non-food products. However, this motivation only affected their evaluation of food, and did not influence their evaluations of non-food. Participants’ evaluations of nonfood were clearly not influenced by the acquisition mind-set that was activated. Moreover, the evidence that eating decreased participants’ evaluations of food but not their dispositions to acquire food (see experiment 5.3) indicates that evaluations of food are also not a result of an acquisition mind-set.

However, these evaluations might be influenced by a generalized motivation that is not restricted to appetitive concerns. Nisbett and Kanouse (1969) found that appetitive
motivation could increase the attractiveness of food. Previous research also suggested that people evaluate an object more favorably if the object can help them fulfill an activated goal, whereas they evaluate an object more negatively if the object could prevent them from pursuing the activated goal (for a review, see Fishbach & Ferguson, 2007; Markman & Brendl, 2000). When a specific goal is identified, motivation to pursue the goal increases the arousal that people experience. If this is so, and if people attribute their arousal to the object that they are evaluating, they might evaluate the object more extremely. In other words, people may evaluate all items more extremely if they misattribute the motivation-induced arousal they happen to be experiencing to these items. Experiment 5.4 investigated this possibility. Achievement motivation was manipulated, and its influence on consumers’ acquisition dispositions and evaluations was examined. I expected that achievement motivation would influence participants’ evaluations of both food and non-food items. However, because this type of motivation was unlikely to induce an acquisition mind-set, it should not influence participants’ acquisition dispositions.

Method

Subjects and Design. Fifty-five undergraduate students at the Hong Kong University of Science and Technology participated to fulfill a course requirement. They were randomly assigned into either the achievement motivation condition or the control condition.
Procedure. All participants were informed that they would take part in two different unrelated studies. In achievement motivation conditions, participants were informed that the most important study in the experiment session was part of a big project testing the relationship between undergraduates’ performance on GMAT and their intelligence, that they would be asked to solve 15 difficult GMAT problems as accurately as possible, and would then take a general Intelligence test. They were told that their scores of the GMAT test and the general intelligence test would be sent to them upon request. They were told that in the second study, they would be asked to complete a personal attitude survey about their reactions to different products.

After introducing the studies, the experimenter instructed participants to work on the easier task first, which was the personal attitude survey. In control conditions, participants were simply informed that they would take part in two different studies and that the first involved completing a personal attitude survey.

The personal attitude survey had two parts. In one part, reported how much they would like to have a series of items along scales from 0 (not at all) to 10 (very much). In the other part, they evaluated the favorableness of a second series of items along scales from -5 (unfavorable) to 5 (favorable). Each part of the survey contained 20 items pertaining to three utilitarian foods (e.g., oatmeal, whole wheat bread, rice, etc), three hedonic foods (desserts, chocolate, potato chips, etc), seven utilitarian non-food products or experiences (e.g., laptop, electronic toothbrush, attend Stephen Hawking’s speech, etc), and seven hedonic non-food products or experiences (e.g., Wii game player, vacation on Maldives Islands, romantic movie, etc). All the items were presented in random order. The order of rating the acquisition dispositions and product evaluations was
counterbalanced within each experimental condition. After completing the questionnaire, participants reported their mood along a scale from -5 (sad) to 5 (happy) and reported how hungry they were, how motivated they were to do well in the survey, and how hard they had tried to make accurate judgments in the survey along scales from 0 (not at all) to 10 (very). Afterwards, participants were debriefed without taking part in the GMAT test and intelligence test.

Results

Manipulation Check. Participants reported trying harder to make accurate judgments in achievement motivation conditions than in control conditions (6.84 vs. 5.52; $F(1, 53) = 4.52, p < .05$). However, manipulation of achievement motivation did not influence participants’ mood or how hungry they were ($F < 1$ in both cases).

