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Cognitive mediation of the efficacy of scarcity appeals in compliance-seeking communication

Brannon, Laura Ann, Ph.D.

The Ohio State University, 1993
COGNITIVE MEDIATION OF THE EFFICACY OF SCARCITY APPEALS IN COMPLIANCE-SEEKING COMMUNICATION

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of the Ohio State University

By

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* * * * *

The Ohio State University
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CHAPTER I
INTRODUCTION

Three major domains of research in social psychology may be better understood by examining how their core effects are due to cognitive mediation. The psychologies of unavailability (Lynn, 1992) and of compliance (Cialdini, 1993), may share a common mediating mechanism with the psychology of persuasion (Eagly & Chaiken, 1993): the extent to which elaborative thinking (Petty & Cacioppo, 1986) accounts for relationships between independent and dependent variables.

While mediational approaches have been highly successful in the psychology of persuasion (e.g., Petty & Cacioppo, 1986), the present program addresses the neglect of mediators of responses to unavailability information and to compliance-seeking communication. These latter domains have not yet participated in the mediator-movement that has so enriched understanding of the psychology of attitudes (Eagly & Chaiken, 1993). It used to be the case that 1
theories about the psychology of attitude change consisted of little more than lists of impactful independent variables (e.g. Hovland, Janis, & Kelley, 1953; Insko, 1967). However, during the seventies (e.g., Osterhouse & Brock, 1970) understanding was transformed by examination of mediators such as cognitive responses (e.g., Petty, Ostrom, & Brock, 1981). The focus on process paid enormous dividends. Accordingly, the overarching objective here has been to test and illuminate processes that may underlie responses to compliance-seeking messages and thereby bring social influence up to conceptual speed with persuasion. For reasons to be made clear shortly, we will develop this mediational approach with respect to compliance-gaining behavior which relies on appeals to unavailability.

Overview of Chapter One

We will first examine the current status of the psychology of compliance and then state criteria that led us to focus upon the compliance principles of Robert Cialdini (1988, 1993). Next we justify detailed treatment of a particular class of compliance appeals, namely, those that rely on unavailability information (Cialdini's "scarcity" principle). An earlier theory ("commodity"--Brock,
1968) that dealt with the psychology of unavailability is reviewed, and its neglect of mediating mechanisms is acknowledged. Finally, a revision of the theory (Brock & Brannon, 1992) is considered that posits how responses to unavailability appeals might be processed. The revised theory trades on cognitive elaboration (Petty & Cacioppo, 1986), and it opens the way for testing alternative accounts of the mechanisms that may underlie the efficacy of social influence appeals. Succeeding chapters describe pertinent field and laboratory experiments.

Compliance-Seeking Communication: A Critique

Attempting to get someone to do what you want is one of the most familiar everyday social events. The business of life depends on eliciting the cooperation of both familiar (children, parents, co-workers, etc.) and unfamiliar persons (airline reservationists, store clerks, plumbers, etc.). Although compliance-gaining tactics have been studied empirically for more than twenty years (cf. Marwell & Schmitt, 1967), the pertinent literatures in social psychology and in communications have yet to produce consensus about which tactics are important under which conditions. A theoretical perspective has been lacking from which the relative effectiveness of influence tactics can be
predicted for clearly defined behavioral domains. Taxonomies of compliance-gaining strategies have been deduced from syntheses of literature in philosophy (e.g. Aristotle), rhetoric, sociology, and organizational behavior (e.g., Marwell & Schmitt, 1967; Miller, Boster, Roloff, & Seibold, 1977). Inductive approaches have asked subjects what they would do in different contexts; for example, Rule, Bisanz, and Kohn (1985) asked subjects to report whom they persuaded, who persuaded them in their everyday lives, and what kinds of things people persuaded other people to do (see also Falbo, 1977).

Both the deductive and inductive approaches, and mixes of the two approaches (e.g., Buss, Gomes, Higgins, & Lauterbach, 1987), have failed to narrow the number of competing taxonomies (and competing factor analyses!). In addition, both approaches have failed to check self-report of preferences for compliance-eliciting tactics against observation of actual attempts to influence other persons. Finally, although an ordering of the effectiveness of compliance-gaining tactics could be derived from some of the approaches cited above, no paradigm has been developed which would facilitate the assessment of the
relative efficacy of different compliance-gaining mechanisms or explain how they work.

Which Compliance Principles?: Criteria and Cialdini's List

Our examination of the literature was narrowed by meeting selected criteria. We looked for compliance analyses which reflected a convergence of real-life compliance practices with the more trustworthy evidence of controlled experiments. Furthermore, we sought compliance principles, and derivative compliance-inductions, that appeared applicable to many situations---ranging from influencing a familiar person (e.g., a romantic partner) in a face-to-face encounter to eliciting cooperation from a stranger (e.g., a store clerk) in an impersonal non-face-to-face (e.g., telephone) encounter.

These criteria were met by the well-known Influence: Science and Practice (Cialdini, 1988, 1993). Cialdini's analyses deserved attention because they blended knowledge of results from laboratory experimentation with careful field observations. In a "three-year period of participant observation" Cialdini found that "thousands of different compliance tactics" fall principally into "six basic categories. Each of these categories is governed by a fundamental
psychological principle that directs human behavior and, in so doing, gives the tactics their power." Cialdini attributed "enormous force" to six principles: reciprocation, consistency, social proof, liking, authority, and scarcity" (Cialdini, 1988, p. ii-iii).

However, as compelling as Cialdini's description and documentation of "enormous force" may be (e.g., the enormous compliance pressure that led to the mass suicide of Jonestown), he did not provide a theory, or even metaprinciples, from which to determine the relative efficacy of the six compliance principles. To do so would require understanding of alternative mechanisms underlying their efficacy, in other words, mediational understanding. Of course, this understanding is the principal objective of the present research: what processes make compliance devices work?

Emphasis on Unavailability Appeals

Although Cialdini could not address the relative efficacy issue, he identified scarcity as that compliance tactic for which research investigation has been most incommensurate with use of the principle in everyday life (1987, p. 168).
Perception of unavailability has a powerful impact in human affairs. Consider that from infancy onwards, the infrequency of events universally captures attention (e.g., Hasher & Zacks, 1984; Lecuyer, 1989; and Slater & Morison, 1984); that perceived scarcity is the underlying premise of all economic thought (e.g., Alchan & Allen, 1967, p. 2); and that preoccupation with secrecy has tormented entire epochs of recent history (e.g., Shils, 1956). Social psychologists have the conceptual and methodological tools to reveal unavailability's powerful effects, to illuminate how instantiations of unavailability--such as scarcity, delay, restriction, and required effort--are processed in the mind of the perceiver, and to evaluate competing explanations for their impactfulness. The present program of research used these social-psychological tools in a series of experiments that examined the effects of presentations of unavailability information in mundane settings. We observed how people responded to persuasive appeals when those appeals manipulated prevalence information. A theory that concerns itself with the psychological consequences of unavailability is reviewed next.
Commodity Theory

Definitions. Unavailability is the focus of commodity theory, a theory that has provided a useful organizing framework for dozens of studies of the effects of restriction, censorship, perceived effort, and so forth (Brock, 1968; Lynn 1991, 1992). The theory consists of eight propositions (Brock, 1968) which relate selective social communication to value formation and attitude change. The theory promotes a psychological conceptualization of traditionally economic variables such as supply and demand.

Commodity theory deals therefore with the psychological effects of unavailability. The theory's key premise is that "any commodity will be valued to the extent that it is scarce or unavailable."

"Commodities" are any things (messages, experiences, or objects) that are potentially possessable and conveyable from one person to another. Something is a commodity to someone only if she or he is a potential possessor of that thing. Things that a person has no chance of obtaining or possessing fall outside the domain of the theory. In its original statement the theory encompassed only useful things and therefore the theory was limited to positive
messages, positive experiences, or positive objects. Self-attributes were excluded as well as negative objects.

"Value" refers to "potency for affecting attitudes and behavior." In other words, a commodity's "value" is its quantitatively measured impact on a person, whatever form that impact may take. For informational commodities, "value" has been interpreted as persuasiveness.

"Unavailability" refers to perceived limits on availability, that is, to factors or conditions which make something hard, or harder, to obtain. Several different sources of perceived limits on availability can be classified into four groups: scarcity, effort, restriction, and delay. Scarcity refers to limits on the supply or the number of suppliers of a commodity. Effort refers to the behavioral and other costs of providing a commodity as well as to the costs of obtaining or keeping it. Restriction refers to factors that may limit the distribution and/or possession of commodities. Finally, delay refers to the amount of time an interested possessor must wait, or had to wait, before a commodity is provided. In the subsequent literature on commodity theory (Lynn, 1991, 1992) studies of delay, of effort, of scarcity,
and of restriction reflect the effects of the impact of perceived unavailability. In this literature, these effects are commonly referred to as "scarcity" effects (e.g., Cialdini, 1993, 194-222) even though scarcity is but one instantiation of unavailability. For convenience, we generally follow this common usage and use "scarcity" and "unavailability" interchangeably.

In summary, commodity theory suggests that limits on availability will increase the psychological and behavioral impact of anything that a person is capable of possessing. See the schematic depiction of the original theory in Figure 1.

According to commodity theory, unavailability claims in advertisements and other persuasive communications should enhance the desirabilities of the things they describe, and the unavailability, itself, of messages should increase the impact of those messages on attitudes and behavior.

The Literature of the Psychology of Unavailability: Selective Review

Although relatively neglected by researchers, the use of unavailability claims is quite common in marketing communications (Cialdini, 1988).
Increased Value of Object

Perception of potential or actual possession of an object (conveyable symbolic or informational stimuli, material objects, experiences)

Perception of commodification (scarcity) of the object as a result of:

- few possessors of the object
- few sources of the object
- greater coercion necessary to obtain the object
- greater source effort to withhold or provide the object
- greater effort necessary to obtain the object
- greater restriction of the object
- greater number of reasons supporting the restriction of the object
- greater delay in obtaining the object
- etc.

"Commodification" of Object

Increased Value of Object

Figure 1. Schematic of original commodity theory (Brock, 1968).
Information provided by advertisements, by product packages, and by salespeople often stresses the limited availability of products, services, and/or promotional offerings. Thus, unavailability claims are often a part of messages designed to persuade people to buy things. Commodity theory suggests that these claims will be effective at generating interest in, and desire for, the things they describe, because unavailability enhances the value of commodities.

Scarcity of products. Advertisers often claim that their products and services are scarce. One of the frequent users of these scarcity claims is the Franklin Mint, which produces collectors' items like commemorative coins, and various kinds of reproductions. The Franklin Mint regularly describes its products as "limited editions," and its ads emphasize the fact that these products are available "exclusively from the Franklin Mint." Another frequent user of scarcity claims has been Gallo Wines. Bottles of their popular Blush Chablis have labels indicating that it is a "limited release" wine despite the fact that this wine is available in most grocery stores across the country.

That scarcity claims increase the desirabilities of the advertised products and services was seen in
the Cabbage-Patch Doll phenomenon. In 1983, Coleco Industries marketed a soft-sculpted doll for the Christmas season. Demand for these dolls exceeded expectations and produced shortages in some markets. Publicity about these shortages increased demand even more, further heightening the doll's scarcity and resulting in a spiraling escalation of the doll's popularity. The frenzy over these dolls became so intense that people fought one another over them and many stores were wrecked in what became known as the "Cabbage-Patch riots."

Of course, the anecdotal evidence provided by the Cabbage-Patch phenomenon is only suggestive. It is not clear if the doll's popularity was due to its scarcity per se or to the publicity its scarcity generated. More rigorous proof of scarcity's effects can be found in an experiment by Szybillo (1973) in which information about women's suits was presented to 90 adult female consumers. These women were told that one of the suits was scarce because only 26 of the suits had been distributed to local stores and that another of the suits was plentiful because 182 of these suits had been distributed to local stores. Consistent with commodity theory's predictions, the scarce suit was considered more attractive than the
available suit. Other studies have replicated this effect; scarcity claims increased the perceived value of such diverse products as nylon hose (Fromkin, Olson, Dipboye, and Barnaby, 1971), recipe books (Verhallen, 1984), and art prints (Atlas and Snyder, 1978).

**Bans on products.** Sometimes the availabilities of products are limited by government bans, and these bans are often used by marketers in an attempt to generate interest in the banned commodity. For example, President Bush banned the importation of foreign made assault rifles. One gun store in Missouri, called "Liquor, Guns and Ammo," used this ban in a newspaper ad for AK-47/S Legends. Plastered across a picture of this assault rifle was the word "BANNED" and next to it was a message informing people "When these are gone, we'll have NO MORE!"

Evidence that banned products are perceived more favorably than are unbanned products comes from a field study conducted in Florida. Miami's city council banned phosphate detergents in 1972. In order to examine the effects of this ban, Mazis, Settle, and Leslie (1973) interviewed residents of both Miami and another Florida city, Tampa. Miami's residents evaluated the banned phosphate detergents more
favorably (comparable to non-phosphate detergents) than did the residents of Tampa where phosphate detergents were not banned.

**Restrictions on order-size.** Advertisers claim scarcity for more than just products: they also frequently describe purchase opportunities as limited. One way that marketers limit these purchase opportunities is to restrict the number of orders any one individual can place. Lessne and Notarantonio (1988) examined the effects of these limits on consumer reactions to an advertised sale price for soft drinks. They found that consumers were more likely to buy the on-sale soft drinks, and wanted to buy more of these soft drinks, when customers could purchase only four bottles each at the sale price than when they could purchase as many bottles as they wanted at the sale price. These results supported commodity theory's predictions that restrictions on order-size will increase the value of purchase opportunities.

**Time limits on opportunities.** Sales prices and other purchase opportunities are also temporally limited. For example, an advertisement publicizing a sale on Legs hosiery read "Legs go on forever, this offer won't." Similar temporal limits on purchase
opportunities can be found in the advertisements of the Franklin Mint which often require interested consumers to respond by a certain date. This imposition of time limits on price specials and other purchase opportunities is a particularly interesting tactic because the advertised opportunities become less and less available as the deadlines are approached.

Evidence concerning the effects of such approaching deadlines was provided by Pennebaker and his students (1979). They surveyed patrons at a country and western bar, and found that the bar's patrons considered the opposite sex patrons more attractive the closer it got to the bar's closing time. Ratings of the same sex patrons were not affected by the approaching closing time, so it seems unlikely that the bar's late night patrons were objectively more attractive than its earlier patrons. Apparently, the opportunity to meet members of the opposite sex became more desirable as the opportunity became more limited, and this led the bar's patrons to rate the available members of the opposite sex more favorably towards closing time.

Dwindling supplies. In a now-classic experiment (Worchel, Lee, & Adewole, 1975), college students were
offered two kinds of familiar cookies (chocolate chip); one kind was contrived to be in very short supply whereas the other kind was perceived as abundant. The students found the scarce cookies more desirable. Familiar cookies, when made unavailable, became more attractive.

Salespeople also use unavailability claims to increase sales. One salespitch employing such claims stresses that "you should place your order now, because supplies are dwindling fast and we may not have any tomorrow." This salespitch, like imposing time limits on purchase opportunities, is likely to be effective because it creates perceptions of increasing unavailability. There is some evidence that unavailability's enhancement of desirability is particularly strong when the unavailability is increasing rather than constant (Worchel, Lee, & Adewole, 1975).

Effects of message unavailability. The government regularly classifies intelligence and other sensitive information as "secret" or "top secret;" big business carefully restricts and controls its proprietary information; and jurors are told to ignore certain testimony--sometimes with opposite effect from that intended by the judge (see Appendix
A: Jurors' inability to suppress "ignored" information).

Unavailability can also be operationalized as a restriction or as a ban or as censoring. Not only do potential recipients of a message want to have a censored message more than a non-censored message, but they come to believe in the message, even when they only know the position of the message and haven't received the message itself.

For example, when University of North Carolina students learned that a speech advocating random drug testing would be banned, they became more in favor of such testing, even without being exposed to the banned speech (Worchel, 1992). The ban served to make the advocacy more acceptable. See also Worchel and Arnold (1973) and Worchel, Arnold, and Barker (1975).

In addition, some studies have demonstrated that multiple scarcity appeals can be used concurrently, and that with multiple instantiations, scarcity appeals become increasingly effective. For example, Knishinsky (1982) owned a meat import company that sold beef to industrial buyers. Knishinsky had his salesforce call the company's regular customers and deliver one of three randomly selected sales presentations. In the control condition, all
conditions in the market place were presented as being unchanged from previous sales calls. In the scarcity of beef condition, supplies of imported beef were said to be low and diminishing; this claim was supported by relevant facts and figures. In the scarcity of beef plus exclusivity of information condition, imported beef was said to be scarce and the information about this scarcity was said to be generally unknown and hard to obtain.

Knishinsky's customers bought an average of 5 tons of beef after receiving the control condition and an average of 12 tons of beef after receiving the scarcity of beef presentation. However, those customers who were told about both the scarcity of beef and the exclusivity of that market information bought the most beef—an average of 30.5 tons.

Original Commodity Theory: A Critique

The most comprehensive literature review, a meta-analysis of more than fifty empirical studies (Lynn, 1991), has generally supported the unavailability--attraction, or unavailability--impact, relationship. These studies include those dealing with the psychological consequences of knowing that a message is "secret," that a product is in "limited supply," that great effort was entailed to convey a given
message, that few, rather than many, persons are having a particular experience, and so forth.

While the studies cited in Lynn's meta-analysis generally corroborated the unavailability-impact relationship, it also included studies which did not do so. Instead of regarding these studies as anomalous, we treated them as bases for revising the theory.

**Discrepant evidence.** For example, in Petty and Mirels (1981), some subjects (females) assigned more value to intimate than to non-intimate disclosures but others (males) did not. The finding for females fit the theory but the reversed effect for male subjects did not. Perhaps males thought differently about intimate disclosure than did females; perhaps intimate disclosure for these males was in some senses, aversive. Similarly, Ditto and Jemmott (1989; cf. also Jemmott, Croyle, & Ditto, 1986) found that a negative health state was perceived as worse when it also perceived as rare rather than common. Verhallen (1982) found that subjects who did not value a commodity were less likely to choose it when it was scarce than when it was common.

In addition to theory-discrepant findings, a second problem was the neglect of mediators; the Lynn
analyses (1987) and meta-analyses (1991) did not arrive at mediational understanding of the effects.

**Theory revision.** In a recent "liberalizing" revision (Brock & Brannon, 1992), commodity theory was extended to self-attributes (traits, abilities) and to negative as well as positive elements. In addition, a cognitive-elaboration mediational account was offered. The idea that elaboration mediates response to unavailability information was prompted by a number of studies. For example, in Petty and Mirels (1981) the anomalous finding for males may have been due to their thinking differently about intimate disclosure than did the female participants.