Acquisition Dispositions and Product Evaluations. Ratings of products in each of the four categories (hedonic foods, utilitarian foods, hedonic non-foods, and utilitarian non-foods) were averaged and analyzed as a function of judgment type (acquisition intentions vs. product evaluations), product type (food vs. nonfood), product nature (hedonic vs. utilitarian), manipulations of achievement motivation, order of presentation (acquisition first vs. evaluation first) and product set (set A first vs. set B first). No effects involving the last two variables were reliable ($p > .10$). Ratings are summarized in Table 5.6 as a function of the first three variables.
### TABLE 5.6

ACQUISITION DISPOSITIONS AND PRODUCT EVALUATIONS AS A FUNCTION OF ACHIEVEMENT MOTIVATION AND PRODUCT TYPE

<table>
<thead>
<tr>
<th></th>
<th>Acquisition Dispositions</th>
<th>Product Evaluations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Food</td>
<td>Non-food</td>
</tr>
<tr>
<td></td>
<td>Hedonic</td>
<td>Utilitarian</td>
</tr>
<tr>
<td>Control</td>
<td>7.36</td>
<td>5.25</td>
</tr>
<tr>
<td>Achievement Motivation</td>
<td>7.05</td>
<td>5.40</td>
</tr>
</tbody>
</table>

The effect of product type was significant, $F (1, 47) = 8.29, p < .006$, and indicated that participants not only reported greater dispositions to acquire non-food product than food (6.61 vs. 6.27) but also evaluated non-food products more favorably.
than food products (2.04 vs. 1.76). Moreover, participants also rated hedonic products more positively than utilitarian products, $F(1, 47) = 137.90, p < .001$, and this was also true of both acquisition ratings (7.14 vs. 5.74, respectively) and evaluations (2.56 vs. 1.23, respectively).

I predicted that achievement motivation would influence participants’ evaluations of both foods and non-foods but would not influence their dispositions to acquire them. This was the case. The interaction of achievement motivation and judgment type was significant, $F(1, 47) = 3.93, p < .05$, and did not depend on either product type (food vs. non-food; $F < 1$) or hedonic quality ($p > .10$). A separate analysis of acquisition dispositions revealed that achievement motivation had no influence on participants’ dispositions to acquire either foods or non-foods ($F < 1$) and this was true regardless of whether the products were hedonic or utilitarian ($p > .10$).

In contrast, participants evaluated products more favorably when achievement motivation was induced than it was not (2.12 vs. 1.68, respectively; $F(1, 53) = 5.61, p < .03$), and this was true for both foods (1.95 vs. 1.57) and non-foods (2.29 vs. 1.79), and for both hedonic products (2.80 vs. 2.33) and utilitarian products (1.44 vs. 1.03).

Discussion

Experiment 5.4 showed that inducing achievement motivation increased participants’ evaluations of both food and non-food products. However, it did not influence participants’ dispositions to acquire these products. The results provide additional evidence that an acquisition mind-set and generalized motivation have
different effects on acquisition dispositions and product evaluations. Specifically, an acquisition mind-set increased participants’ dispositions to acquire both foods and non-foods, but did not influence their evaluations of these products, as shown in Experiment 5.2. In contrast, generalized achievement motivation increased participants’ evaluation of different products but did not influence their dispositions to acquire them.

SUMMARY

The studies reported in this chapter examined the influence of appetitive motivation on activation of an acquisition mind-set. Hunger increased people’s dispositions to acquire food and subsequently activated acquisition-related procedures, giving rise to an acquisition mind-set. Once activated, the mind-set also increased people’s dispositions to acquire non-food products or experiences. Moreover, this tendency was true even when the appetitive motivation that activated the mind-set was satiated by eating.

Previous studies on mind-sets (e.g., Gollwitzer et al., 1990) suggested that instructing participants to engage in a behavior may activate a mind-set that persists to influence people’s subsequent behavior. The studies reported in the present chapter showed that cognitive procedures could be activated indirectly by manipulating motivation to achieve a goal. This motivation stimulates a sequence of goal-directed actions (i.e., cognitive procedures) that, once activated, induces a mind-set that influences people’s behavior that is irrelevant to achieve the manipulated goal. Furthermore, its influence of mind-set may persist even when the motivation that elicited it is satiated.
The current studies also provided evidence that people’s acquisition dispositions and product evaluations may be influenced by different factors. Activating acquisition-related procedures could increase people’s acquisition dispositions without affecting their evaluation of those products. However, manipulating arousal by stimulating an achievement motivation influenced participants’ evaluations of different products without affecting their reported intentions to acquire those products. Further exploring the processes by which consumers form acquisition dispositions or product evaluations will be meaningful.
CHAPTER 6
CONCLUSIONS

CONCEPTUAL AND EMPIRICAL IMPLICATIONS

This dissertation investigated the influence of people’s past behavior on their further behavior in totally unrelated situations. The construct of a behavioral mind-set was used to conceptualize this influence. This conceptualization I proposed provides an integrative framework that (a) defines the construct of behavioral mind-set; (b) clarifies the assumptions underlying mind-set effects; (c) specifies the mechanism by which mind-sets operate, (d) explores the cognitive and motivational antecedents of mind-sets, (e) discusses the possible consequences of mind-set effects; and (f) distinguishes mind-set effects from other effects pertaining to the influence of past behavior on future behavior.

Specifically, behavioral mind-set is defined as the effect of performing a behavior in one situation on the likelihood of performing a conceptually similar behavior in subsequent, unrelated. It reflects the activation of procedural knowledge in the process of pursue one goal and its persistent influence in the pursuit of subsequent goals which are irrelevant to the goal that gives rise to the mind-set.

Once a cognitive procedure is activated, it becomes the dominant strategy that people will use to pursue subsequent goals if the strategy is applicable. In the meantime, the mind-set prevents people from considering other equally applicable information processing strategies. Moreover, when the pursuit of a goal entails a sequence of actions,
inducing a mind-set to perform an action in the middle of the sequence can prevent individuals from performing earlier steps in the sequence. The experiments reported in the first half of Chapter 3 supported this possibility by showing that when a purchase decision entails deciding (a) whether to buy (b) which to buy and (c) how to implement the purchase, inducing consumers to consider which alternative they prefer created a mind-set that prevented them from considering whether to buy at all. Consequently, participants who developed the which-to-buy mind-set were more likely to make a purchase in both this and subsequent purchase situations.

In addition, cognitive procedures could exist at different levels of generality. Activating one procedure at more specific level could also activate a more general procedure that it is associated with. If the general procedure is applicable for pursuing the subsequent goals, it will be more likely to be used than other equally applicable procedures. Studies reported in the second half of Chapter 3 showed that making various forms of comparative judgment, such as judging the relative attractiveness of wild animals and comparing animals on their physical attributes, gave rise to a comparative mind-set that disposed people to decide which of two alternative products they preferred in a later purchase situation. As a result, they were likely to make a purchase without considering the possibility of not making a purchase at all.

Research reported in Chapter 4 further tested the mechanism through which mind-sets operate. That is, engaging in one behavior may activate mind-sets that change the thoughts that people generate in response to information that they receive later. I tested this mechanism in the context of understanding the influence of making supportive elaborations or counterarguments in one situation on the effectiveness persuasion that
people are exposed to in the subsequent situation. Specifically, I found that making supporting elaborations in one situation activated a bolstering mind-set that disposed people to generate more supportive thoughts and fewer opposing thoughts in response to a subsequent, unrelated communication. Consequently, they were more likely to be persuaded than otherwise. However, generating opposing arguments in one situation disposed people to generate more opposing thoughts and fewer supportive thoughts towards subsequent persuasion. Consequently, they were less likely to be persuaded than otherwise. Because elaboration may be the default information processing strategy that people employ in response to persuasive messages, the effect of a bolstering mind-set is normally weaker than the effect of a counterarguing mind-set.

Moreover, the same messages could stimulate people either to making supportive elaborations or counterarguments, depending on people’s prior standpoint. The last experiment reported in Chapter 4 showed that when participants had no prior standpoint supporting either Obama or McCain, watching the video of Obama’s speech led them to elaborate the content of the speech, which activated the procedures of elaborating. Therefore, they were more likely to elaborate the persuasive communication from Toyota. However, watching the video of presidential debate between Obama and McCain led them to follow each candidate’s arguments against the other candidate. Consequently, the procedures of counterarguing were activated and they were more likely to argue against the persuasive communication from Toyota. Interestingly, when participants were affiliated with either the Democratic Party or the Republican Party, they were more likely to support their favorite candidate and elaborate one candidate’s arguments. Consequently, a bolstering mind-set emerged.
Research reported in Chapter 5 explored the antecedents of mind-set activation. A mind-set could be activated directly by instructing people to engage in a behavior. However, a mind-set could also be activated indirectly by inducing the motivation to pursue a goal. Four experiments showed that appetitive motivation to eat increased people’s dispositions to acquire food and subsequently activated acquisition-related procedures, giving rise to an acquisition mind-set. Once activated, the mind-set also increased people’s dispositions to acquire non-food products or experiences. Moreover, this tendency was true even when the appetitive motivation that activated the mind-set was satiated by eating.