A similar cognitive-processing suggestion was made by Petty, Harkins and Williams (1980). In a study that has some conceptual parallels with the present approach, they found that persons critically evaluated information if the information was only available to themselves; whereas, when the information was widely available to others, the merit of the information did not affect how well the information was evaluated. Ditto and Jemmott (1989) observed increased information seeking when a negative personal condition was rare rather than common. Finally, when unavailability has been instantiated as delay
(Mischel, 1974), children had to cope with their strong propensities to think too much about the delayed object or experience; unavailability instigated increased thinking.

It became apparent that the pertinent literature might be better encompassed by a theory (Brock & Brannon, 1992) which exploited the possibility that cognitive elaboration is likely to be instigated by unavailability information. See Figure 2.

The elaborative account (Brock & Brannon, 1992) allows for negative changes (e.g., Ditto & Jemmott, 1989; Verhallen, 1982). Accordingly, Bozzolo and Brock (1992, p. 97) hypothesized: "Increasing one's motivation to process a weak message through perception of unavailability would make unfavorable cognitive responses more likely, leading to attitude change away from the advocated position." Although the Bozzolo and Brock (1992) experiment provided a direct confirmation of this prediction for low need for cognition subjects (Cacioppo & Petty, 1982), the effect was not obtained for subjects who were high in need for cognition. Thus, their interpretation was necessarily equivocal. We think their ambiguous results were due to high need for cognition subjects disbelieving the unavailability manipulation.
Perception of potential or actual possession of an object (conveyable symbolic or informational stimuli, material objects, experiences, traits, skills).

Perception of commodification (scarcity) of the object as a result of:

Same as original commodity theory

"Commodification" of Object

Increased Cognitive Processing (e.g. Information Receptivity)

Positive cognitive responses resulting from:
- initial affective response
- message argument(s) supporting commodity

Negative cognitive responses resulting from:
- initial affective response
- message argument(s) against commodity

Polarized positive response to the commodity

Polarized negative response to the commodity

Figure 2. Schematic of liberalized commodity theory (Brock & Brannon, 1992).
At any rate, the present experiments provided firmer tests of the liberalized theory; later chapters examine differential processing of positive versus negative elements, and of strong versus weak messages under different levels of perceived unavailability.

Competing Theoretical Accounts of the Impact of Unavailability Information

The aim of the present inquiry was to illuminate the psychological mechanisms that may underlie compliance-seeking communication that trades on unavailability.

Heuristic account. According to the currently prevailing heuristic theory scarcity is considered to be an heuristic cue to value, such that people uncritically apply a rule of thumb, that "what is rare is good," when they encounter scarcity information (Lynn, 1992; Cialdini, 1993; and Pratkanis & Aronson, 1992, p, 189). The hidden assumption here is that "what" refers to something positive. Cialdini (1993) uses an "automatic pilot" metaphor to characterize the knee-jerk responsiveness of persons to unavailability information. He also has proposed a stronger account of how people respond to scarcity, as follows: "It is difficult to steel ourselves cognitively against scarcity pressures because they have a . . . .
quality that makes thinking difficult; our typical
reaction to scarcity hinders our ability to think" (1993, pp. 216, 221).

Of course, the cue account and the cognitive impairment account can be conceptually distinguished; sometimes Cialdini simply invokes the "click whirr" impact of a cue and sometimes he adds hindering of thought. In the present experiments we test the first, or cue, account. This account implies no increase in thinking in response to a scarcity cue but it is silent regarding a decrease. The second hindering/impairment account does imply a decrease, and this account is discussed further in Chapter 5. The literature does not contain any direct experimental tests of Cialdini's notions; certainly, there are no experiments--before the present series--in which the heuristic account of response to scarcity has been pitted against alternatives.

*Elaborative account.* An alternative mechanism that may underlie the effects of scarcity has been referred to as the *Scarcity-elaboration-polarization position* (Brock & Brannon, 1992). We believe that increased scarcity instigates polarization, namely, adopting more extreme attitudes. Thus, for example, a person's negatively valenced experience, such as an
illness, would be regarded as more aversive to the extent that it is rare. In short, scarcity, or reduced prevalence, makes evaluations more extreme (Ditto & Jemmott, 1989).

Key to the second position is our proposal that polarization occurs because of enhanced cognitive elaboration (Petty & Cacioppo, 1986), *here defined as increased evaluative thought—thinking that considers that pros and cons of an object or an advocacy.*

To recapitulate, the elaboration position is contrasted with the heuristic position. The elaboration position predicts increased evaluative thinking: scarcity will lead to more thought and, if arguments are presented, the merit of those arguments will be objectively appraised. If strong arguments are presented, their strengths will be appreciated and will heighten evaluation; if weak arguments are presented, the increased thinking will lead their weaknesses to count more heavily against what is being advocated. This differential processing is, of course, not suggested by the no-processing view promoted by Cialdini in his analysis of how scarcity works.

The heuristic-elaboration distinction is important for a variety of reasons. A large body of
research (e.g. Petty & Cacioppo, 1986) has shown that attitudes formed through central-elaborative routes may be more resistant to counterpropaganda, persist more over time, and are more predictive of behavior than attitudes formed through peripheral-heuristic routes. In addition the heuristic account only allows for positive changes in response to a scarcity cue. The elaborative account, as we have seen (Bozzolo & Brock, 1992), allows for negative changes.

Summary of Chapter One

The aim, to invest the psychologies of compliance and unavailability with mediational understanding, led to the following steps. We examined the current status of the psychology of compliance and the criteria that led us to employ the compliance principles of Robert Cialdini (1988, 1993). Next, detailed treatment of scarcity appeals was justified. A theory ("commodity"—Brock, 1968) that dealt with the psychology of unavailability was reviewed, and its neglect of mediating mechanisms was noted. Finally, a revision of the theory (Brock & Brannon, 1992) was considered that posits how responses to unavailability appeals might be processed. The revised theory trades on cognitive elaboration (Petty & Cacioppo, 1986); and it opens the way for testing alternative accounts of
the mechanisms that may underlie the efficacy of social influence appeals. Two theoretical accounts of how unavailability information is processed—the heuristic and the elaborative—were explicated and considered for further testing.

**Experimental Paradigm and Overview of Chapters Two to Five**

To look at the impact of unavailability on compliance, we sought recurrent, short-duration, exchanges between strangers in which the effects of different compliance-gaining messages could be examined without the confounding by other factors that is often entailed in face-to-face encounters (e.g., the effects of physical attractiveness, of smiling, of posture, etc.) and/or in ongoing relationships (e.g. past understandings, expectations for future interaction, etc.).

The situation had to accommodate compliance-inducing messages that were reasonable and comparable operationalizations of Cialdini principles. The complying behavior had to be real-world behavior instead of self-reports about past or future actions. Within these constraints, it was possible (Chapter Two) to evaluate the strength of four Cialdini inductions, the heretofore neglected scarcity tactic,
along with the more widely researched authority, social proof, and liking tactics. Chapter Two summarizes previously reported field experiments (Brannon, 1990), reports two new field experiments that corroborated the effectiveness of scarcity appeals, and provides an empirical examination of the extent to which influence appeals can be equilibrated.

Chapter Three reports two laboratory experiments that tested the extension of the liberalized commodity theory (Brock & Brannon, 1992) to negative elements and to traits and abilities; in the main experiment the role of cognitive elaboration in facilitating evaluative polarization was examined. The follow-up experiments examined whether scarcity information, by itself, leads to evaluative thinking and whether the focal trait was considered prevalent prior to any prevalence information.

In Chapter Four three field experiments examine how scarcity affected the impact of strong versus weak compliance-gaining messages in real-life settings (attempts to influence telephone operators and fast-food restaurant customers).

Chapter Five provides a general discussion of the seven experiments. The chapter updates commodity
theory, proposes a new approach to the social psychology of compliance, and lists several implications for future research.
CHAPTER II

EFFICACY OF COMPLIANCE-GAINING TACTICS:
FIELD EXPERIMENTAL TESTS OF APPEALS TO
SCARCITY, AUTHORITY, SOCIAL PROOF, AND LIKING

The first two experiments were conducted to demonstrate the efficacy of unavailability information in the compliance domain. The second experiment provided indirect evidence that unavailability instigates thoughtful processing.

The studies examined four compliance tactics -- scarcity (unavailability), authority, social proof (social comparison), and liking (friendship)--in a specific, common, persuasive situation, namely, the elicitation of compliance from strangers in non-face-to-face interactions. Non-face-to-face situations were chosen because they ruled out factors, other than the compliance bases themselves, that could influence the recipients of the compliance inductions; there was no risk of confounding with non-verbal cues. In addition, supplementary studies dealt with the equilibration of the appeals, that is, the extent to
which the appeals, although substantively different, were comparably strong embodiments of their conceptual categories.

Compliance Principles

Perspective of Commodity Theory: The Power of Scarcity

To recapitulate from Chapter 1, commodity theory (Brock, 1968; Lynn, 1987; Brock & Brannon, 1992) proposes that resources of any type (informational, material, etc.) would be seen as more valuable to the extent that they are scarce, hard to obtain, delayed, or restricted. Many factors can make information (or material) appear to be less accessible, and, consequently, more desirable, such as effort by the source, fewer sources possessing the information, greater difficulty for the recipient in obtaining the information, and the relatively small supply of some information (e.g., secrets) in comparison to the demand for that information (c.f. Figure 1 in Chapter 1). Chapter 1 pointed out that no other empirically based taxonomies of compliance strategies were found that included tactics similar to those, such as scarcity, that are suggested by commodity theory. Cialdini (1988) notes that appeals to scarcity are frequently used in marketing techniques, such as the
"deadline" or "limited number" methods, in which consumers are warned that the offer is limited in some way, either by time or by quantity (pp. 229-232). For example, a home vacuum cleaner company trained its salespersons to claim that "I have so many other people to see that I have time to visit a family only once. It's company policy that even if you decide later that you want this machine, I can't come back and sell it to you." The claim "of course, is nonsense; any customer who called for another visit would be accommodated gladly" (Cialdini, 1988, p. 231).

**Review of Social Proof, Liking, and Authority**

The principle of social comparison, or social proof, is based on the premise that, "We view a behavior as more correct in a given situation to the degree that we see others performing it" (Cialdini, 1988, p. 110-111). Cialdini sees research on bystander apathy, in which people fail to come to the aid of a person in need more when they are with others than when they are alone, as being a clear example of the principle of social proof at work. People observe the reactions of others in ambiguous situations, in order to help them understand what is happening. If others are also uncertain, they may delay taking
action. The principle of social proof is thus particularly effective when there is uncertainty or when others are perceived as similar (Cialdini, 1988, p. 154). Compliance strategies akin to Cialdini's social proof were listed by other investigators (e.g., Miller, et al., 1977; Rule, et al., 1985; and Cody, McLaughlin, & Jordan, 1980).

The liking rule, according to Cialdini, states that people are more willing to comply with the requests of persons whom they like. This liking could be the result of the requester's attractiveness, similarity to, or familiarity with the recipient, mere association with other positive things, or outright flattery (Cialdini, 1988, pp. 196-197): For example, the extremely successful "greatest car salesman" who sent prospective customers printed cards that read "I like you." "There's nothing else on the card, nothin' but my name; I'm just telling 'em that I like 'em." (Cialdini, 1988, p. 166). Drachman, deCarufel, & Insko (1978) found that people who compliment others are well-liked, even when the positive comments are not true. Compliance tactics akin to Cialdini's liking rule were listed by Miller et al. (1977), Rule et al. (1985), Buss et al. (1987), and Cody et al. (1980).
In his discussion of the authority principle, Cialdini cites studies of obedience to authority (i.e., Milgram, 1974). He also lists a variety of factors and symbols, such as titles (e.g., "the Ohio State University") and clothing, that indirectly convey authority and increase compliance. Compliance strategies akin to Cialdini's authority are listed by other writers (Miller et al., 1977; Rule et al., 1985; and Cody et al., 1980).

Chapter Two Experiments

In sum, Cialdini and others have provided evidence for the real-life prevalence of selected influence tactics. The core of Cialdini's interpretational account has been "click, whirr responding," i.e., the tendency of compliance targets to respond mechanically to one piece of information in an automatic uncritical fashion (Cialdini, 1988, p. 8). If Cialdini is correct, there should be little differentiation among compliance appeals in their effectiveness as compared to a control appeal. On the other hand, if cognitive elaboration is instigated by unavailability information, then a compliance target should augment an activity which was initially positive and decrease an activity which was initially negative.
In the present experiments we chose service workers—telephone operators and hotel desk clerks—and used scarcity, and other appeals, to induce them to prolong a presumed positively-valued service activity. Thus, we asked whether scarcity could increase performance of an activity to which the targets were initially positively disposed.

Two field situations were employed whose characteristics had been established in previous research (Brannon, 1990). In the first field situation, telephone operators were asked to make a long-distance phone call to a non-answering number. When the operators reported that no one was answering the initial call they were asked to redial the same number. The amount of compliance could be measured by the number of rings allowed on the second attempt, adjusted for the number of rings on the initial attempt. Theoretically, the "commodity" in this situation was the action of making a connection between a caller and the caller's party. It was assumed that the value of this commodity, this ordinary service activity, could be increased by unavailability information and that the increased value would be reflected in increased performance of the activity. It was assumed, of course, that the
activity was positively regarded by the operators. Operators want to facilitate connections between a caller and the caller's party, in part to provide a service and, in part, to earn money. (If no connection is made the telephone company in most instances does not earn any money!).

The other field situation was designed to test the compliance of hotel desk clerks. Desk clerks were asked to wait twice while the experimenters searched for questions they wanted to ask; the amount of compliance was measured as the amount of time held in the second waiting period, adjusted for the amount of time held in the initial waiting period. Theoretically, the "commodity" in this situation was the action of holding and answering the question; it was assumed that the value of this commodity, this ordinary service activity, could be increased by unavailability information and that the increased value would be reflected in increased performance of the activity. Here again, it was assumed that desk clerks want to help answer questions for prospective and actual guests of the hotel.

Note that the dependent measures in both field situations reflected individual differences in the magnitude of the focal behavior, namely, individual
differences in the propensity to comply as well as any differences due to how busy the operators or clerks were at the moment.

Experiment 1

Method

Subjects. Subjects were 300 telephone operators who were unaware that their behavior was being observed.

Procedure. Long-distance phone calls were placed by two experimenters (1 male and 1 female) using operator assistance. An out-of-state number at which there would be no answer was used. The experimenter asked the operator to place a person-to-person call, and the number of rings allowed on the first try was recorded. After the operator terminated the call because it could not be completed, the same operator was asked to redial. The number of rings, if any, was recorded. The request to redial the number was accompanied by a reason, the compliance induction. An hour was divided so that twelve minutes were spent in each of five experimental conditions. The order of the conditions was randomized each hour. The experimenters were blind to the hypothesis and did not know the overall purpose of the research.
Compliance inductions. Precautions were taken so that the treatment implementation was as standard as possible. The experimenters were occasionally monitored during the actual data collection, in order to ensure that the delivery of the inductions was standardized. The experimenters used the following inductions.

Scarcity (Unavailability): "Please try this number again, operator, because the other party has been waiting for this call for eight weeks." The operator would perceive that the completion of a desired call had been unavailable to the target party for a considerable period of time. A severe restriction is entailed: the call could only be completed at this time—never during the past eight weeks and/or the information was unavailable until now.

Authority: "Please try this number again, operator, because this is part of a major research project for the World Health Organization."

Social Proof: "Please try this number again, operator, because everyday when I call this number the operator gets it for me on the second try."
Liking: "Please try this number again, operator, because you sound like a good operator who knows how to please a customer, and I am pleased."

Control: "Please try this number again, operator."

Results and Discussion

Although the overall correlation of first attempt rings with second attempt rings was small, it was significant \[ r(300) = .17, p < .01 \]. In order to examine the effects of experimenter experience, the first half of each experimenter's calls was compared with their second half.

Preliminary analyses revealed that there were no main effects or interactions with Experimenter or Half of Calls Made, other than a significant main effect for Experimenter \[ F(1, 279) = 5.08, p < .03 \]. Therefore a one-way analysis of covariance was performed on the number of rings for attempt 2, covarying out the number of rings for attempt 1, with Condition as the sole factor. There was a significant main effect for Condition \[ F(4, 294) = 17.13, p < .0001 \], with operators in the scarcity condition complying more than operators in the other conditions. Figure 3 displays the mean number of rings on the second attempt, adjusted for the number of rings on the first attempt,
in each of the five conditions. Larger numbers indicate greater compliance.

A planned comparison between the scarcity condition and the other four treatments revealed that the scarcity induction was, in fact, the most persuasive \( F(1, 294) = 66.09, \ p < .0001 \). When the scarcity condition was compared to just the other three Cialdini principles (authority, social proof, and liking), it was still the most effective \( F(1, 294) = 58.05, \ p < .0001 \). In a Scheffe's test only scarcity elicited more compliance than was observed in the control condition (\( p < .05 \)).

Were the operationalized levels of each of the compliance strategies comparable to one another? While it would be impossible to ascertain exactly how much scarcity is equal to a given "amount" of authority (the well-known "apples versus oranges" dilemma), the actual Cialdini inductions were selected because pretesting showed them to be comparable on a variety of dimensions, namely, embodiment, strength, representativeness, appropriateness, and perceived effectiveness. See Appendix B details.
Figure 3. Operators' compliance in ringing non-answering telephones (second call adjusted for initial call): Experiment 1.
Experiment 2

Experiment 2 was a conceptual replication of the first experiment. Although the supplementary study data, which are reported in Appendix C, indicated that the inductions were comparable in their representativeness, strength, embodiment, etc., the second experiment was designed to provide more information about the impact of the appeals on cognitive elaboration via a direct measure of the target subjects' actual responses to the inductions. Specifically, hotel desk clerks were led to believe that the experimenter had left the phone to look for a list of questions during each call. The experimenter then recorded the clerks' utterances during the holding period, in order to determine whether and how the clerks were reacting to the inductions.

Method

Subjects and sites. Subjects were 105 desk clerks at various hotels in the United States.

Procedure. One female and one male experimenter called hotels listed in an 800-number directory for the United States. Experimenters asked to speak with the front desk clerk, and recorded his or her name. The clerk was then told: "I'm staying with you next week and have a couple of questions. Do you have an
indoor swimming pool? [after the answer, the experimenter continued] Could you please hold?" The experimenter recorded the duration that the clerk held on the telephone line (in seconds). During the holding period, the experimenter held a "mute" button on the telephone and recorded all of the clerk's utterances.

After the clerk terminated the call (hung up), the experimenter redialed the same number and asked to speak with the same clerk. The experimenter then continued: "I'm sorry, we must have been disconnected. Do you have a restaurant? I have other questions here that I will find and get back to you. Could you please hold because: [compliance induction]."

Scarcity (Unavailability): "this is the only time this entire week that I'll be able to get through with this other question." The clerk would perceive extreme restrictions on the caller's ability to ask the other question and on the clerk's ability to help.

Authority: "this other question has to do with an important research project at Ohio State University."
Social proof: "Front desk people usually have the answer to this type of question, and they have helped with it."

Liking: "You sound nice, the kind of person I would like, that could help with this other question."

Control: "I have this other question."

The experimenter recorded the duration that the clerk held on the telephone line, as well as the clerk's utterances during the "muted" holding period. All of the other details of Experiment Two (e.g. counterbalancing, training of experimenters, etc.) paralleled the procedure of Experiment One.

Results

The dependent variable was time held on the second holding period adjusted for time held on the first holding period: the overall correlation of time held during period one with time held during period two was substantial \[ r(105) = .52, p < .0001 \]. Preliminary analyses revealed no main effects or interactions between Experimenter and Half of Calls Made. Therefore, a one-way analysis of covariance was performed on the means in Figure 4, with Condition as the sole factor and time held during period one as the covariate. There was a significant main effect for
Figure 4. Desk clerks' compliance in holding on a telephone call (second period holding adjusted for first period holding): Experiment 2.
Condition \([E(4, 99)=2.97, p<.02]\), with clerks in the scarcity condition complying more than clerks in the other conditions.

A planned comparison between the scarcity condition and the other four treatments revealed that the scarcity induction was, in fact, the most persuasive \([F(1, 99)=11.59, p<.001]\). When the scarcity condition was compared to just the other three Cialdini principles (authority, social proof, and liking), it was still the most effective \([F(1, 99)=11.34, p<.001]\). In a Scheffe's test only scarcity elicited more compliance than was observed in the control condition \((p<.05)\).

**Subjects' responses to the inductions.** As noted previously, during the two holding periods the experimenters pressed a "mute" button and recorded the clerks' comments. During these surveillances, clerks clearly believed that the experimenter had left the phone in order to look for the list of questions. Many clerks made candid comments to co-workers, or to themselves, about the experimenter or about aspects of their work.

The primary purpose for the surveillance of the clerks' responses was to determine whether subjects would spontaneously comment on the inductions, and,
specifically, whether they would express any disbelief concerning the appeals. In no case did clerks express any disbelief or doubt concerning any of the appeals. For example, one clerk in the liking condition spontaneously told a co-worker: "She said I was nice, she sounds real cute. . . . I've held on as long as I can. . . . I am a very busy guy, and I'm really nice, too." Obviously this clerk did not question the experimenter's sincerity; and no clerks' utterances indicated suspicion.

Examination of the clerks' utterances as a possible indicator to how they were actually processing the appeals. Overall, there were too few utterances by the clerks to allow refined coding. However, the total numbers were suggestive. Five times as many utterances (about the appeal and the experimenter), adjusted for the holding time, were observed in response to scarcity than in response to any of the other appeals.

This heightened cognitive processing by the clerks in response to scarcity did not appear consistent with the view (e.g., Cialdini, 1993, pp. 194-222) that scarcity information tends to reduce thinking and cognitive appraisal. Instead, the tendency of scarcity information to lead to heightened
cognitive processing corroborated the hypothesis that unavailability instigates thoughtful processing.

As in Experiment 1, it was empirically established that the operationalized levels of each of the compliance strategies were comparable to one another. See Appendix C for details.

General Discussion

The results of the Chapter Two experiments showed that requests based on scarcity were more effective than a control condition for both telephone operators and hotel desk clerks. However, that requests based on liking, authority, social proof, did not differ from the control is discussed below. These findings corroborated and extended similar results in Brannon (1990). It was noted that, with the exception of Cialdini (1988), other compliance theorists have omitted appeal to scarcity as a compliance-eliciting tactic. Therefore, at a minimum, the present findings caution investigators of social influence against further neglect of commodity-related tactics (Brock, 1968; Lynn, 1991; Brock & Brannon, 1992). It was assumed that the results occurred because a positive activity--phone redialing by operators, holding for a question from a hotel guest by a desk clerk--became more highly valued due to evaluative thinking
instigated by unavailability information. Direct evidence for this assumption was obtained during the surveillances of clerks in the second experiment.

The failure of authority, liking, and social proof to elicit increased compliance is noteworthy. At the very least, the failure here and elsewhere (Brannon, 1990) cautions against willy-nilly application of these principles. For example, asking operators to redial "because this is part of a major research project for the World Health Organization" certainly had a priori likelihood of being a powerful inducement to enhanced cooperation. However, the significance of the present failures for authority (and liking and social proof) is that these devices do not work unconditionally as is implied by Cialdini's automatic "click-whirr" metaphor.

A methodological advance is seen in the present use of multiple methods and multiple quantitative dependent measures of real-life behavior. Previous research has relied too heavily on subjects' self-reports of past or future preferences for compliance-gaining strategies. Such self-reports may or may not coincide with actual choice of strategies, and they may or may not coincide with the relative effectiveness of strategies in real-life.
Limitations

Processing of initially negative activity.
The elaborative account posits that thinking leads to
polarization of the initial value of an object
(experience, activity, message, etc.). It was assumed
that the activities of the present service workers
(operators, clerks) were positively valued to begin
with. An additional experiment would be helpful in
which unavailability information accompanied a request
that was negative or aversive for the target. For
example, suppose a telemarketer of a widget asked you
to hold while she searched for some information and
suppose further that listening to telemarketers is in
fact a negatively toned experience for you. If the
telemarketer's request was accompanied by a scarcity
appeal (e.g. "this is the only time this week I can
call you") your enhanced scrutiny of the negative
activity might lead you to less cooperation, i.e.,
less holding during the waiting period. The
ability of the cognitive elaboration account to
predict both increased and decreased compliance as a
function of unavailability should be tested in future
research.

Equivalence of inductions. An alternative to
the present approach would entail sampling very
broadly and representatively from populations of appeals while, at the same time, sampling broadly among possible brief impersonal compliance settings. In this way, one might eventually be able to draw general conclusions about the relative efficacy of scarcity versus liking versus authority versus social proof, etc. The present approach (selecting specific messages from each of these social influence domains and examining them in two specific influence settings) fell short of providing assurance that the relative ordering of effectiveness would be generalizable to classes of social influence processes rather than limited to particular messages in particular contexts.

However, the current operationalizations of the compliance principles were designed to be representative of actual usage in real-life (Cialdini, 1988, 1993), an aim that appeared to be corroborated by the supplementary studies' data in Experiments 1 and 2 (Appendices B and C). Moreover, surveillance of desk clerks' private reactions to the appeals in Experiment 2 indicated that the appeals were found to be plausible. To be sure, the current operations did not reflect the highest conceivable strengths of authority, scarcity, liking or social proof appeals. For example, to implement a very strong authority
appeal the experimenter might have said "Please try this number again operator because I am calling from the White House on behalf of the President." The scarcity operationalization might have been "please try this number again operator, because this is the only time in his life that my party will be there." Thus, it is certainly possible to conceive of alternative versions of the compliance inductions that would likely have received similar embodiment scores, but, at the same time, higher strength ratings than the operations that were actually used.

Of course, there are a number of problems with higher strength levels, such as implausibleness. As noted, we wished to reflect prevalent usage of appeals by real-life practitioners (Cialdini, 1988, 1993). The present operations were approximately equivalent in their rated fit to the theoretical definitions, and in their rated effectiveness, strength, interestingness, and representativeness. (See Appendices B and C).

Can the Efficacy of Commodity Manipulations be Extended to Face-to-Face Interactions?

Although the current influence settings were very brief non-face-to-face interactions between strangers, there is evidence that commodity manipulations may
also be effective in longer face-to-face situations. In a series of six experiments on the so-called "that's not all" technique, two experimenters, the communicators, purveyed unpriced cupcakes to passersby (Burger, 1986). Although not labeled as such by Burger, there were two commodity (unavailability) manipulations (Brock, 1968): (a) enhancement of the communicator's effort and (b) delay imposed on the passerby. In a condition combining these manipulations, when a passerby asked about the price of the cupcakes, they were told the price by the first experimenter, whereupon he was immediately interrupted by the second experimenter (thus manipulating the perceived effort of the first experimenter). The first experimenter then held up his or her hand and said to the potential customer "wait a second" without allowing the customer to respond to the price of the cupcake (delay manipulation). After blocking the passerby with his hand, the first experimenter announced that the price included two cookies as well as a cupcake (Burger, 1986, p. 278). When experimenters were interrupted and when they blocked the customer's response, more customers purchased cookies than in a control
condition that did not contain these two commodity manipulations but did include the additional cookies.

The final Burger experiment compared the commodity condition to another compliance technique, door-in-the-face. In the latter technique, increased compliance to a request results from getting the target person to first say "no" to a costly request. In the door-in-the-face condition the price was lowered from the initial quotation, but there was no interruption of the experimenter and no blocking of the customer's responding (Burger, 1986, p. 282). The commodity (blocking + delay) condition customers purchased more cookies relative to a control condition baseline than did the door-in-the-face customers. Thus, the Burger results suggested that commodity-based manipulation may be effective in gaining compliance in longer face-to-face situations as well as brief impersonal encounters.

Summary and Transition to Chapter Three

The present experiments, in conjunction with those reported earlier by Brannon (1990), demonstrated the efficacy of scarcity appeals in brief impersonal influence situations. The results supported the initial decision to focus on unavailability appeals because they are widespread and, at the same time,
neglected by compliance theorists. The failure of authority, liking, and social proof appeals to elicit enhanced compliance cautioned against the assumption that these tactics may have universal efficacy.

While the results were consistent with the elaborative explanation, the only direct evidence came from the surveillance of clerks' utterances in the second experiment; the clerks were more moved to "think out loud" by scarcity than by the other appeals. This behavior would be less consistent with an heuristic than with an elaborative account of scarcity's impact. The experiments reported in Chapters Three and Four dealt more systematically with the cognitive elaboration hypothesis.
CHAPTER III
LABORATORY INVESTIGATIONS OF HOW COGNITIVE ELABORATION MEDIATES THE EFFECTS OF SCARCITY ON ATTITUDBINAL POLARIZATION

With the efficacy of scarcity now well established for the compliance domain (Chapter 2), the remaining experiments (Chapters 3 and 4) sought to explicate more systematically how that efficacy is mediated. Recall that in the clerk experiment of the previous chapter, increased utterances were elicited to a greater extent by the scarcity appeal. This interesting lead notwithstanding, the nature of field settings used in Chapter 2 precluded measurement or manipulation of variables that could detect or reveal the possible underlying role of differential elaborative processing. The experiments in this chapter, following the agenda of liberalized commodity theory (Brock & Brannon, 1992), were designed to illuminate the role of cognitive processing as a mediator of scarcity effects and to extend the domain
of scarcity effects to negative elements and to traits and abilities.

Although there have been no direct tests of elaborative mediation so far, evidence reviewed by Brock and Brannon (1992, pp. 138-140) showed the plausibleness of an elaborative account of scarcity's efficacy (see also Bozzolo & Brock, 1992). For example, in an experiment by Worchel (1992, Table 3), subjects targeted for censorship as individuals, rather than targeted generally or targeted as members of a group, showed the most extreme attitude scores (in favor of a discrepant advocacy) and also reported the most interest in hearing the scarce (censored) message. The individually targeted subjects may have been especially likely to imagine the strong arguments of the withheld message, and, if this were so, move to adopt more extreme attitudes. However, because there has been no direct measurement of putative mediating variables—both here (Worchel, 1992), as well as in previous research (e.g., Bozzolo & Brock, 1992; Worchel et al., 1975)—the elaboration mechanism, defined here as evaluative thinking, had yet to be empirically established.

The present experiments enabled two kinds of analyses. First, examination of the direct effects of
scarcity on cognitive elaboration (Petty & Cacioppo, 1986) and, secondly, path analyses to demonstrate, if possible, that elaboration mediates the scarcity-polarization relationship (Brock & Brannon, 1992).

Experiment 3

Introduction

In order to test the two theoretical positions (see Chapter 1)---heuristic versus elaborative processing---laboratory experiments were conducted which attempted to detect increased differential evaluative processing of positive and negative information as a function of manipulated availability.

In the present test of the elaborative hypothesis we examined the effects of scarcity on polarized evaluation of personal attributes. In a conceptually similar study by Ditto and Jemmott (1989) a beneficial health condition was evaluated as a more desirable attribute when it was thought to be rare than when it was thought to be common; correspondingly, a detrimental condition was evaluated as a more serious health problem when it was thought to be rare than when it was thought to be common. Although Ditto and Jemmott did not attempt directly to measure subjects' cognitive responses to scarcity, they attributed the polarization to unthinking extremizing: "Because
prevalence information is often a reliable indicator of evaluative extremity, people may come to automatically infer evaluative extremity from perceived prevalence. For example, if all that is known about some object or characteristic is that it is rare, people may rely on a scarcity principle to infer an extreme evaluation" (p. 17). Thus, the Ditto & Jemmott account is similar to Cialdini's mindless-processing interpretation (Chapter 1). In contrast to Ditto and Jemmott, it is argued here that the polarization they observed was due to increased evaluative thought rather than mindless extremitizing.

Method

71 OSU undergraduates, earning course credit for their participation, completed and self-scored a fifteen-item True-False questionnaire which ostensibly measured their picture-mindedness, defined for them as a person's aptitude for producing pictures in the mind. For example, some of the 15 items were "I occasionally daydream," "Sometimes I like to replay movies in my mind," and "I have some pictures of things in my mind." See Appendix H for the complete form. The self-scoring procedure, in which subjects tallied their own responses on the 15-item test and compared the sum to a provided criterion, enabled all
subjects to become convinced that they indeed possessed picture-mindedness.

Three manipulations followed. The first defined picture-mindedness as either a trait, that is, the tendency to produce pictures in the mind, or as an ability. The wording for the trait manipulation was as follows: "The P-M test you just took is the Picture-Mindedness Test, a test that takes into account a combination of different experiences to measure a trait of personality, a person's inclination to have pictures in the mind." The wording for the ability manipulation was as follows: "The P-M test you just took is the Picture-Mindedness Test, a test that takes into account a combination of different experiences to measure an ability, a person's aptitude for producing pictures in the mind." See Appendix H for self-scoring form.

Secondly, subjects were told that picture-mindedness was either advantageous, that is positive, or disadvantageous, that is negative. This positive-negative manipulation was accomplished by having subjects review a check-list of advantages, or disadvantages, of picture-mindedness (Appendix H). An example of an advantage was "Reading comprehension is benefited because seeing the things you are reading
about is helpful." An example of a disadvantage was "Reading comprehension is harmed because seeing the things you are reading about interferes."

Next, subjects were told that picture-mindedness was either very rare or very common. The subjects in the Low Scarcity condition were told that "Only a few people clearly have picture-mindedness; psychological research has found picture-mindedness in fewer than one person in every hundred. Whether anyone is one of those very few persons with picture-mindedness can be best determined by psychological testing."

Subjects in the High Scarcity condition were told that "Most people clearly have picture-mindedness; psychological research has found picture-mindedness in practically everyone; only one person in every hundred lacks picture-mindedness. Whether anyone is one of those many persons with picture-mindedness can be best determined by psychological testing."

Subjects then filled out 10-point scales assessing how having picture-mindedness made them feel, ranging from "much worse" (0) to "much better" (9) as well as three semantic-differential scales: very good (9)/very bad (0), very favorable (9)/very unfavorable (0), and very helpful (9)/very unhelpful (0). Finally, subjects were asked to list all the
thoughts that they had while they were learning about their picture-mindedness, and then they were debriefed. See Appendix H.

Results

Manipulations Checks. Following the dependent measures subjects were asked to rate "Who else has picture-mindedness" (0=very few people, 9=nearly all people). The mean under High Scarcity, was significantly lower than the mean under Low Scarcity (M=2.41 for High Scarcity, M=7.16 for Low Scarcity; F(1,67)=114.98, p<.0001).

Main findings. Preliminary analyses revealed no main effects or interactions with Attribute (Trait/Ability); therefore, this factor will not be discussed further. The scores on the 10-point feeling scale and the three semantic-differential scales were highly correlated (.76<rs<.90; ps<.0001). Therefore, a composite score (the mean) of the four attitude measures of picture-mindedness was the dependent variable in a 2 (Scarcity: High/Low) X 2 (Valence: Positive/Negative) analysis of variance. There was a significant main effect for valence, indicating that subjects who were led to believe that having picture-mindedness was beneficial felt significantly better about having that attribute than those who believed
that having picture-mindedness was disadvantageous \( F(1,67)=25.77, p<.0001 \). This expected main effect tended to be qualified, however, by a nonsignificant interaction between scarcity and valence as shown in Figure 5 \( F(1,67)=1.97, p<.17 \).

Planned comparisons revealed that the predicted simple effects, as shown in Figure 5, were in the predicted direction but fell short of statistical significance. Subjects who believed that picture-mindedness was a positive attribute tended to feel better about having it when it was rare than when it was common \( F < 1, \text{n.s.} \); whereas subjects who believed that picture-mindedness was a negative attribute tended to feel worse about having it when it rare than when it was common \( F(1,67)=2.53, p<.12 \).

Analysis of subsample in which the manipulation check was successful. Although the scarcity manipulation check indicated that the scarcity manipulation was successful overall, nine subjects in the High Scarcity condition indicated, contrary to the manipulation, that "many people" had picture-mindedness. (All subjects in the Low Scarcity condition responded appropriately). Therefore, as an exploratory analysis, the data for the sixty-two
Figure 5. Effects of scarcity and valence (advantageous or disadvantageous) on ratings of picture-mindedness: Experiment 3.
subjects for whom the scarcity manipulation was successful were analyzed separately.

The mean of the four attitude measures of picture-mindedness was the dependent variable in a 2 (Scarcity: High/Low) × 2 (Valence: Positive/Negative) analysis of variance. Once again, there was a significant main effect for valence, indicating that subjects who were led to believe that having picture-mindedness was beneficial felt significantly better about having that attribute than those who believed that having picture-mindedness was disadvantageous [F(1,58)=29.40, p<.0001]. The interaction between scarcity and valence reached statistical significance in this analysis, as shown in Figure 6 [F(1,58)=4.38, p<.04].

Subjects who believed that picture-mindedness was a positive attribute tended to feel better about having it when it was rare than when it was common [F < 1, n.s.]; whereas subjects who believed that picture-mindedness was a negative attribute felt worse about having it when it was rare than when it was common [F(1,58)=5.53, p<.02].

The Scarcity × Valence interaction was apparently delivered by subjects' responses to the Negative valence conditions. This could be due to a ceiling
Figure 6. Effects of scarcity and valence (advantageous or disadvantageous) on ratings of picture-mindedness: Experiment 3 subsample.
effect for the Positive Valence conditions. For both the total sample and the subsample (N=62) the average response to the Positive conditions was a 7.1, on a scale ranging from 0 to 9. Even subjects who were told that picture-mindedness was Negative tended to rate it above the midpoint on the scale: the average response to the Negative conditions was 5.2 for the total sample and 5.1 for the subsample.

This experiment has indicated that the extremitizing, or polarizing, effect of rarity may be applicable not only to the exotic health condition contrived by Ditto and Jemmott (1989) but may be generally applicable to traits and skills.

Path analyses. The thoughts subjects generated were scored for extent of evaluative thinking, that is, mention of possible positive or negative aspects of picture-mindedness. Two judges recorded the total number of thoughts, as well as the specific number of positive and negative thoughts; disagreements were resolved by discussion.