FUTURE RESEARCH DIRECTIONS

Several directions for further research are suggested by the research I have conducted so far. First, as discussed in Chapter 2, using a particular strategy in one situation could increase the accessibility this strategy, and thus increase the likelihood that this or a similar processing strategy will be used in subsequent situation. Equally likely, using a particular strategy in one situation could increase the ease of applying the strategy. Therefore, people may use this or a similar strategy more efficiently in a subsequent situation. The studies reported in this dissertation explored the first possibility. However, it is possible that activating a mind-set may not only change the outcome of judgments and decision making but also increase the speed of making judgments and decisions. Future research investigating the influence of mind-set on processing fluency and decision speed will be fruitful.
Empirical studies reported in this dissertation tested the influence of behavioral mind-sets on people’s response to influence that they receive from an external source in subsequent situations. However, an activated mind-set may also affect people’s reactions to information that they generate themselves, such as a previously formed attitude toward a behavior. For example, if people have formed an attitude toward a behavior in a typical situation, this attitude may be retrieved to guide their behavior when they encounter a similar situation later. Therefore, developing a bolstering mind-set or a counterarguing mind-set may influence the way that consumers evaluate the appropriateness of engaging in a behavior following the retrieved attitude. In particular, activating a counterarguing mind-set may increase people’s disposition to generate negative thoughts about engaging in attitude-consistent behavior, and therefore, decrease their likelihood of performing the behavior. However, activating a bolstering mind-set may increase people’s disposition to generate positive thoughts about engaging in attitude-consistent behavior, and therefore, increase their likelihood of performing the behavior. Future research will test this possibility.
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APPENDICES

APPENDIX A: MATERIALS USED IN EXPERIMENT 3.4

Descriptions of Vacation Packages (Task 1)

Favorable Sets

<table>
<thead>
<tr>
<th>Vacation Package A</th>
<th>Vacation Package B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good Nightspots</td>
<td>Nice Choice of Food</td>
</tr>
<tr>
<td>Beautiful Scenery</td>
<td>Good Theaters</td>
</tr>
<tr>
<td>Pollution Problem</td>
<td>Possible Bad Weather</td>
</tr>
<tr>
<td>Expensive</td>
<td>Crowded</td>
</tr>
<tr>
<td>Good Museums</td>
<td>Attractive Beaches</td>
</tr>
<tr>
<td>Nice Shopping Centers</td>
<td>Efficient Transportation</td>
</tr>
</tbody>
</table>

Unfavorable Sets

<table>
<thead>
<tr>
<th>Vacation Package A</th>
<th>Vacation Package B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bad Nightspots</td>
<td>Limited Choice of Food</td>
</tr>
<tr>
<td>Beautiful Scenery</td>
<td>Good Theaters</td>
</tr>
<tr>
<td>Pollution Problem</td>
<td>Possible Bad Weather</td>
</tr>
<tr>
<td>Expensive</td>
<td>Crowded</td>
</tr>
<tr>
<td>Good Museums</td>
<td>Attractive Beaches</td>
</tr>
<tr>
<td>Long Travel Time</td>
<td>Poor Transportation</td>
</tr>
</tbody>
</table>

Descriptions of Computers (Task 2).