To further pin down the possible causal role of scarcity-induced thinking in bringing about polarization I conducted a standard path analysis for the whole sample (N=71) as shown in Figure 7.
Figure 7. Path analysis: Attitudinal polarization as a function of scarcity and message-consistent evaluative thinking: Experiment 3.
In this analysis, Scarcity refers to the dichotomous scarcity manipulation. Evaluative thinking refers to the number of thoughts that were consistent with the valence of the message. Evaluative thinking was expected to be consistent with the message because picture-mindedness was totally unfamiliar to subjects prior to the experiment (because it was a fictitious attribute) and because the only information subjects were given about picture-mindedness was a list of several fairly compelling reasons why picture-mindedness was either beneficial (positive) or detrimental (negative). Under these conditions, subjects should tend to generate thoughts that are predominantly consistent with the message (Tesser, 1978). If a subject was told that having picture-mindedness was positive, the evaluative thinking score would be the number of positive thoughts the subject generated; here, evaluative thinking would be primarily positive. If, on the other hand, a subject was told that having picture-mindedness was negative, the evaluative thinking score would be the number of negative thoughts the subject generated. In this case, evaluative thinking would be primarily negative. Attitude polarization refers to more extreme attitudes
consistent with the message. For a subject in the positive condition, polarization was simply the subject's attitude composite. For subjects in the negative condition, polarization was the subject's attitude composite, reverse scored; this transformation resulted in higher scores indicating more extreme attitudes in the direction of the message.

As can be seen in Figure 7, bivariate scarcity was not linked directly to attitude polarization, that is, to attitude scores that were consistent with the positive or negative depiction of picture-mindedness. This was the only non-significant path in the analysis. Instead, the impact of scarcity on attitude polarization was mediated by message consistent evaluative thinking, the number of thoughts that was consistent with the positive or negative depiction of picture-mindedness.

The same pattern of results was found (albeit of borderline significance: ps < .10 versus .05 in the full sample) when the same analysis was conducted using the subsample (N=62) for whom the scarcity manipulation check was most successful.

Alternative measures of evaluative thinking. The above measure of evaluative thinking seemed most
appropriate to test the hypothesis that high scarcity leads to more valenced thoughts (namely, in the present context, message-consistent thoughts) than low scarcity. However, alternative measures of evaluative thinking tended to produce similar results. For example, identical patterns of significance were obtained for the path analysis (N=71) when the measure of evaluative thinking was the number of message-consistent thoughts minus the number of message-inconsistent thoughts; and when the measure of evaluative thinking was the proportion of total thoughts that was message-consistent.

In addition, similar patterns of results were obtained when the measure of evaluative thinking was the proportion of valenced thoughts (positive and negative) that was message-consistent; and when the measure of evaluative thinking was the number of message-consistent thoughts minus the number of message-opposite thoughts, divided by the number of valenced thoughts. However, for these latter two analyses the path from Scarcity to Evaluative Thinking was no longer significant (ps of .19 and .14, respectively). However, only 21% of subjects listed both positive and negative thoughts. Therefore, for the majority of subjects, 79%, the last two measures
of evaluative thinking would be equivalent to the number of valenced thoughts (either positive or negative) divided by the number of valenced thoughts, or unity. Obviously, these latter measures of evaluative thinking were problematic because of their severely restricted ranges.

It may be noted that this lab experiment did not include another widely-used measure of critical thinking, namely, an expressed desire for more information (e.g., Worchel, 1992) about picture-mindedness. However, Ditto and Jemmott (1989) did measure information receptivity in their study and found that subjects actively sought more information about a negative state under high than under low scarcity. Thus, although Ditto and Jemmott argued for an heuristic effect of scarcity, their own data provided evidence for increased, rather than reduced, thoughtful processing.

A supplementary study of possible alternative interpretations of Experiment 3.

How do we know that being told that picture-mindedness was rare increased evaluative thinking, rather than being told that picture-mindedness was common reduced such thinking from some initial level? A small, additional study was conducted to determine
whether subjects were initially inclined to assume that picture-mindedness was relatively rare or common. If subjects assumed that picture-mindedness was common, even before receiving the scarcity manipulation, this would support the claim that being told that picture-mindedness was rare led to increased evaluative thinking from the baseline (which was to assume that picture-mindedness was common and therefore didn't require scrutiny).

Subjects were fifteen undergraduates at the Ohio State University who participated for course credit.

Procedure. Subjects completed and self-scored the picture-mindedness questionnaire from Experiment 3. For half of the subjects (N=7) picture-mindedness was described as a trait; for the other half (N=8) picture-mindedness was described as an ability. Then, without being told anything about whether picture-mindedness was rare or common, or whether picture-mindedness was good or bad, subjects were asked to guess: "Who else has picture-mindedness" (0=very few people, 9=nearly all people). See Appendix H.

Results and Discussion. When given no information about the rarity of picture-mindedness, subjects tended to assume that it was relatively common (M=6.07), regardless of whether it was
described as a trait or as an ability. These ratings were combined with the manipulation check data for Experiment 3 in a one-way analysis of variance with Scarcity (High/Low/No Information) as the sole factor. There was a significant main effect \[ F(2,83)=64.53, \quad p<.0001 \]: Subjects who were in the No Scarcity Information (\(M=6.07\)) and the Low Scarcity (\(M=7.16\)) conditions rated picture-mindedness as being significantly more common than subjects in the High Scarcity condition (\(M=2.41\), Scheffe's test, \(p<.05\)).

Thus, subjects spontaneously assumed that picture-mindedness was common, unless they were specifically told otherwise. Therefore, when interpreting the results of the path analysis of Experiment 3, it seemed appropriate to conclude that being told that picture-mindedness was rare increased evaluative thinking from the initial baseline, rather than being told that picture-mindedness was common reduced such thinking.

**Experiment 4**

Further proof that scarcity instigates evaluative thinking came from a follow-up study, Experiment 4, in which the scarcity manipulation, rare versus common, was the only information subjects received. Subjects were simply told that they would be tested for
picture-mindedness, that it was rare or common, and then they immediately listed their thoughts. The thoughts were scored in order to determine whether scarcity alone elicits evaluative scrutiny.

Method

Subjects were fifty-five undergraduates at the Ohio State University who participated for course credit.

Procedure. Subjects were given a questionnaire which instructed subjects that "In a few minutes Picture-Mindedness will be explained and you will be asked a few questions to determine whether you have Picture-Mindedness." The questionnaire then immediately introduced the scarcity manipulation from Experiment 3, "Who has picture-mindedness?" The subjects in the Low Scarcity condition were told that "Only a few people clearly have picture-mindedness; psychological research has found picture-mindedness in fewer than one person in every hundred. Whether anyone is one of those very few persons with picture-mindedness can be best determined by psychological testing." Subjects in the High Scarcity condition were told that "Most people clearly have picture-mindedness; psychological research has found picture-mindedness in practically everyone; only one person in
every hundred lacks picture-mindedness. Whether anyone is one of those many persons with picture-mindedness can be best determined by psychological testing."

Upon turning the page, subjects were instructed to "list all of the thoughts and ideas you have right now about picture-mindedness." See Appendix H.

Results

The thoughts were scored for extent of evaluative thinking, that is, mention of possible positive or negative aspects of picture-mindedness. Two judges recorded the number of evaluative thoughts, as well as the specific number of positive and negative thoughts; disagreements were resolved by discussion.

Subjects in this experiment were not given any information about picture-mindedness' valence. Therefore, it was expected that subjects would generate more valenced thoughts in the High than the Low Scarcity condition, but it was impossible to predict whether these thoughts would tend to be primarily positive or negative. Therefore, the number of thoughts that was evaluative was the dependent variable in a one-way analysis of variance, with Scarcity (High/Low) as the sole factor. There was a
significant main effect of Scarcity [$F(1,53)=5.32, p<.03$], indicating that subjects in the High Scarcity condition generated a greater number of evaluative thoughts ($M=1.07$) than subjects in the Low Scarcity condition ($M=0.38$).

In order to determine whether this main effect was driven primarily by High Scarcity subjects generating primarily positive or negative thoughts, separate one-way analyses of variance were conducted for both the number of positive and negative thoughts, with Scarcity as the sole factor. When the number of positive thoughts was the dependent variable, there was a borderline significant main effect of Scarcity [$F(1,53)=2.96, p<.09$], indicating that subjects in the High Scarcity condition tended to generate more positive thoughts ($M=0.86$) than subjects in the Low Scarcity condition ($M=0.35$).

Similarly, when the number of negative thoughts was the dependent variable, there was a borderline significant main effect of Scarcity [$F(1,53)=2.91, p<.09$], indicating that subjects in the High Scarcity condition generated more negative thoughts ($M=0.24$) than subjects in the Low Scarcity condition ($M=0.04$).

Overall, of the total evaluative thoughts, subjects generated a greater proportion of positive
(75%) than negative thoughts (25%). However, as previously noted, subjects who were told that picture-mindedness was rare generated more of both positive and negative thoughts than subjects who were told that it was common.

The fact that these subjects tended to generate more positive thoughts about picture-mindedness supported the speculation that the non-significant trend toward scarcity-induced polarization for subjects in the Positive Valence condition of Experiment 3 may have been due to a ceiling effect. Subjects were predisposed to evaluate picture-mindedness positively.

Discussion

More evaluative thinking (both positive and negative) was observed when subjects were told picture-mindedness was rare than when they were told it was common. This study suggested that scarcity alone, not in association with any particular object, can elicit evaluative scrutiny, in effect, making people think about the pros and cons of whatever is alleged to be rare.

Conclusion and Transition to Chapter Four

In sum, the present lab experiments confirmed the observation of a scarcity-thinking relationship in the
clerk field experiment (Chapter 2). In addition, the impact of scarcity has been extended to negative elements and to traits and abilities. More importantly, from the standpoint of the principal theoretical question, the experiments provided the first direct measurement of a putative mediator of scarcity's polarizing impact. The findings, in particular the path analyses, favored an elaborative account and are inconsistent with heuristic views (e.g., Lynn, 1992) of how scarcity (Cialdini, 1993) and rarity (Ditto & Jemmott, 1989) work.

The experiments of the present chapter have capitalized upon our ability in the laboratory to obtain direct measurement of subjects' thinking. However, the subjects—college psychology students—and the focal trait/ability—picture-mindedness—may limit the generalizability of the cognitive processing interpretation of scarcity's efficacy. Therefore, in the next chapter (4), we returned to observation of adults in field settings and used a different paradigm to reveal the dynamics of differential cognitive elaboration in response to scarcity.
CHAPTER IV
FIELD EXPERIMENTAL TESTS OF SCARCITY'S EFFECTS ON SENSITIVITY TO MESSAGE STRENGTH

The laboratory experiments of Chapter Three employed direct measurement of cognitive responses to determine that evaluative thinking may account for scarcity's effects on evaluative polarization. Evaluative thinking can be examined from another perspective, namely, observation of subjects' sensitivity to the merits of persuasive messages (Petty & Cacioppo, 1986). The field experiments of the present Chapter took this tack by employing magnitude of differential processing of strong versus weak arguments as an indicator of extent of elaboration.

The general hypothesis was that, when a message is accompanied by scarcity information, scrutiny is heightened and the merit of the message is weighed. Thus, an inherently strong message will become more compelling if it has been characterized as scarce; an inherently weak message, less compelling because the
scrutiny instigated by scarcity leads the recipient to properly appraise its weakness. These derivations are shown in the following figures.

According to the elaboration hypothesis (Figure 8), a strong, compelling argument results in significantly more compliance when scrutiny is heightened, in this case under scarcity conditions, than when it is not. Similarly, a weak, or specious argument results in significantly less compliance when scrutiny is heightened, once again under scarcity. Note also that when people are not particularly scrutinizing message arguments, in this case, under low scarcity conditions, they do not display differential compliance to strong and weak arguments, because they are not critically evaluating the messages and do not weigh argument quality.

This prediction can be contrasted with the prediction that stems from the prevailing heuristic cue position (Cialdini, 1993). According to the cue position, scarcity does not influence message scrutiny. In Figure 9, people are no more likely to show differential compliance to strong versus weak arguments under scarcity conditions. Instead, regardless of the message quality, everyone shows more compliance in response to a scarcity appeal.
Figure 8. Theoretical effects of scarcity and argument strength on message acceptance: Elaboration position.
Figure 9. Theoretical effects of scarcity and argument strength on message acceptance: Heuristic position.
Now recall the strong version of Cialdini's account, namely, a knee-jerk ("click-whirr") response to a cue as well as impairment of critical thinking. If the strong version applied, then the parallel lines might converge under high scarcity—the strong and weak messages would become indistinguishable because thought was disrupted.

An important insight is suggested by the elaboration position: some arguments, namely, weak or specious ones, will result in reduced compliance when accompanied by scarcity information. See Figure 8.

Experiment 5

The next experiment used the phone operator paradigm from Experiment 1 in Chapter Two. Telephone operators were asked to make a long-distance phone call. When the operators reported that no one was answering the initial call they were asked to redial the same number and extent of redialing was the principal dependent measure of compliance. In the present experiment scarcity and the strength of the argument for redialing were manipulated. In this 2 X 2 design, if the elaboration position is correct, there should be greater differential responding to strong versus weak arguments under high than under low scarcity conditions.
Method: Phone Operator Compliance in Response to Strong versus Weak Arguments

Subjects were 143 long-distance telephone operators.

Procedure. Long-distance phone calls were placed by three experimenters (1 male and 2 females) who were blind to the hypothesis. An out-of-state number at which there would be no answer was used. The experimenter asked the operator to place a person-to-person call, and the number of rings allowed on the first try was recorded. Then the same operator was asked to redial, and the number of rings, if any, was recorded. Thus, ringing by the same operator was counted at time one and at time two: this double measurement eliminated variance due to individual differences in an operator's propensity to ring as well as variance due to time-of-day differences in telephone call traffic.

Compliance Inductions. In all four cells, the operator, after announcing that no one answered, was told, "Please release and try this same number again." The reasons given to the operator constituted the experimental conditions. In the High Scarcity condition, the operator was told "This is the only time this month that I can make this call." In the
Low Scarcity condition, "today" was substituted for "month." In the Strong Argument condition, the experimenter continued, "I want to talk to him about matters that affect his job, his family, and his health." In the Weak Argument condition, the experimenter continued "I want to talk to him about matters that may not make any difference."

Pilot test of the manipulations. The above arguments were pretested to ensure that they were, in fact, perceived as strong or weak.

Subjects were 37 Ohio State University undergraduates participating for course credit.

Procedure and findings. Subjects filled out a questionnaire which asked them to rate a number of issues in psychological assessment of human experiences, both mental experiences and experiences as consumers. Subjects were instructed to "Imagine that you are trying to place an important phone call, and the phone rings and rings, and no one answers. The operator suggests that you try placing the call at another time, but you want to try again immediately. So you say 'Please try this number again, operator,' (You give a reason)"

Subjects were then asked to check off on 10-point scales how effective and how strong the arguments were
that were used in Experiment 5 (Strong Argument: "I want to talk to him about matters that affect his job, his family, and his health;" Weak Argument: "I want to talk to him about matters that may not make any difference"). The items were worded as follows:

Effectiveness: "Check below each reason given to the operator how effective it will be? How effective will be your statement to the operator?" (1=ineffective, 10=very effective).

Strength: "Check below each reason given to the operator how strong it will be? How strong will be your statement to the operator?" (1=weak, 10=strong).

One-way analyses of variance were performed on the effectiveness and strength ratings, with Argument Strength as the sole factor. The strong argument was rated as being significantly more effective than the weak argument \([M=7.68 \text{ for Strong, } M=2.08 \text{ for Weak}; F(1,36)=123.74, p<.0001]\). Similarly, the strong argument was rated as being significantly stronger than the weak argument \([M=7.95 \text{ for Strong, } M=2.32 \text{ for Weak}; F(1,36)=109.99, p<.0001]\). Clearly, the strong argument was perceived as being more compelling and convincing than the weak argument.
Results and Discussion

Preliminary analyses revealed no interactions between either Sex of Experimenter or Sex of Operator and either Scarcity or Argument Strength. Therefore, an analysis of covariance was performed on the number of rings for attempt 2, with the number of rings for attempt 1 serving as covariate, and with Scarcity and Argument Strength as the two factors. As can be seen in Figure 10, there was a significant main effect for Argument Strength \([F(1,138)=47.88, p<.0001]\). This main effect was qualified, however, by a significant interaction between Scarcity and Argument Strength \([F(1,138)=23.00, p<.0001]\): differential impact of strong versus weak arguments was more pronounced under high than under low scarcity. The strong argument elicited significantly more compliance when it was paired with high, rather than low scarcity; \([F(1,138)=22.32, p<.0001]\). Similarly, the weak argument elicited significantly less compliance when it was paired with high, compared to low, scarcity; \([F(1,138)=5.06, p<.03]\). This heightened impact of the strong versus weak manipulation under high scarcity is, of course, consistent with the increased thought position and not obviously derivable from the heuristic view of how scarcity works.
Figure 10. Operators' compliance in ringing non-answering telephones (second call adjusted for initial call) as a function of scarcity and argument strength: Experiment 5.
Experiment 6: An examination of possible alternative interpretations of Experiment 5

How do we know that the interaction between Scarcity and Argument Strength found in Experiment 5 was due to high scarcity increasing processing, rather than due to low scarcity reducing processing? Experiment 6 was conducted in order to determine whether subjects would be inclined to scrutinize message arguments in the absence of any scarcity information.

Subjects were 67 long-distance telephone operators who were unaware that their behavior was being observed.

Procedure. Experiment 6 was an exact replication of Experiment 5, except that operators merely received strong versus weak arguments for redialing the number; they received no scarcity information. (It would have been ideal to carry out these additional conditions as part of the same omnibus experiment with subjects assigned randomly to all the conditions).

As in Experiment 5, the experimenter asked the operator to place a person-to-person call, and the number of rings allowed on the first try was recorded. Then the same operator was asked to redial, and the number of rings, if any, was recorded. Once again,
the reasons given to the operator for redialing constituted the experimental conditions. As before, subjects in the Strong Argument condition were told, "Please release and try this same number again. I want to talk to him about matters that affect his job, his family, and his health." Similarly, subjects in the Weak Argument condition were told, "Please release and try this same number again. I want to talk to him about matters that may not make any difference."

Results. An analysis of covariance was performed on the number of rings for attempt 2, with the number of rings for attempt 1 serving as the covariate, and with Argument Strength as the sole factor. The main effect for Argument Strength was not significant \( [M=13.80 \text{ for Strong Argument, } M=11.59 \text{ for Weak Argument}; F(1,64)=1.37, p >.20] \). Although operators tended to comply more in response to the Strong than in response to the Weak argument, this tendency did not approach statistical significance.

Discussion. This result indicated that subjects in the telephone operator studies were not initially scrutinizing message arguments. Therefore, the interaction found in Experiment 5 can be reasonably attributed to high scarcity information leading to increased message processing, rather than to low
A portion of the data from Experiment 5 was combined with the data from Experiment 6 as follows. 

A 2 (Scarcity: Low/No Information) X 2 (Argument Strength: Strong/Weak) analysis of covariance was performed on the number of rings for attempt 2, with the number of rings for attempt 1 serving as a covariate. The main effect of Argument Strength approached significance \([F(1,132)=3.26, p<.07]\). More importantly, the interaction between Scarcity and Argument Strength did not approach significance \((F < 1)\). Thus, subjects who received Low Scarcity information behaved as did those who had not received any scarcity information.

Another analysis combined the data from Experiments 5 and 6 as follows. A 3 (Scarcity: High/Low/No Information) X 2 (Argument Strength: Strong/Weak) analysis of covariance was performed on the number of rings for attempt 2, with the number of rings for attempt 1 serving as a covariate. Again, there was a significant main effect for Argument Strength \([F(1, 203)=31.05, p<.001]\). See Table 1.
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**Note.** Combined data from Experiments 5 and 6: See text for explanation. Cell sizes are listed in parentheses. The adjusted means are slightly different from those for the separate analyses, due to the combined covariance analysis.
This main effect was qualified, however, by a significant Scarcity × Argument Strength interaction \[\text{F}(2, 203)=10.34, \ p<.0001\]. Planned comparisons between the Low Scarcity and No Information conditions once again demonstrated that subjects who received no scarcity information tended to respond similarly to those who were in the Low Scarcity condition in Experiment 5 [Fs < 1 for both the Strong and the Weak Arguments]. Further planned comparisons between the High Scarcity versus the Low Scarcity and the No Information conditions revealed that the significant Scarcity × Argument Strength interaction was due to the increased processing of the High Scarcity subjects [for the Strong Argument, \(\text{F}(1, 203)=19.04, \ p<.0001\); for the Weak Argument \(\text{F}(1, 203)=4.65, \ p<.03\)]. Thus high scarcity led subjects to scrutinize information, and this heightened scrutiny was higher than that elicited by no information regarding scarcity or by low scarcity information.

**Experiment 7**

A second test of the strong-weak effect under high scarcity was carried out in a very different environment, a local Mexican fast food drive-thru restaurant. We chose this site to explore whether the strong-weak effect under high scarcity could be
obtained in the noisy, fast-paced flow of a commercial environment.

Customers were asked by the order-takers, employees who were entirely unaware of the hypothesis, to consider purchasing a product that was, in fact, rarely purchased. It was hypothesized that actual sales of the item, a cinnamon twist, could be increased with a scarcity appeal; it was expected, however, that under scarcity, customers would be more affected by strong versus weak arguments for buying the cinnamon twist.

**Method:** Mexican Fast-Food Restaurant Customers' Compliance with Strong versus Weak Appeals. 360 regular drive-thru restaurant customers heard extra messages during the off-peak hours. No customers complained about the additional upselling.

**Procedure.** Several order-takers systematically manipulated scarcity and argument strength by reading a pre-scheduled set of scripts to customers. After welcoming the customer to Taco Bell and suggesting ordering a cinnamon twist, the order-taker read the scripts to manipulate scarcity and argument strength as follows:

High Scarcity: "Would you like a cinnamon twist made with our special recipe today only?" or Low
Scarcity: "Would you like a cinnamon twist made with our usual recipe for this year?"

Strong Argument: "The cinnamon twist goes great with Mexican food, you know" or Weak Argument: "The cinnamon twist is not really Mexican food, you know."

Observer's role. A hidden, trained observer, wearing a headset, audited every transaction, noted the delivery of the appeal, scored the quality of the delivery, and, finally, scored whether or not the customer ordered a cinnamon twist.

Pilot test of the manipulations. The arguments and the scarcity manipulations used in Experiment 7 were pretested to ensure that they were perceived as intended. The same 37 subjects who filled out manipulation check questionnaires for Experiment 5 also completed the manipulation check questionnaires for Experiment 7.

Procedure and findings. Subjects filled out a questionnaire which asked them to rate a number of issues in psychological assessment of human experiences, both mental experiences and experiences as consumers. Subjects were asked to "rate the following statements that order-takers make to Taco Bell customers." Subjects were asked to check off on 10-point scales how effective and how strong the
arguments were (Strong argument: "The cinnamon twist goes great with Mexican food, you know," Weak argument: "The cinnamon twist is not really Mexican food, you know;" High Scarcity: "Made with our special recipe today only," Low Scarcity: "Made with our usual recipe for this year").

Subjects rated how effective (1=ineffective, 10=very effective) and how strong (1=very weak, 10=very strong) the strong and weak arguments were. Finally, as a check on the scarcity manipulation, subjects rated how available the cinnamon twist was in both the high and low scarcity conditions (1=very unavailable, 10=very available).

One-way analyses of variance were performed on the effectiveness and strength ratings for the Argument Strength manipulations. The strong argument was rated as being significantly more effective than the weak argument \([M=5.59 \text{ versus } M=3.16; F(1,36)=31.90, p<.0001]\). Similarly, the strong argument was rated as being significantly stronger than the weak argument \([M=5.86 \text{ versus } M=3.03; F(1,36)=31.09, p<.0001]\). As expected, the strong argument was perceived as being more compelling and convincing than the weak argument. Note, however, that the means for the strong argument were only
slightly above the scale midpoint, and that the means for the weak argument were only slightly below the scale midpoint. In a real commercial environment, where customer satisfaction is a valid consideration, we were unable to use extremely strong and extremely weak arguments.

A one-way analysis of variance was performed on the availability ratings. The high scarcity appeal was rated as being significantly less available than the low scarcity appeal \([M=4.70\text{ versus } M=7.05; F(1,36)=9.49, p<.004]\).

**Results and Discussion**

We conducted 360 transactions and deleted 55 because the appeals were either misdelivered or not heard by the customer. Therefore, 305 transactions were included in the analyses.

Figure 11 shows the percentage of transactions in which a cinnamon twist was purchased as function of scarcity and argument strength. During an average business day, only about 10 in 800 customers, or about 1.3\%, order a cinnamon twist. Although cinnamon twist sales did not increase markedly, overall sales increased over the no-appeal level. More importantly, a log-linear analysis on the proportion of cinnamon twists purchased in each treatment combination
Figure 11. Cinnamon twist purchasing as a function of scarcity and argument strength: Experiment 7.
revealed a pattern of data that was similar to the previous experiment and which corroborated the elaboration position: a significant strong-weak difference was observed under high scarcity but not under low scarcity (likelihood ratio chi square with 1 df=3.998, p<.05). The consistency of these data with the previous lab and field tests was encouraging because the effect may have been somewhat constrained due to a floor effect for the high scarcity, weak argument, condition where twist purchasing was actually at the level of the base rate (1.3%).

Chapter Summary

Experiments Five and Seven have shown how scarcity can moderate compliance with strong versus weak appeals in two disparate real-life settings. Willingness to redial, or to order a cinnamon twist, was affected by the merit of the appeal if the appeal was accompanied by high scarcity information. Under low scarcity, or no information (Experiment 6), no differential processing in response to message strength was observed. The field experiments of this chapter have thus corroborated the laboratory evidence of the previous chapter in implicating the role of evaluative thinking as the mediator of scarcity's polarizing impact on attitudes and compliance.
CHAPTER V
GENERAL DISCUSSION

The present series of experiments merged two domains of inquiry in social psychology—work since 1968 (Brock) on the psychology of unavailability (e.g., Lynn, 1991) and since 1967 (Marwell & Schmitt) on the psychology of compliance (e.g., Miller et al. 1977; Cialdini, 1993)—with a third domain, the psychology of persuasion (e.g., Petty & Cacioppo, 1986). By capitalizing on the third domain's independent manipulation of message strength and its measurement of cognitive-elaborative mechanisms, a case has been made for thoughtful responsiveness to scarcity appeals, and, therefore, for the ability of such appeals to push recipients either for or against the focal request. This understanding is quite different from the prevalent heuristic view of unidirectional responding to compliance tactics (e.g., Cialdini, 1993).
Efficacy of Scarcity

In *Influence: Science and Practice* Cialdini (1988, 1993) categorized a variety of persuasive tactics which are commonly used in "real-world" situations by persuasion practitioners. Although he considered appeals to liking, to authority, to social proof, to scarcity, etc., to be enormously powerful, he did not provide a theoretical perspective from which relative power could be derived, nor did he even speculate about relative power under limited or specified conditions. Moreover, Cialdini's reliance on "mindless," or heuristic, accounts to explain how compliance tactics work, has been disputed here. By empirically broaching the relative efficacy question and by testing the worth of putative mediators for a particular compliance tactic (scarcity), the present series of experiments advanced understanding of both the psychology of compliance and the psychology of unavailability.

Comment on ethics. The intrusions in the lives of desk clerks, phone operators, and fast-food customers were "part and parcel" of their everyday experience—a request to hold for a question, or to redial, or to consider a menu item. Furthermore, the requests and responses were completed in a couple of
minutes so that none of these subjects could have experienced an actual decrement in performance or morale. The gains for ecological validity appeared to justify these momentary intrusions.

Partitioning the Field of Influence Situations

One can imagine partitioning the field of possible influence situations into component parts (i.e., non-face-to-face interactions with strangers, face-to-face interactions with acquaintances, etc.). Such a partitioning would allow specification of the domain of applicability of powerful compliance principles. From what is presently known, commodity tactics appear to be the tactics of choice to affect influence in short-duration impersonal exchanges.

An appeal to scarcity in such situations will often be effective because there is often an initial positive disposition, such as the willingness of service personnel to provide an appropriate service: redialing (telephone operators) or answering questions (hotel desk clerks). Where there may be a negative initial response, a scarcity appeal might backfire. However, even when the initial response is negative, e.g. one's presumed disclination to buy a widget from a telemarketer, telemarketers might yet prevail if the initial request is not to buy a product but simply
to listen further. For example, the telemarketer might initially offer "I have been trying to reach you for several days" or "this is the only time this week that I could call you; could you listen to me for a few minutes?"

Whether scarcity is the sovereign compliance principle in impersonal situations (Chapter 2), and whether the key mediator is evaluative thinking (Chapters 3 and 4), are issues for kindred research in which such factors as the following are systematically addressed: face-to-face communication, relationship duration, expectation for future interaction, and acquaintanceship. Further research could provide a partitioning of social influence settings in which the constituent classes are differentiated in terms of hierarchies of social influence principles. For one major class, the brief impersonal influence attempt, the present results have indicated the potential of the commodity theory perspective with its repertory (Lynn, 1991) of empirically-proven unavailability manipulations.

Mediation of Scarcity's Efficacy

The major question addressed by the present experiments dealt with the mediation of scarcity's efficacy. In their liberalization of commodity
theory, Brock and Brannon (1992; Figure 2) proposed that increased cognitive processing mediated the effects of independent "commodifiers" on valuational dependent variables. One genuine mediator, reactance (Brehm, 1966), appeared inapplicable to the bulk of the domain of commodity theory; for example, reactance theory could not account for the key results in the classic Worchel et al. (1975) cookie experiment (Brehm & Brehm, 1981, p. 342). Other putative mediators, for example, uniqueness striving, were shown, on analysis, to be more properly conceptualized as moderators rather than as mediators (Brock & Brannon, 1992).

Finally, the hedonic value of novelty (e.g., Berlyne, 1970) cannot begin to explain unavailability's effect in dozens of studies (Lynn, 1991) where the focal object had everyday familiarity, e.g., chocolate chip cookies for college students (Worchel et al., 1975).

While the results of Chapter Two, together with the those of Burger (1986), and the demonstrations cited by Cialdini (1993), attested to the efficacy and ubiquity of scarcity, a new mediational analysis has been added that suggests when and how a scarcity appeal can be productive and when and how it can be counterproductive, that is, the conditions under which unavailability information may backfire.
A particularly important outcome is the understanding that unavailability does not necessarily result in increased impact (compliance) as would be suggested by the earlier literatures (Lynn, 1991; Cialdini, 1988, 1993; Brock, 1968; Pratkanis & Aronson, 1992, p. 189). Indeed, the experiments of Chapters Three and Four have illuminated the process and shown that, if a message or experience is not initially at least somewhat desirable, or if it is associated with weak arguments, scarcity-induced evaluative thinking can reduce the impact of that message or the desirability of that experience.

Revisions of Commodity Theory

Reconsider the case of censorship. An implication of the new understanding (Brock & Brannon, 1992; the present Chapters Three and Four) is that bans and censoring do not inevitably need to work in the direction of enhancing the banned material. If the ban is accompanied by strong and compelling arguments, it is those arguments that will be elaborated upon with the likely effect of further devaluing the banned material or activity. For example, smoking bans have probably made smoking less attractive for everyone because smoking's lethal consequences--the strong arguments--are so well known.
In sum, communicators who rush to use scarcity appeals had better be sure that their advocacies are receiving favorable responses at the outset. If not, scarcity-induced cognitive elaboration could produce attitude change in a boomerang direction.

The Chapter Three demonstration that commodity theory can be extended to traits and abilities (see also Ditto & Jemmott, 1989) has intriguing practical implications. For example, in the health counseling arena, emphasizing the rarity of patients' risk factors, rather than their prevalence (for example, "you have elevated cholesterol levels but so do many others"), might invite greater scrutiny and appropriate preventive action.

The Heuristic Cue Position Reexamined.

Let us review the cue, or heuristic, account as conveyed in Cialdini's "click-whirr" metaphor. According to the cue position, scarcity does not influence message scrutiny. People are no more likely to show differential compliance to strong than to weak arguments under scarcity conditions. Instead, regardless of the message quality, everyone shows more compliance in response to a scarcity appeal. Now recall the stronger version of Cialdini's account, namely, impairment of critical thinking in addition to
the knee-jerk response to the cue. If the stronger
version applied, processing of strong and weak
messages would become indistinguishable because
thought was so disrupted by the scarcity cue.

While the present experiments were not set up to
discriminate between the regular and the strong
versions of Cialdini's account, the results of Chapter
Four confirmed the elaboration postulate from the
liberalized commodity theory (Brock & Brannon, 1992):
some arguments, namely, weak or specious ones, will
result in reduced compliance when accompanied by
scarcity information.

In general, Cialdini's treatment of compliance
tactics does not even envision general conditions
under which the tactics may backfire. The revised
theory (Brock & Brannon, 1992) stipulates such
conditions, and the Chapter Four results provided
empirical corroboration.

But can scarcity ever serve as a mere cue, as
Cialdini posits? It seems that the present field
experiments were stringent tests of the elaboration
position. The interpersonal exchanges were extremely
brief; and, in the restaurant experiment, there were
the added distractions of hunger and a noisy
environment. In other words, because these conditions
made it more difficult for subjects to thoughtfully evaluate all of the relevant information, the cards were stacked against evaluative thinking in these studies.

Yet suppose that elaborative processing were to be somehow excluded. Under exclusionary conditions, might not scarcity serve as a simple cue? Reconsider the second experiment of Chapter Three which measured subjects' cognitive processing of "picture-mindedness" before the subjects received any information except about prevalence. Recall that prevalence information alone led to differential evaluative thinking.

It is still possible, of course, to imagine asking subjects to consider an experience or a message that is actually, or expected to be, nonsensical and/or unintelligible. With elaborative processing thus excluded might not scarcity function as a simple heuristic? The problem with setting up such a demonstration is that even unintelligible material elicits elaboration; in fact, unintelligibility may instigate elaboration that is particularly idiosyncratic and therefore especially effective (Padgett & Brock, 1987).

Perhaps a distraction approach, in which subjects receive scarcity information but subsequent attending
is immediately and totally entrained by an irrelevant task, could provide evidence for the elusive cue-only effect. I will be conducting such a study in a follow-up to my dissertation research.

A final possibility for cue-only effects of scarcity may occur as possessability drops below some level of psychological plausibleness. Under extreme conditions, where possessability is ruled out, scarcity may augment the initial valence of an object without further cognitive elaboration. See the discussion below of possessability.

Implications for Further Research

Chapter Two has demonstrated the relative efficacy of scarcity appeals in brief impersonal encounters. This evidence, in combination with other meta-analytic evidence (Lynn, 1991), appears to confirm that perceived unavailability can heighten evaluations and that scarcity is indeed an important principle of social influence (Cialdini, 1993, pp. 194-222). While development of additional moderators of the unavailability-desirability relationship may be of interest (see Lynn, 1992), here are other next steps that appear to be far more worthwhile.
Effects of unavailability on uncooperativeness.
The behaviors chosen for the Chapter 2 experiments were presumably positively valenced for the targeted subjects—operators and desk clerks. Follow-up research was discussed in Chapter 2 in which negatively-toned behavior would be requested, for example, to wait on the phone for a telemarketer. If evaluative thinking is elicited by scarcity appeals, such appeals should backfire when the behavior requested is aversive.

The possessability issue. The mediational role of elaboration in response to unavailability was shown by rarity's effect on increased evaluative thought listing in the Chapter Three analyses and by scarcity's augmentation of differential processing of strong and weak messages in the Chapter Four experiments. These findings make it now worthwhile to ask the following question. Can cognitive elaboration be instigated by unavailability per se (as suggested by the third experiment in Chapter 3) or must the scarcity inhere in an element (object, message, experience) which is owned or possessable by the perceiver, as insisted by commodity theory (Brock, 1968; Brock & Brannon, 1992)? In response to the question, is there a mere unavailability effect?, our
hunch is that such an effect will be difficult to demonstrate. Perception of possessability, Heider's (1958) "unit formation," is a theoretical precondition; repeated failures to confirm the unavailability-desirability relationship have been reported when this precondition has been ambiguous or unsatisfied (Lynn, 1993).

Antidotes to scarcity "arousal." A second research issue concerns whether scarcity-induced desirability affects evaluations of the actual quality of the focal object. Cialdini's position on this question is quite clear (1993, p. 212) and constitutes the core of his recommended defense against scarcity pressures:

If, because of brain-clouding arousal, we can't rely on our knowledge about the scarcity principle to stimulate properly cautious behavior, what can we use? Beyond arousal itself, is there any other piece of information we can use to help make a proper decision in the face of scarcity? Fortunately, there is information available on which we can base thoughtful decisions about scarce items. It comes from the cookie study (Worchel et al., 1975) where
the researchers uncovered something that seems strange but rings true regarding scarcity: Even though the scarce cookies were rated as significantly more desirable, they were not rated as any better-tasting than the abundant cookies. So, despite the increased yearning that scarcity caused (the raters said they wanted to have more of the scarce cookies in the future and would pay a greater price for them), it did not make the cookies taste one whit better. Therein lies an important insight. The joy is not in the experiencing of a scarce commodity but in the possessing of it."

We question Cialdini's "insight." Ceiling effects and past familiarity may have precluded tasting differences for the chocolate chip cookies in Worchel et al. (1975). Instead, it is more likely that perception of taste of a food, or, more generally, perception of actual product performance or of experienced quality, will be consistent with the bulk of other sentiments toward the product or experience (e.g., Wilson, Lisle, Kraft, & Wetzel, 1989).
It would be a useful next step to measure persons' ratings of their direct experiences following scarcity information. Our hunch is that sensitive measures would reflect an effect of scarcity on direct experiences such as how well something tastes (e.g., Olson & Dover, 1978). In sum, Cialdini's antidote to scarcity "arousal" may fail because the commodity is actually enjoyed more; more is at stake following a scarcity induction than an elevation in "pride of ownership."