<table>
<thead>
<tr>
<th>Computer A:</th>
<th>Computer B:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insensitive Mouse</td>
<td>Stable Operation</td>
</tr>
<tr>
<td>Deliver within Three Days</td>
<td>Payment after Delivery</td>
</tr>
<tr>
<td>High RAM Capacity</td>
<td>Low Hard Disk Capacity</td>
</tr>
<tr>
<td>Good Post Purchase Repair Service</td>
<td>Energy Consuming</td>
</tr>
<tr>
<td>Keyboard with New Design</td>
<td>Sold in a Reputable Store</td>
</tr>
<tr>
<td>Little Software Included</td>
<td>Two-year Warranty with No Extra Cost</td>
</tr>
</tbody>
</table>
## APPENDIX B: MATERIALS USED IN EXPERIMENT 3.5.2

<table>
<thead>
<tr>
<th>Person A:</th>
<th>Person B:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humorous</td>
<td>Filial</td>
</tr>
<tr>
<td>Sloppy</td>
<td>Stubborn</td>
</tr>
<tr>
<td>Enterprising</td>
<td>Considerate</td>
</tr>
<tr>
<td>Tolerant</td>
<td>Intelligent</td>
</tr>
<tr>
<td>Impulsive</td>
<td>Pessimistic</td>
</tr>
<tr>
<td>Verbose</td>
<td>Hot-tempered</td>
</tr>
</tbody>
</table>
APPENDIX C: STIMULUS MATERIALS USED IN EXPERIMENT 4.1 and 4.2

Advertisements of Vacation Spot – Switzerland

Igloo Hotels of Switzerland:

Experience an Ancient Inuit Tradition and Spend a Night in a Cozy Igloo
It will be a fantastic experience to visit Kleine Scheidegg in January, which is an Igloo village in Switzerland. Igloo Hotels are built completely new every year by ice. The beds are equipped with costly sheepskin and very warm expedition sleeping bags. During your stay you will be taken care of by a crew of experienced mountain guides.

In Igloo Village, you can indulge in the comfort of a sauna. Enjoy some mulled wine at the Igloo Bar and have a genuine cheese-hotpot for dinner.

A night at Igloo Village offers the possibility to immerse in the ancient tradition of the Inuit and to enjoy the magical winter wonderland of the alpine mountains. And what’s more, having your bed right in the middle of a skiing resort you can start a journey of skiing early next morning!

The price of staying in Igloo hotels is $70 per night (food and drinks are excluded) on usual days. You may need to pay extra charge if you want to enjoy staying Igloo hotel in busy seasons.
Advertisements of Vacation Spot – Milwaukee

Welcome to Milwaukee:

Experience the History of Music and Visit the Art Museum
Milwaukee is the largest city in Wisconsin, which located on the southwestern shore of Lake Michigan.

Milwaukee's most visually prominent cultural attraction is the Milwaukee Art Museum, and especially its new $100 million wing. The museum includes a "brise soleil," a moving sunscreen that quite literally unfolds like the wing of a bird. The museum is home to over 25,000 works of art. Its permanent holdings contain an important collection of Old Masters and 19th-century and 20th-century artwork, as well as some of the nation's best collections of German Expressionism, folk and Haitian art, American decorative arts, and post-1960 American art.

Milwaukee has a long history of musical activity. The first organized musical society, called "Milwaukee Beethoven Society" formed in 1843, three years before the city was incorporated. Milwaukee has advertised itself as the "City of Festivals," especially emphasizing an annual fair along the lakefront called Summerfest, which is also known as "The Big Gig". Listed in the Guinness Book of World Records as the largest music festival in the world, Summerfest attracts one million visitors a year.
MILWAUKEE...Are you Busy? Finding a resource for things to do? Check the Monthly Calendar Tour Guide... Milwaukee is Busy!!!
APPENDIX D: STIMULUS MATERIALS USED IN EXPERIMENT 4.3

Donation Appeals from UNICEF

Education is a fundamental human right. Every child is entitled to it. It is critical to our development as individuals and as societies, and it helps pave the way to a successful and productive future. When we ensure that children have access to a rights-based, quality education that is rooted in gender equality, we create a ripple effect of opportunity that impacts generations to come.

UNICEF works tirelessly to ensure that every child – regardless of gender, ethnicity, socioeconomic background or circumstances – has access to a quality education. We focus on gender equality and work towards eliminating disparities of all kinds. Our innovative programs and initiatives target the world’s most disadvantaged children: the excluded, the vulnerable and the invisible.

A Call from UNICEF

With its strong presence in 155 countries, UNICEF is the world's leading advocate for children. UNICEF promotes children education - ensuring that they complete primary education as a minimum. To achieve our goal we need to raise an additional US$10 million.