Why does scarcity prompt scrutiny? In the present research program, two steps were taken: (a) provide evidence that unavailability's impact applies to compliance as well as persuasion and judgment domains (Lynn, 1991, 1992); (b) identify a process that mediates between unavailability information and magnitude of compliant behaviors. The third step, lies ahead; (c) empirical examination of the bases for the process.

Why it is that perception of actual or impending scarcity prompts thoughtful scrutiny? Should it do so given that scarcity is a universal of the human condition (Alchian & Allen, 1967, p. 2) and that information regarding infrequency may be encoded automatically (Hasher & Zacks, 1984)? What is the
basis for the allegation that heightened cognitive elaboration stems from perception of scarcity? One answer—the human preference for novelty (e.g., Berlyne, 1970), can be ruled out. The objects or advocacies that became more desirable with actual or impending unavailability were totally familiar to the subjects, for example: cafeteria food to Florida State University students (West, 1975), cupcakes for UC Santa Clara students (Burger, 1986), cookies to Texas A & M students (Worchel et al, 1975), and drug testing to Texas A & M students (Worchel, 1992).

We proposed that unavailability of a possessable element—be it an object, a message, or an opportunity—has an incremental impact on thinking for two reasons. First, unless they have contrary information, people initially expect that possessable elements are in fact widely available. Subsequent information to the contrary violates an expectancy and this violation may prompt cognitive appraisal (Clary & Tesser, 1983; Maheswaran & Chaiken, 1991). Thus, in Chapter Three it was demonstrated that subjects, who were given no further information, considered picture-mindedness to be prevalent. Information that it was, in fact, rare contradicted the starting expectation and led to increased cognitive appraisal.
The second reason may stem from the adaptational strategy of attempting to increase understanding of possessable elements that appear to be constrained, in short supply, withheld, etc. From an evolutionary-adaptational perspective, it has probably served humans to think less about resources that appear abundant than about resources whose supply is limited and/or dwindling. If opportunities for resource utilization are reduced, those particular resources must be given greater scrutiny than other resources which may be consumed and/or enjoyed without limit as to when or how. The next stage in research on scarcity and influence may fruitfully address these expectancy and adaptational accounts.

Test of the strong version of the heuristic account. It was noted in Chapter 1 that the present experiments did not address the strong version of the heuristic account (Cialdini, 1993, p. 216) which proposed that scarcity information could hinder or impair thinking. This account is depicted in Figure 12. Unfortunately, the present experiments were not set up to detect reduced thinking; the subjects in the present experiments were not critically evaluating the messages to begin with, so they could not really reduce processing much further. Future research might
Figure 12. Theoretical effects of scarcity and argument strength on message acceptance: Reduced thinking position.
profitably look at the effect of scarcity information when subjects are initially scrutinizing the message arguments. The elaboration view predicts heightened cognitive effort after scarcity (or at least maintaining the initial message scrutiny), while the strong Cialdini position predicts a measurable decrease in processing from the prior baseline.

**Conclusions**

The present series of seven experiments appear to require the treatment of unavailability effects in any serious textbook discussions of compliance-gaining tactics; furthermore, the data collected so far suggest that scarcity instigates evaluative thinking rather than serving as an heuristic cue for mindless processing.

Since appeals to scarcity may well be the most prevalent compliance-gaining mechanism, as Cialdini (1987) avers, increased understanding of how scarcity works has been a major milestone in a general proposal (Brannon & Brock, in preparation) to provide a fresh conceptual approach to the psychology of compliance. Cialdini's metaphor of modern man, a person droning ahead on automatic pilot, appears to falter for the case of scarcity. Does it falter generally?
The present methods for examining how compliance effects are mediated can be applied to other tactics such as appeals to reciprocation and to social proof. With improved understanding of how tactics work, it may be conceptually more feasible to rank tactics in terms of their likely efficacy. Furthermore, this line of inquiry may reveal communalities of underlying mechanisms that suggest new principles of social influence.
APPENDIX A

"When Jurors are Ordered to Ignore Testimony, They Ignore the Order" (Wall Street Journal Article)
When Jurors Are Ordered to Ignore Testimony, They Ignore the Order

By MICHAEL ALLEN
Staff Reporter of The Wall Street Journal

Two police officers burst through James Duncan's door without a warrant, punch him in the stomach and then handcuff him to a radiator while they ransack his apartment. Mr. Duncan sued them for conducting an illegal search.

A big damage award seems likely—that is, until the attorneys for both sides casually mention to the jury that the search revealed evidence of heroin trafficking. The judge turns down the motion of the jurors to disregard the statement.

But do they? A new study by the American Bar Foundation and Northwestern University, using this and other fictional cases, suggests not. In the study, mock jurors who didn't hear about the heroin were nearly twice as likely to award punitive damages to Mr. Duncan as those who did, and typically assessed $10,000 more in total damages.

The results, says New York University law professor Stephen Gillers, tend to confirm what many trial lawyers have long suspected: "You can never unring the bell."

Forbidden Information

This study, and others like it, are adding new fuel to an old debate over just how good jurors are at filtering out forbidden information from their deliberations. For example, how is one to ignore the pregnant wife of a defendant who sits in the front row every day? Or the blacksmear newspaper article that exposes massive fraud in city hall the week before the mayor goes up for re-election? Or hints that a doctor bringing a dangerous new vaccine to market every day? Or the blockbuster news story that parade his criminal record before jurors.

Some courtroom observers say that's sensible. "The bottom line is, most jurors, because they're human beings, find it difficult to ignore what they consider important," says one consultant.

"It's laughable, because juries don't disregard it," says Michael Saks, a law professor at the University of Iowa. "They do the rational thing instead of the just thing."

The American Bar Foundation experiment is one of the latest in a growing body of research by social scientists suggesting the limits of judicial admonishments. In the experiment, the subjects were shown a videotape of closing arguments in a mock trial of police officers accused of improperly searching the house of a suspected criminal, the fictional Mr. Duncan. About a third of the viewers were told the search turned up incriminating evidence, which the judge instructed them to ignore since it wasn't relevant to determining the reasonableness of the police conduct. But researchers found that, far from disregarding the results of the search, jurors tended to use them to make sense of preceding events, a phenomenon psychologists call " hindsight bias."

When evidence of criminality was found, for example, jurors remembered evidence that supported the officers' story. They even remembered the policeman to be experienced—a fact not mentioned in the trial. Such findings could affect police testify to make the bills with their bodies, revealing malpractice suits or companies defending against product-liability claims.

One lawyer told to disregard evidence of injury and focus on what the defendants should have known beforehand.

Pretrial Publicity

Students of the courtroom disagree over whether jurors can successfully weed out pretrial publicity from their deliberations.

Most judges tend to play down the effects of publicity, and successful appeals based on prejudicial articles are rare. Most people care a lot more about at-coming than news they might hear about. But William Schwarzer, a federal judge in San Francisco, adds that jurors are generally good about listening to instructions from the bench.

But John Carroll, an associate professor of behavioral and policy sciences at Massachusetts Institute of Technology, says preliminary results of a study he's working on indicate that not only are jurors significantly influenced by pretrial publicity, but a judge's instructions may actually exacerbate the effects. "By telling people to disregard this, the judge is drawing attention to it," he says.

This points up a dilemma that often faces attorneys when the opposing counsel brings out prejudicial evidence—for example, mentioning that a plaintiff in a rape case has a history of wrongfully accusing men. In order to lay the groundwork for an appeal, the plaintiff's attorney must register an objection. But by making a big deal about it, he attracts attention to the incriminating evidence and the effects of the evidence are underlined. "It's almost a no-win situation," says Saul Kassin, a professor of psychology at Williams College.

One judge claims he's solved the problem. "A year or so ago, a good trial judge from Bie County, Ohio, has for years been videotaping witness testimony before the jury is assembled. He then, if he says, he can edit out anything untoward before it is used in deliberations. Otherwise, he says, it's like stepping in mud—afterward you can't separate it out."
APPENDIX B

Auxiliary Study to Select Comparable Embodiments of Compliance Principles as Inductions: Study 1
Fifty-one undergraduate students received the list of definitions of the compliance tactics, as well as the description of the Operator scenario. Subjects were asked to "Imagine that you are trying to place an important phone call, and the phone rings and rings, and no one answers. The operator suggests that you try placing the call at another time, but you want to try again immediately. So you say, 'please try this number again, operator, (you give a reason)'. Subjects were asked to rate six operationalizations of each of the four compliance tactics on several 10-point scales (Appendix E):

Embodiment: "Check below each reason given to the operator how well it fits the definition of the [compliance] tactic [1=doesn't fit (compliance tactic) at all, 10=completely fits (compliance tactic)]."

Representativeness: "Check below each reason given to the operator how ordinary it is, that is common versus unusual [1=unusual use of (compliance tactic), 10=common use of (compliance tactic)]."

Strength: "Check below each reason given to the operator how strong it will be [1=very weak (compliance tactic) statement, 10=very strong (compliance tactic) statement]."
Appropriateness: "Check below each reason given to the operator how appropriate a (compliance tactic) statement this will be [1=not at all appropriate (compliance tactic) statement, 10=very appropriate (compliance tactic) statement].

Effectiveness: "Check below each reason given to the operator how effective it will be? How effective will be your statement to the operator? [1=ineffective use of (compliance tactic), 10=effective use of (compliance tactic)]."

Tables 2 to 5 shows the mean scale scores and standard deviations of each operationalization of each compliance tactic.

Based on the ratings on these scales, the following operationalization were selected as being comparable:

Scarcity (Unavailability): "Please try this number again, operator, because the other party has been waiting for this call for eight weeks."

Authority: "Please try this number again, operator, because this is part of a major research project for the World Health Organization."
Table 2

Comparability of Appeals to Telephone Operators: Mean Ratings of Scarcity Appeals

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<td>7.3</td>
</tr>
<tr>
<td></td>
<td>(1.8)</td>
<td>(1.9)</td>
<td>(2.3)</td>
<td>(2.7)</td>
<td>(2.0)</td>
<td>(2.5)</td>
</tr>
<tr>
<td>Effectiveness</td>
<td>7.5</td>
<td>8.1</td>
<td>6.0</td>
<td>4.8</td>
<td>6.2</td>
<td>7.3</td>
</tr>
<tr>
<td></td>
<td>(2.1)</td>
<td>(2.2)</td>
<td>(2.5)</td>
<td>(2.4)</td>
<td>(2.6)</td>
<td>(2.1)</td>
</tr>
</tbody>
</table>

Note. Standard deviations are shown in parentheses; N=51. See text for rating scales.

Scarcity reasons:

1: "because this is the only time this month my party will be there."

2: "because this is the only time this year my party will be there."

3: "because I have been trying to reach this number all day."

4: "because this number is the hardest number to reach on my list."

5: "because I won't be able to get to a phone again for many hours."

6: "because the other party has been waiting for this call for eight weeks."
Table 3
Comparability of Appeals to Telephone Operators: Mean Ratings of Authority Appeals

<table>
<thead>
<tr>
<th>Reasons</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
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<td>Rating Dimension</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Embodiment</td>
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<td>7.4</td>
<td>6.7</td>
<td>6.9</td>
<td>8.0</td>
<td>8.5</td>
</tr>
<tr>
<td>(2.6) (2.5) (2.6) (2.5) (2.1) (2.1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Representativeness</td>
<td>6.7</td>
<td>7.7</td>
<td>7.0</td>
<td>7.0</td>
<td>8.1</td>
<td>8.7</td>
</tr>
<tr>
<td>(2.4) (2.1) (2.1) (2.2) (1.9) (1.9)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strength</td>
<td>7.0</td>
<td>7.2</td>
<td>6.6</td>
<td>6.4</td>
<td>7.2</td>
<td>7.5</td>
</tr>
<tr>
<td>(2.4) (2.4) (2.5) (2.7) (2.5) (2.8)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appropriateness</td>
<td>7.2</td>
<td>7.8</td>
<td>7.1</td>
<td>7.3</td>
<td>8.1</td>
<td>8.5</td>
</tr>
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<td>(2.2) (2.0) (2.4) (2.5) (2.1) (2.0)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effectiveness</td>
<td>6.6</td>
<td>7.2</td>
<td>6.6</td>
<td>6.9</td>
<td>8.2</td>
<td>8.4</td>
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<tr>
<td>(2.5) (2.2) (2.5) (2.4) (1.8) (2.1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Standard deviations are shown in parentheses; N=51. See text for rating scales.

Authority reasons:

1: "because this is part of an important research project at the Ohio State University."

2: "because this is part of a major research project for the World Health Organization."

3: "because this is part of a national survey for the Medical Association."

4: "because this is part of a national survey for the Confederation of Departments of Justice."

5: "because this is part of a major project at the General Auditing Office of the United States Government."

6: "because this call has been requested by the General Inspectors Office of the United States Government."
### Table 4

**Comparability of Appeals to Telephone Operators: Mean Ratings of Social Proof Appeals**

<table>
<thead>
<tr>
<th>Reasons</th>
<th>1</th>
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<th>5</th>
<th>6</th>
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<tr>
<td>Embodiment</td>
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<td>6.9</td>
<td>6.6</td>
<td>7.3</td>
<td>6.3</td>
<td>7.2</td>
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<td>(2.5)</td>
<td>(2.7)</td>
<td>(2.2)</td>
<td>(2.8)</td>
<td>(2.9)</td>
</tr>
<tr>
<td>Representativeness</td>
<td>7.2</td>
<td>6.7</td>
<td>6.3</td>
<td>7.2</td>
<td>6.1</td>
<td>7.4</td>
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<td>(2.5)</td>
<td>(2.0)</td>
<td>(2.7)</td>
<td>(2.6)</td>
</tr>
<tr>
<td>Strength</td>
<td>7.1</td>
<td>6.9</td>
<td>6.2</td>
<td>7.2</td>
<td>5.8</td>
<td>6.5</td>
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<tr>
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<td>(2.7)</td>
<td>(2.9)</td>
<td>(2.5)</td>
<td>(2.9)</td>
<td>(2.9)</td>
</tr>
<tr>
<td>Appropriateness</td>
<td>7.2</td>
<td>7.4</td>
<td>6.4</td>
<td>6.8</td>
<td>5.9</td>
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<td>(2.2)</td>
<td>(2.6)</td>
<td>(2.3)</td>
<td>(2.6)</td>
<td>(2.8)</td>
</tr>
<tr>
<td>Effectiveness</td>
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<td>6.9</td>
<td>6.1</td>
<td>6.7</td>
<td>6.0</td>
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<td>(2.6)</td>
<td>(2.5)</td>
<td>(2.7)</td>
<td>(2.7)</td>
</tr>
</tbody>
</table>

Note. Standard deviations are shown in parentheses; N=51. See text for rating scales.

Social Proof reasons:

1: "because other operators have gotten this number for me when they have tried again."

2: "because operators generally can get this number on the second try."

3: "because operators always have helped me in this way before."

4: "because other operators get this number when they have tried again."

5: "because dozens of operators have gotten this number for me at other times."

6: "because everyday when I call this number the operator gets it for me on the second try."
Table 5

Comparability of Appeals to Telephone Operators: Mean Ratings of Liking Appeals

<table>
<thead>
<tr>
<th>Rating Dimension</th>
<th>1</th>
<th>2</th>
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<td>(2.4)</td>
<td>(2.3)</td>
<td>(2.4)</td>
<td>(2.6)</td>
<td>(3.0)</td>
</tr>
<tr>
<td>Representative</td>
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<td>5.9</td>
<td>6.3</td>
<td>6.6</td>
<td>7.2</td>
<td>4.6</td>
</tr>
<tr>
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<td>(2.4)</td>
<td>(2.5)</td>
<td>(2.2)</td>
<td>(2.4)</td>
<td>(2.7)</td>
</tr>
<tr>
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<td>5.7</td>
<td>6.1</td>
<td>6.4</td>
<td>6.8</td>
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<td>(2.4)</td>
<td>(2.6)</td>
<td>(2.4)</td>
<td>(2.7)</td>
<td>(2.9)</td>
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<tr>
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<td>5.7</td>
<td>5.9</td>
<td>5.9</td>
<td>6.8</td>
<td>3.1</td>
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<tr>
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<td>(2.7)</td>
<td>(2.5)</td>
<td>(2.4)</td>
<td>(2.6)</td>
<td>(2.6)</td>
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<tr>
<td>Effectiveness</td>
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<td>5.2</td>
<td>5.4</td>
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<td>(2.7)</td>
<td>(2.5)</td>
<td>(2.7)</td>
<td>(2.6)</td>
<td>(3.0)</td>
</tr>
</tbody>
</table>

Note. Standard deviations are shown in parentheses; N=51. See text for rating scales.

Liking reasons:

1: "because you sound like a nice person, the kind of person I would like."

2: "because your voice has a friendly tone, that I find likable."

3: "because as a telephone operator you have impressed me with being a nice person that I would like."

4: "because your friendliness is clear in your voice and I like that very much."

5: "because you sound like a good operator who knows how to please a customer and I am pleased."

6: "because you sound like a truly lovable person. I wish there was a way to meet you."
Social Proof: "Please try this number again, operator, because everyday when I call this number the operator gets it for me on the second try."

Liking: "Please try this number again, operator, because you sound like a good operator who knows how to please a customer, and I am pleased."

A multivariate analysis of variance (MANOVA) was performed with the five scale scores (embodiment, strength, representativeness, appropriateness, and perceived effectiveness) and the four strategies as the within-subjects factors. In this 5 (Scale) $\times$ 4 (Strategy) Manova, there was a significant main-effect for Scale [$F(4,200)=3.85, p<.01$] which basically indicated that scores on the Strength scale tended to be lower than scores on the other scales, for all of the strategies. Not surprisingly, since the Experiment 1 appeals were selected to be comparable across scales, there was no main effect of Strategy [$F(3,150)=.93, n.s.$]; nor was there an interaction between Strategy and Scale [$F(12,600)=1.30, p>.20$].

Tables 6 to 10 show that the ratings of the appeals were moderately correlated.

The correlations among ratings for the most extreme scales (Tables 11 to 15) were uniformly lower than the correlations for the appeals that were
Table 6

Correlations Among Ratings of the Liking Appeals: Embodiment, Representativeness, Strength, Appropriateness, and Effectiveness

<table>
<thead>
<tr>
<th>Rating Dimension</th>
<th>EM</th>
<th>R</th>
<th>S</th>
<th>A</th>
<th>EF</th>
</tr>
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</tr>
<tr>
<td>Representativeness (R)</td>
<td>.63**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strength (S)</td>
<td>.47**</td>
<td>.66**</td>
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<td></td>
</tr>
<tr>
<td>Appropriateness (A)</td>
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<td>.72**</td>
<td>.80**</td>
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</tr>
<tr>
<td>Effectiveness (EF)</td>
<td>.60**</td>
<td>.59**</td>
<td>.63**</td>
<td>.76**</td>
<td>--</td>
</tr>
</tbody>
</table>

Note. N=51. See text for rating scales.

Liking reason: "Please try this number again, operator, because you sound like a good operator who knows how to please a customer, and I am pleased."

* p<.05.
** p<.01.
Table 7

Correlations Among Ratings of the Social Proof Appeals: Embodiment, Representativeness, Strength, Appropriateness, and Effectiveness

<table>
<thead>
<tr>
<th></th>
<th>EM</th>
<th>R</th>
<th>S</th>
<th>A</th>
<th>EF</th>
</tr>
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<tr>
<td>Embodiment (EM)</td>
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</tr>
<tr>
<td>Representativeness (R)</td>
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</tr>
<tr>
<td>Strength (S)</td>
<td>0.23</td>
<td>0.54**</td>
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</tr>
<tr>
<td>Appropriateness (A)</td>
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<td>0.53**</td>
<td>0.60**</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>Effectiveness (EF)</td>
<td>0.42**</td>
<td>0.61**</td>
<td>0.63**</td>
<td>0.64**</td>
<td>--</td>
</tr>
</tbody>
</table>

Note. N=51. See text for rating scales.

Social proof reason: "Please try this number again, operator, because everyday when I call this number the operator gets it for me on the second time."

* p<.05.
** p<.01.
Table 8

Correlations Among Ratings of Authority Appeals: Embodiment, Representativeness, Strength, Appropriateness, and Effectiveness

<table>
<thead>
<tr>
<th>Rating Dimension</th>
<th>EM</th>
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<th>A</th>
<th>EF</th>
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<td>Representativeness (R)</td>
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<tr>
<td>Strength (S)</td>
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<tr>
<td>Appropriateness (A)</td>
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<td>.63**</td>
<td>.50**</td>
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</tr>
</tbody>
</table>

Note. N=51. See text for rating scales.

Authority reason: "Please try this number again, operator, because this is part of a major research project for the World Health Organization."

* p<.05.
** p<.01.
Table 9

Correlations Among Ratings of Scarcity Appeals: Embodiment, Representativeness, Strength, Appropriateness, and Effectiveness

<table>
<thead>
<tr>
<th></th>
<th>EM</th>
<th>R</th>
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<th>A</th>
<th>EF</th>
</tr>
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<td></td>
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<td>Embodiment (EM)</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Representativeness (R)</td>
<td>.63**</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strength (S)</td>
<td>.30*</td>
<td>.34*</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Appropriateness (A)</td>
<td>.57**</td>
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<td>.57**</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>Effectiveness (EF)</td>
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<td>.46**</td>
<td>.53**</td>
<td>.72**</td>
<td>--</td>
</tr>
</tbody>
</table>

Note. N=51. See text for rating scales.

Scarcity reason: "Please try this number again, operator, because the other party has been waiting for this call for eight weeks."

* p<.05.
** p<.01.
### Table 10

**Correlations Among Combined Ratings of Appeals in Experiment 1: Embodiment, Representativeness, Strength, Appropriateness, and Effectiveness**

<table>
<thead>
<tr>
<th>Rating Dimension</th>
<th>EM</th>
<th>R</th>
<th>S</th>
<th>A</th>
<th>EF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Embodiment (EM)</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Representativeness (R)</td>
<td>.60**</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strength (S)</td>
<td>.36**</td>
<td>.69**</td>
<td>--</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appropriateness (A)</td>
<td>.65**</td>
<td>.71**</td>
<td>.74**</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>Effectiveness (EF)</td>
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<td>.70**</td>
<td>.65**</td>
<td>.75**</td>
<td>--</td>
</tr>
</tbody>
</table>

Note. N=51. See text for rating scales.

Liking reason: "Please try this number again, operator, because you sound like a good operator who knows how to please a customer, and I am pleased."

Social proof reason: "Please try this number again, operator, because everyday when I call this number the operator gets it for me on the second time."

Authority reason: "Please try this number again, operator, because this is part of a major research project for the World Health Organization."

Scarcity reason: "Please try this number again, operator, because the other party has been waiting for this call for eight weeks."

* p<.05.
** p<.01.
### Table 11

Correlations Among Ratings of the Most Extreme Liking Appeal in Study 1: Embodiment, Representativeness, Strength, Appropriateness, and Effectiveness

<table>
<thead>
<tr>
<th>Rating Dimension</th>
<th>EM</th>
<th>R</th>
<th>S</th>
<th>A</th>
<th>EF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Embodiment (EM)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Representativeness (R)</td>
<td>.71**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strength (S)</td>
<td>.55**</td>
<td>.62**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appropriateness (A)</td>
<td>.42**</td>
<td>.64**</td>
<td>.68**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effectiveness (EF)</td>
<td>.58**</td>
<td>.64**</td>
<td>.67**</td>
<td>.73**</td>
<td></td>
</tr>
</tbody>
</table>

Note. N=51. See text for rating scales.

Liking reason: "Please try this number again, operator, because you sound like a truly loveable person, I wish there was a way to meet you."

* p<.05.
** p<.01.
Table 12

Correlations Among Ratings of the Most Extreme Social Proof Appeal in Study 1: Embodiment, Representativeness, Strength, Appropriateness, and Effectiveness

<table>
<thead>
<tr>
<th>Rating Dimension</th>
<th>EM</th>
<th>R</th>
<th>S</th>
<th>A</th>
<th>EF</th>
</tr>
</thead>
<tbody>
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<td>Embodiment (EM)</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Representativeness (R)</td>
<td>.33*</td>
<td>--</td>
<td></td>
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</tr>
<tr>
<td>Strength (S)</td>
<td>.20</td>
<td>.52**</td>
<td>--</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appropriateness (A)</td>
<td>.59**</td>
<td>.67**</td>
<td>.63**</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>Effectiveness (EF)</td>
<td>.30*</td>
<td>.41**</td>
<td>.41**</td>
<td>.52**</td>
<td>--</td>
</tr>
</tbody>
</table>

Note. N=51. See text for rating scales.

Social proof reason: "Please try this number again, operator, because dozens of operators have gotten this number for me at other times."

* p<.05.
** p<.01.
Table 13

Correlations Among Ratings of the Most Extreme Authority Appeal in Study 1: Embodiment, Representativeness, Strength, Appropriateness, and Effectiveness

<table>
<thead>
<tr>
<th>Rating Dimension</th>
<th>EM</th>
<th>R</th>
<th>S</th>
<th>A</th>
<th>EF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Embodiment (EM)</td>
<td></td>
<td>--</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Representativeness (R)</td>
<td>.60**</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strength (S)</td>
<td>.04</td>
<td>.22</td>
<td>--</td>
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</tr>
<tr>
<td>Appropriateness (A)</td>
<td>.65**</td>
<td>.56**</td>
<td>.27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effectiveness (EF)</td>
<td>.32*</td>
<td>.26</td>
<td>.34*</td>
<td>.21</td>
<td>--</td>
</tr>
</tbody>
</table>

Note. N=51. See text for rating scales.

Authority reason: "Please try this number again, operator, because this is part of a major project at the General Auditing Office of the United States Government."

* p<.05.
** p<.01.
Table 14

Correlations Among Ratings of the Most Extreme Scarcity Appeal in Study 1: Embodiment, Representativeness, Strength, Appropriateness, and Effectiveness

<table>
<thead>
<tr>
<th>Rating Dimension</th>
<th>EM</th>
<th>R</th>
<th>S</th>
<th>A</th>
<th>EF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Embodiment (EM)</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Representativeness (R)</td>
<td>.46**</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strength (S)</td>
<td>.09</td>
<td>.25</td>
<td>--</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appropriateness (A)</td>
<td>.52**</td>
<td>.49**</td>
<td>.28*</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>Effectiveness (EF)</td>
<td>.49**</td>
<td>.70**</td>
<td>.28*</td>
<td>.73**</td>
<td>--</td>
</tr>
</tbody>
</table>

Note. N=51. See text for rating scales.

Scarcity reason: "Please try this number again, operator, because this is the only time this year my party will be there."

* p<.05.
** p<.01.
Table 15

Correlations Among Combined Ratings of the Most Extreme Appeals in Study 1: Embodiment, Representativeness, Strength, Appropriateness, and Effectiveness

<table>
<thead>
<tr>
<th>Rating Dimension</th>
<th>EM</th>
<th>R</th>
<th>S</th>
<th>A</th>
<th>EF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Embodiment (EM)</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Representativeness (R)</td>
<td>.44**</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strength (S)</td>
<td>.28*</td>
<td>.66**</td>
<td>--</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appropriateness (A)</td>
<td>.53**</td>
<td>.61**</td>
<td>.66**</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>Effectiveness (EF)</td>
<td>.38**</td>
<td>.48**</td>
<td>.53**</td>
<td>.55**</td>
<td>--</td>
</tr>
</tbody>
</table>

Note. N=51. See text for rating scales.

Liking reason: "Please try this number again, operator, because you sound like a truly loveable person, I wish there was a way to meet you."

Social proof reason: "Please try this number again, operator, because dozens of operators have gotten this number for me at other times."

Authority reason: "Please try this number again, operator, because this is part of a major project at the General Auditing Office of the United States Government."

Scarcity reason: "Please try this number again, operator, because this is the only time this year my party will be there."

* p<.05.
** p<.01.
actually used in Experiment 1 (Table 6 to 10). At the very least, this comparison attests to the sensitivity of the different ratings. In addition, some scales (e.g., effectiveness) better differentiated among the appeals than others (e.g., strength).

In sum, the particular operationalizations of each of the four strategies were considered to be comparable (with respect to embodiment, strength, representativeness, appropriateness, and perceived effectiveness), and these were the appeals used in the Experiment One.
APPENDIX C

Supplementary Study to Determine Whether Inductions Were Comparable Embodiments of Compliance Principles: Study 2
As before, the actual Cialdini inductions were tested to see whether they were comparable embodiments, or operationalizations, of the theoretical principles. The inductions used in the current clerk experiment were identical to those used in prior research (Brannon, 1990), where they were shown to be comparable embodiments of their respective theoretical categories.

An additional supplementary study was conducted in order to assess how comparable the inductions were on three dimensions: strength, representativeness, and perceived effectiveness. Forty undergraduate students received the list of definitions of the compliance tactics, as well as the description of the Clerk scenario. Subjects were asked to rate on 10-point scales (Appendix F):

Strength: "How strong a [compliance tactic] statement will this be to the clerk? [1=very weak (compliance tactic) statement, 10=very strong (compliance tactic) statement]."

Effectiveness: "How effective will your statement be to the clerk? [1=ineffective use of (compliance tactic), 10=effective use of (compliance tactic)]."

Representativeness: "How ordinary, that is common versus unusual, is your statement to the clerk?"
The mean strength rating was 5.93. There were no significant differences between inductions: all of the operationalizations were comparable, and on the high end of the scale, in strength level.

The mean effectiveness rating was 6.64. Once again, there were no significant differences between inductions, indicating that the operationalizations were perceived as being comparably, and highly, effective.

The mean representativeness rating was 5.64. The liking appeal was rated as being less representative than the other inductions (Scheffe's test, p<.05).

Summary of supplementary study data. In general, the inductions tended to be comparable, and on the high end of the scale, in their rated embodiment, strength, perceived effectiveness, and representativeness: The average ratings ranged from five to seven on a ten-point scale.
APPENDIX D

Tables 16 and 17: Cell Numbers for Chapter 2 Experiments
Table 16

**Experiment 1 (Operator Redialing): Cell Sizes**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Number of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scarcity</td>
<td>57</td>
</tr>
<tr>
<td>Authority</td>
<td>63</td>
</tr>
<tr>
<td>Social Proof</td>
<td>65</td>
</tr>
<tr>
<td>Liking</td>
<td>51</td>
</tr>
<tr>
<td>Control</td>
<td>64</td>
</tr>
</tbody>
</table>
## Table 17

**Experiment 2 (Clerk Holding): Cell Sizes**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Number of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scarcity</td>
<td>21</td>
</tr>
<tr>
<td>Authority</td>
<td>22</td>
</tr>
<tr>
<td>Social Proof</td>
<td>21</td>
</tr>
<tr>
<td>Liking</td>
<td>20</td>
</tr>
<tr>
<td>Control (Placebic)</td>
<td>21</td>
</tr>
</tbody>
</table>
APPENDIX E

Embodiment Questionnaire for Operator Scenario
Compliance Tactics

Study the following definitions of four tactics that can be used to get another person to comply: authority, liking, social proof, and scarcity. You will be asked to give your opinion about how well certain human behaviors exemplify these tactics. See whether you can rate behaviors from different viewpoints: this is the purpose.

Liking

We like to be considered nice people who are liked by others. Therefore, learning that a person considers you to be nice and that the person likes you, can be an effective way of eliciting your return liking, as well as your willingness to comply with that person's request.

Social Proof

When most other people perform some action, this is social proof that the action is good. When other people try to do something and succeed at what they try to do, there is social proof that anyone might also succeed. Therefore, social proof can be used to elicit your compliance by informing you that other persons have already done what is being requested.

Authority

An authority can be a person or a major institution such as Ohio State University. Because of a university's knowledge, power, and public responsibility, it can make sense for you to comply with the requests of a representative of a university.

Scarcity

People assign more value or more importance to objects or opportunities when they are less available, that is, access is restricted by amount or time. Therefore, scarcity can be used to elicit compliance by emphasizing such restrictions.

YOU MAY REFER TO THESE DEFINITIONS AT ANY TIME
Imagine that you are trying to place an important phone call, and the phone rings and rings, and no one answers. The operator suggests that you try placing the call at another time, but you want to try again immediately. So you say "Please try this number again, operator. (YOU GIVE A REASON)"

Check below each REASON given to the operator how well it fits the definition of the LIKING tactic? (1=doesn't fit LIKING at all, 10=completely fits LIKING).

1. REASON: because you sound like a nice person, the kind of person I would like.
   
   __________
   1 2 3 4 5 6 7 8 9 10

2. REASON: because your voice has a friendly tone, that I find likable.
   
   __________
   1 2 3 4 5 6 7 8 9 10

3. REASON: because as a telephone operator you have impressed me with being a nice person that I would like.
   
   __________
   1 2 3 4 5 6 7 8 9 10

4. REASON: because your friendliness is clear in your voice and I like that very much.
   
   __________
   1 2 3 4 5 6 7 8 9 10

5. REASON: because you sound like a good operator who knows how to please a customer and I am pleased.
   
   __________
   1 2 3 4 5 6 7 8 9 10

6. REASON: because you sound like a truly lovable person. I wish there was a way to meet you.
   
   __________
   1 2 3 4 5 6 7 8 9 10
Imagine that you are trying to place an important phone call, and the phone rings and rings, and no one answers. The operator suggests that you try placing the call at another time, but you want to try again immediately. So you say "Please try this number again, operator. (YOU GIVE A REASON)

Check below each REASON given to the operator how well it fits the definition of the SOCIAL PROOF tactic? (1=doesn't fit SOCIAL PROOF at all, 10=completely fits SOCIAL PROOF).

1. REASON: because other operators have gotten this number for me when they have tried again."

2. REASON: because operators generally can get this number on the second try."

3. REASON: because operators always have helped me in this way before."

4. REASON: because other operators get this number when they have tried again."

5. REASON: because dozens of operators have gotten this number for me at other times."

6. REASON: because everyday when I call this number the operator gets it for me on the second try."
Imagine that you are trying to place an important phone call, and the phone rings and rings, and no one answers. The operator suggests that you try placing the call at another time, but you want to try again immediately. So you say "Please try this number again, operator. (YOU GIVE A REASON)

Check below each REASON given to the operator how well it fits the definition of the AUTHORITY tactic? (1 = doesn't fit AUTHORITY at all, 10 = completely fits AUTHORITY).

1. REASON: because this is part of an important research project at the Ohio State University.

2. REASON: because this is part of a major research project for the World Health Organization.

3. REASON: because this is part of a national survey for the Medical Association.

4. REASON: because this is part of a national survey for the Confederation of Departments of Justice.

5. REASON: because this is part of a major project at the General Auditing Office of the United States Government.

6. REASON: because this call has been requested by the General Inspectors Office of the United States Government.
Imagine that you are trying to place an important phone call, and the phone rings and rings, and no one answers. The operator suggests that you try placing the call at another time, but you want to try again immediately. So you say "Please try this number again, operator.

Check below each REASON given to the operator how well it fits the definition of the SCARCITY tactic? (1=doesn't fit SCARCITY at all, 10 =completely fits SCARCITY)

1. REASON: because this is the only time this month my party will be there.

2. REASON: because this is the only time this year my party will be there.

3. REASON: because I have been trying to reach this number all day.

4. REASON: because this number is the hardest number to reach on my list.

5. REASON: because I won't be able to get to a phone again for many hours.

6. REASON: because the other party has been waiting for this call for eight weeks.
Imagine that you are trying to place an important phone call, and the phone rings and rings, and no one answers. The operator suggests that you try placing the call at another time, but you want to try again immediately. So you say "Please try this number again, operator. (YOU GIVE A REASON)

Check below each REASON given to the operator how strong it will be. (1 = very weak LIKING statement, 10 = very strong LIKING statement).

1. REASON: because you sound like a nice person, the kind of person I would like.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

2. REASON: because your voice has a friendly tone, that I find likable.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

3. REASON: because as a telephone operator you have impressed me with being a nice person that I would like.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

4. REASON: because your friendliness is clear in your voice and I like that very much.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

5. REASON: because you sound like a good operator who knows how to please a customer and I am pleased.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

6. REASON: because you sound like a truly lovable person. I wish there was a way to meet you.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
Imagine that you are trying to place an important phone call, and the phone rings and rings, and no one answers. The operator suggests that you try placing the call at another time, but you want to try again immediately. So you say "Please try this number again, operator. (YOU GIVE A REASON)

Check below each REASON given to the operator how strong it will be. (1 = very weak SOCIAL PROOF statement, 10 = very strong SOCIAL PROOF statement).

1. REASON: because other operators have gotten this number for me when they have tried again.

____/____/____/____/____/____/____/____/____/____/
1 2 3 4 5 6 7 8 9 10

2. REASON: because operators generally can get this number on the second try.

____/____/____/____/____/____/____/____/____/____/
1 2 3 4 5 6 7 8 9 10

3. REASON: because operators always have helped me in this way before.

____/____/____/____/____/____/____/____/____/____/
1 2 3 4 5 6 7 8 9 10

4. REASON: because other operators get this number when they have tried again.

____/____/____/____/____/____/____/____/____/____/
1 2 3 4 5 6 7 8 9 10

5. REASON: because dozens of operators have gotten this number for me at other times.

____/____/____/____/____/____/____/____/____/____/
1 2 3 4 5 6 7 8 9 10

6. REASON: because everyday when I call this number the operator gets it for me on the second try.

____/____/____/____/____/____/____/____/____/____/
1 2 3 4 5 6 7 8 9 10
Imagine that you are trying to place an important phone call, and the phone rings and rings, and no one answers. The operator suggests that you try placing the call at another time, but you want to try again immediately. So you say "Please try this number again, operator." (YOU GIVE A REASON)

Check below each REASON given to the operator how strong it will be. (1 = very weak AUTHORITY statement, 10 = very strong AUTHORITY statement).