UNICEF needs your help to ensure that millions of children in Africa have an education and a better future. Your donation makes a huge difference, because we keep our costs low by leveraging local community partnerships and, wherever possible, other national and international development efforts.

These are examples of what your money can do:
- $10 - School supplies for 1 student in Mozambique and Rwanda
- $35 - Desk and chair for 1 student in Malawi
- $45 – Learning materials for 10 children in Zimbabwe
- $135 – 5 days training of a teacher in Rwanda
Your gift of education is the chance of a better life. With your help, we can give new hope to children like eight-year-old Mukandayisenga, who lost both parents in the aftermath of Rwanda's civil war. Your donation will make their future a world of difference.
Education is a privilege. It allows disadvantaged children with unique talent to become successful in their society and to equip themselves for positions that will benefit both themselves and their family. This is critical to our development as individuals and as societies, and it helps pave the way to a successful and productive future.

*Advocates for Children* works tirelessly to ensure that the best and brightest children can take advantage of a quality education regardless of their social background. Our innovative program focuses primarily on identifying the most gifted children from disadvantaged and impoverished backgrounds and permits them to acquire the education necessary to get ahead. (If funds are available, we attempt to provide a good education for other disadvantaged children as well.)

**A Call from Advocates for Children**

*Advocates for Children* is one of many organizations that promote children’s education throughout the world. To achieve our goal we need to raise an additional US$10 million.

*Advocates for Children* needs your help to ensure that talented children in Africa have an education and a better future. Your donation makes a huge difference, because we keep our costs low by leveraging local community partnerships and, wherever possible, other national and international development efforts.

Your gift of education is the chance of a better life. With your help, we can give new hope to children who suffer from the war in African countries. Your donation will make their future a world of difference.
APPENDIX E: STIMULUS MATERIALS USED IN EXPERIMENT 5.2

Sentence Scramble Task for Acquisition-prime Conditions

Problem 1: museum painting water acquired a the
Problem 2: beautiful plant are garden flowers
Problem 3: girls delete new want skirts
Problem 4: chair floor the painted he
Problem 5: a company shining owns he
Problem 6: old she white helped lady the
Problem 7: get awards proud many he
Problem 8: sky breath blue is the
Problem 9: diamond rings run Angela two has
Problem 10: basketball boys play rain
Problem 11: obtained concert he two tickets
Problem 12: cars smell fast run
Problem 13: desire people moon wealth
Problem 14: exercises fit everyday he
Problem 15: he pioneer heritage received huge a
Problem 16: brand Sony is Japanese electronics a
Problem 17: reputation she a good excel gained
Sentence Scramble Task for Hunger-prime Conditions

Problem 1: children tissue hungry are the
Problem 2: beautiful plant are garden flowers
Problem 3: people death to village starved
Problem 4: chair floor the painted he
Problem 5: drank bird water thirsty a dog
Problem 6: old she white helped lady the
Problem 7: hunger is flood-hit areas there in
Problem 8: sky breath blue is the
Problem 9: dog pitiable is flag hungry
Problem 10: basketball boys play rain
Problem 11: appetite sparkling he big a has
Problem 12: cars smell fast run
Problem 13: plums thirst can reduce taste
Problem 14: exercises fits everyday he
Problem 15: man eat the could hungry a lot
Problem 16: brand Sony is Japanese electronics a
Problem 17: sleep people during do hungry feel not
Problem 1: balloon  sky  sun  a  flies  in  the
Problem 2: beautiful  plant  are  garden  flowers
Problem 3: downcoats  warm  cold  keep  people
Problem 4: chair  floor  the  painted  he
Problem 5: play  children  fountain  funny  the  near
Problem 6: old  she  white  helped  lady  the
Problem 7: Hong Kong  financial  north  a  center  is
Problem 8: sky  breath  blue  is  the
Problem 9: Whale  fish  is  mammal
Problem 10: basketball  boys  play  rain
Problem 11: losing  swimming  helps  exercise  weight
Problem 12: cars  smell  fast  run
Problem 13: eloquent  are  doctors  lawyers
Problem 14: exercises  fit  everyday  he
Problem 15: again  friends  old  break  meet
Problem 16: brand  Sony  is  Japanese  electronics  a
Problem 17: psychologist  he  runs  is  a