1. REASON: because this is part of an important research project at the Ohio State University.

   /____/____/____/____/____/____/____/____/____/
   1 2 3 4 5 6 7 8 9 10

2. REASON: because this is part of a major research project for the World Health Organization.

   /____/____/____/____/____/____/____/____/____/
   1 2 3 4 5 6 7 8 9 10

3. REASON: because this is part of a national survey for the Medical Association.

   /____/____/____/____/____/____/____/____/____/
   1 2 3 4 5 6 7 8 9 10

4. REASON: because this is part of a national survey for the Confederation of Departments of Justice.

   /____/____/____/____/____/____/____/____/____/
   1 2 3 4 5 6 7 8 9 10

5. REASON: because this is part of a major project at the General Auditing Office of the United States Government.

   /____/____/____/____/____/____/____/____/____/
   1 2 3 4 5 6 7 8 9 10

6. REASON: because this call has been requested by the General Inspectors Office of the United States Government.

   /____/____/____/____/____/____/____/____/____/
   1 2 3 4 5 6 7 8 9 10
Imagine that you are trying to place an important phone call, and the phone rings and rings, and no one answers. The operator suggests that you try placing the call at another time, but you want to try again immediately. So you say "Please try this number again, operator."

Check below each REASON given to the operator how strong it will be. (1 = very weak SCARCITY statement, 10 = very strong SCARCITY statement).

1. REASON: because this is the only time this month my party will be there.
   
   __________
   1 2 3 4 5 6 7 8 9 10

2. REASON: because this is the only time this year my party will be there.
   
   __________
   1 2 3 4 5 6 7 8 9 10

3. REASON: because I have been trying to reach this number all day.
   
   __________
   1 2 3 4 5 6 7 8 9 10

4. REASON: because this number is the hardest number to reach on my list.
   
   __________
   1 2 3 4 5 6 7 8 9 10

5. REASON: because I won't be able to get to a phone again for many hours.
   
   __________
   1 2 3 4 5 6 7 8 9 10

6. REASON: because the other party has been waiting for this call for eight weeks.
   
   __________
   1 2 3 4 5 6 7 8 9 10
Imagine that you are trying to place an important phone call, and the phone rings and rings, and no one answers. The operator suggests that you try placing the call at another time, but you want to try again immediately. So you say "Please try this number again, operator. (YOU GIVE A REASON)

Check below each REASON given to the operator how ordinary it is, that is common versus unusual. (1 = unusual use of LIKING, 10 = common use of LIKING).

1. REASON: because you sound like a nice person, the kind of person I would like.

1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 / 10

2. REASON: because your voice has a friendly tone, that I find likable.

1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 / 10

3. REASON: because as a telephone operator you have impressed me with being a nice person that I would like.

1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 / 10

4. REASON: because your friendliness is clear in your voice and I like that very much.

1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 / 10

5. REASON: because you sound like a good operator who knows how to please a customer and I am pleased.

1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 / 10

6. REASON: because you sound like a truly lovable person. I wish there was a way to meet you.

1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 / 10
Imagine that you are trying to place an important phone call, and the phone rings and rings, and no one answers. The operator suggests that you try placing the call at another time, but you want to try again immediately. So you say "Please try this number again, operator. (YOU GIVE A REASON)

Check below each REASON given to the operator how ordinary it is, that is common versus unusual. (1 = unusual use of SOCIAL PROOF, 10 = common use of SOCIAL PROOF).

1. REASON: because other operators have gotten this number for me when they have tried again."
   
   
   

2. REASON: because operators generally can get this number on the second try."
   
   
   

3. REASON: because operators always have helped me in this way before."
   
   
   

4. REASON: because other operators get this number when they have tried again."
   
   
   

5. REASON: because dozens of operators have gotten this number for me at other times."
   
   
   

6. REASON: because everyday when I call this number the operator gets it for me on the second try."
   
   
   

Imagine that you are trying to place an important phone call, and the phone rings and rings, and no one answers. The operator suggests that you try placing the call at another time, but you want to try again immediately. So you say "Please try this number again, operator. (YOU GIVE A REASON)"

Check below each REASON given to the operator how ordinary it is, that is common versus unusual. (1 = unusual use of AUTHORITY, 10 = common use of AUTHORITY).

1. REASON: because this is part of an important research project at the Ohio State University.

2. REASON: because this is part of a major research project for the World Health Organization.

3. REASON: because this is part of a national survey for the Medical Association.

4. REASON: because this is part of a national survey for the Confederation of Departments of Justice.

5. REASON: because this is part of a major project at the General Auditing Office of the United States Government.

6. REASON: because this call has been requested by the General Inspectors Office of the United States Government.
Imagine that you are trying to place an important phone call, and the phone rings and rings, and no one answers. The operator suggests that you try placing the call at another time, but you want to try again immediately. So you say "Please try this number again, operator.

Check below each REASON given to the operator how ordinary it is, that is common versus unusual. (1 = unusual use of SCARCITY, 10 = common use of SCARCITY).

1. REASON: because this is the only time this month my party will be there.
   \[\ldots\]
   \[\ldots\]

2. REASON: because this is the only time this year my party will be there.
   \[\ldots\]
   \[\ldots\]

3. REASON: because I have been trying to reach this number all day.
   \[\ldots\]
   \[\ldots\]

4. REASON: because this number is the hardest number to reach on my list.
   \[\ldots\]
   \[\ldots\]

5. REASON: because I won't be able to get to a phone again for many hours.
   \[\ldots\]
   \[\ldots\]

6. REASON: because the other party has been waiting for this call for eight weeks.
   \[\ldots\]
   \[\ldots\]
Imagine that you are trying to place an important phone call, and the phone rings and rings, and no one answers. The operator suggests that you try placing the call at another time, but you want to try again immediately. So you say "Please try this number again, operator. (YOU GIVE A REASON)"

Check below each REASON given to the operator how appropriate an LIKING statement this will be. (1=not at all appropriate LIKING statement, 10 = very appropriate LIKING statement).

1. REASON: because you sound like a nice person, the kind of person I would like."

[Blank for LIKING statement rating]

2. REASON: because your voice has a friendly tone, that I find likable."

[Blank for LIKING statement rating]

3. REASON: because as a telephone operator you have impressed me with being a nice person that I would like."

[Blank for LIKING statement rating]

4. REASON: because your friendliness is clear in your voice and I like that very much."

[Blank for LIKING statement rating]

5. REASON: because you sound like a good operator who knows how to please a customer and I am pleased."

[Blank for LIKING statement rating]

6. REASON: because you sound like a truly lovable person. I wish there was a way to meet you."

[Blank for LIKING statement rating]
Imagine that you are trying to place an important phone call, and the phone rings and rings, and no one answers. The operator suggests that you try placing the call at another time, but you want to try again immediately. So you say "Please try this number again, operator. (YOU GIVE A REASON"

Check below each REASON given to the operator how appropriate an SOCIAL PROOF statement this will be. (1=not at all appropriate SOCIAL PROOF statement, 10 = very appropriate SOCIAL PROOF statement).

1. REASON: because other operators have gotten this number for me when they have tried again."

2. REASON: because operators generally can get this number on the second try."

3. REASON: because operators always have helped me in this way before."

4. REASON: because other operators get this number when they have tried again."

5. REASON: because dozens of operators have gotten this number for me at other times."

6. REASON: because everyday when I call this number the operator gets it for me on the second try."

1 2 3 4 5 6 7 8 9 10
Imagine that you are trying to place an important phone call, and the phone rings and rings, and no one answers. The operator suggests that you try placing the call at another time, but you want to try again immediately. So you say "Please try this number again, operator. (YOU GIVE A REASON)

Check below each REASON given to the operator how appropriate an AUTHORITY statement this will be. (1=not at all appropriate AUTHORITY statement, 10 = very appropriate AUTHORITY statement).

<table>
<thead>
<tr>
<th>REASON</th>
<th>Authority</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. REASON: because this is part of an important research project at the Ohio State University.</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>2. REASON: because this is part of a major research project for the World Health Organization</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>3. REASON: because this is part of a national survey for the Medical Association</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>4. REASON: because this is part of a national survey for the Confederation of Departments of Justice</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>5. REASON: because this is part of a major project at the General Auditing Office of the United States Government</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>6. REASON: because this call has been requested by the General Inspectors Office of the United States Government</td>
<td></td>
<td>10</td>
</tr>
</tbody>
</table>
Imagine that you are trying to place an important phone call, and the phone rings and rings, and no one answers. The operator suggests that you try placing the call at another time, but you want to try again immediately. So you say "Please try this number again, operator.

Check below each REASON given to the operator how appropriate an SCARCITY statement this will be. (1 = not at all appropriate SCARCITY statement, 10 = very appropriate SCARCITY statement).

1. REASON: because this is the only time this month my party will be there."

/____/____/____/____/____/____/____/____/____/____/
1 2 3 4 5 6 7 8 9 10

2. REASON: because this is the only time this year my party will be there."

/____/____/____/____/____/____/____/____/____/____/
1 2 3 4 5 6 7 8 9 10

3. REASON: because I have been trying to reach this number all day."

/____/____/____/____/____/____/____/____/____/____/
1 2 3 4 5 6 7 8 9 10

4. REASON: because this number is the hardest number to reach on my list.""

/____/____/____/____/____/____/____/____/____/____/
1 2 3 4 5 6 7 8 9 10

5. REASON: because I won't be able to get to a phone again for many hours."

/____/____/____/____/____/____/____/____/____/____/
1 2 3 4 5 6 7 8 9 10

6. REASON: because the other party has been waiting for this call for eight weeks.""

/____/____/____/____/____/____/____/____/____/____/
1 2 3 4 5 6 7 8 9 10
Imagine that you are trying to place an important phone call, and the phone rings and rings, and no one answers. The operator suggests that you try placing the call at another time, but you want to try again immediately. So you say "Please try this number again, operator." (YOU GIVE A REASON)

Check below each REASON given to the operator how effective it will be? How effective will be your statement to the operator? (1 = ineffective use of LIKING, 10 = very effective use of LIKING).

1. REASON: because you sound like a nice person, the kind of person I would like.

   / ___/ ___/ ___/ ___/ ___/ ___/ ___/ ___/ ___/ ___/___/ 1 2 3 4 5 6 7 8 9 10

2. REASON: because your voice has a friendly tone, that I find likable.

   / ___/ ___/ ___/ ___/ ___/ ___/ ___/ ___/ ___/ ___/___/ 1 2 3 4 5 6 7 8 9 10

3. REASON: because as a telephone operator you have impressed me with being a nice person that I would like.

   / ___/ ___/ ___/ ___/ ___/ ___/ ___/ ___/ ___/ ___/___/ 1 2 3 4 5 6 7 8 9 10

4. REASON: because your friendliness is clear in your voice and I like that very much.

   / ___/ ___/ ___/ ___/ ___/ ___/ ___/ ___/ ___/ ___/___/ 1 2 3 4 5 6 7 8 9 10

5. REASON: because you sound like a good operator who knows how to please a customer and I am pleased.

   / ___/ ___/ ___/ ___/ ___/ ___/ ___/ ___/ ___/ ___/___/ 1 2 3 4 5 6 7 8 9 10

6. REASON: because you sound like a truly lovable person. I wish there was a way to meet you.

   / ___/ ___/ ___/ ___/ ___/ ___/ ___/ ___/ ___/ ___/___/ 1 2 3 4 5 6 7 8 9 10
Imagine that you are trying to place an important phone call, and the phone rings and rings, and no one answers. The operator suggests that you try placing the call at another time, but you want to try again immediately. So you say "Please try this number again, operator. (YOU GIVE A REASON)

Check below each REASON given to the operator how effective it will be? How effective will be your statement to the operator? (1 = ineffective use of SOCIAL PROOF, 10 = very effective use of SOCIAL PROOF).

1. REASON: because other operators have gotten this number for me when they have tried again."

2. REASON: because operators generally can get this number on the second try."

3. REASON: because operators always have helped me in this way before."

4. REASON: because other operators get this number when they have tried again."

5. REASON: because dozens of operators have gotten this number for me at other times."

6. REASON: because everyday when I call this number the operator gets it for me on the second try."
Imagine that you are trying to place an important phone call, and the phone rings and rings, and no one answers. The operator suggests that you try placing the call at another time, but you want to try again immediately. So you say "Please try this number again, operator. (YOU GIVE A REASON)

Check below each REASON given to the operator how effective it will be? How effective will be your statement to the operator? (1 = ineffective use of AUTHORITY, 10 = very effective use of AUTHORITY).

1. REASON: because this is part of an important research project at the Ohio State University."

2. REASON: because this is part of a major research project for the World Health Organization"

3. REASON: because this is part of a national survey for the Medical Association."

4. REASON: because this is part of a national survey for the Confederation of Departments of Justice."

5. REASON: because this is part of a major project at the General Auditing Office of the United States Government."

6. REASON: because this call has been requested by the General Inspectors Office of the United States Government.

/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__);
Imagine that you are trying to place an important phone call, and the phone rings and rings, and no one answers. The operator suggests that you try placing the call at another time, but you want to try again immediately. So you say "Please try this number again, operator."

Check below each REASON given to the operator how effective it will be? How effective will be your statement to the operator? (1 = ineffective use of SCARCITY; 10 = very effective use of SCARCITY).

1. REASON: because this is the only time this month my party will be there.

2. REASON: because this is the only time this year my party will be there.

3. REASON: because I have been trying to reach this number all day.

4. REASON: because this number is the hardest number to reach on my list.

5. REASON: because I won't be able to get to a phone again for many hours.

6. REASON: because the other party has been waiting for this call for eight weeks.
APPENDIX F

Embodiment Questionnaire for Desk Clerk Scenario
Compliance Tactics

Study the following definitions of four tactics that can be used to get another person to comply: authority, liking, social proof, and scarcity. You will be asked to give your opinion about how well certain human behaviors exemplify these tactics. See whether you can rate behaviors from different viewpoints: this is the purpose.

Liking

We like to be considered nice people who are liked by others. Therefore, learning that a person considers you to be nice and that the person likes you, can be an effective way of eliciting your return liking, as well as your willingness to comply with that person's request.

Social Proof

When most other people perform some action, this is social proof that the action is good. When other people try to do something and succeed at what they try to do, there is social proof that anyone might also succeed. Therefore, social proof can be used to elicit your compliance by informing you that other persons have already done what is being requested.

Authority

An authority can be a person or a major institution such as Ohio State University. Because of a university's knowledge, power, and public responsibility, it can make sense for you to comply with the requests of a representative of a university.

Scarcity

People assign more value or more importance to objects or opportunities when they are less available, that is, access is restricted by amount or time. Therefore, scarcity can be used to elicit compliance by emphasizing such restrictions.

YOU MAY REFER TO THESE DEFINITIONS AT ANY TIME
Imagine that you will be staying at a motel next week, and have just called the front desk to ask some questions. When the clerk answers the phone, you realize that you have misplaced your list of questions. When the clerk asks you to call back later, you want to convince him to wait as you look for the list of questions. So you say "Please hold because you sound nice, the kind of person I would like, that could help with this other question."

How strong a LIKING statement will this be to the clerk? (1 = very weak LIKING statement, 10 = very strong LIKING statement).

/____/____/____/____/____/____/____/____/____/____/  1  2  3  4  5  6  7  8  9  10
Imagine that you will be staying at a motel next week, and have just called the front desk to ask some questions. When the clerk answers the phone, you realize that you have misplaced your list of questions. When the clerk asks you to call back later, you want to convince him to wait as you look for the list of questions. So you say "Please hold because front desk people usually have the answer to this type of question, and they have helped with it."

How strong a SOCIAL PROOF statement will this be to the clerk? (1 = very weak SOCIAL PROOF statement, 10 = very strong SOCIAL PROOF statement).


1 2 3 4 5 6 7 8 9 10
Imagine that you will be staying at a motel next week, and have just called the front desk to ask some questions. When the clerk answers the phone, you realize that you have misplaced your list of questions. When the clerk asks you to call back later, you want to convince him to wait as you look for the list of questions. So you say "Please hold because this other question has to do with an important research project at the Ohio State University."

How strong an AUTHORITY statement will this be to the clerk? (1 = very weak AUTHORITY statement, 10 = very strong AUTHORITY statement).

/ _____ / _____ / _____ / _____ / _____ / _____ / _____ / _____ / _____ / 1 2 3 4 5 6 7 8 9 10
Imagine that you will be staying at a motel next week, and have just called the front desk to ask some questions. When the clerk answers the phone, you realize that you have misplaced your list of questions. When the clerk asks you to call back later, you want to convince him to wait as you look for the list of questions. So you say "Please hold because this is the only time this entire week that I'll be able to get through with this other question."

How strong a SCARCITY statement will this be to the clerk? (1 = very weak SCARCITY statement, 10 = very strong SCARCITY statement).
Imagine that you will be staying at a motel next week, and have just called the front desk to ask some questions. When the clerk answers the phone, you realize that you have misplaced your list of questions. When the clerk asks you to call back later, you want to convince him to wait as you look for the list of questions. So you say "Please hold because you sound nice, the kind of person I would like, that could help with this other question."

How ordinary, that is common versus unusual, is your statement to the clerk? (1 = unusual use of LIKING, 10 = common use of LIKING).

Unusual use of LIKING

Common use of LIKING
Imagine that you will be staying at a motel next week, and have just called the front desk to ask some questions. When the clerk answers the phone, you realize that you have misplaced your list of questions. When the clerk asks you to call back later, you want to convince him to wait as you look for the list of questions. So you say "Please hold because front desk people usually have the answer to this type of question, and they have haloed with it."

How ordinary, that is common versus unusual, is your statement to the clerk? (1 = unusual use of SOCIAL PROOF, 10 = common use of SOCIAL PROOF).

1 2 3 4 5 6 7 8 9 10

Unusual use of SOCIAL PROOF
Common use of SOCIAL PROOF
Imagine that you will be staying at a motel next week, and have just called the front desk to ask some questions. When the clerk answers the phone, you realize that you have misplaced your list of questions. When the clerk asks you to call back later, you want to convince him to wait as you look for the list of questions. So you say "Please hold because this other question has to do with an important research project at the Ohio State University."

How ordinary, that is how common versus unusual, is your statement to the clerk? (1 = unusual use of AUTHORITY, 10 = common use of AUTHORITY).

/___/___/___/___/___/___/___/___/___/___/

1 2 3 4 5 6 7 8 9 10

Unusual use of AUTHORITY

Common use of AUTHORITY
Imagine that you will be staying at a motel next week, and have just called the front desk to ask some questions. When the clerk answers the phone, you realize that you have misplaced your list of questions. When the clerk asks you to call back later, you want to convince him to wait as you look for the list of questions. So you say "Please hold because this is the only time this entire week that I'll be able to get through with this other question."

How ordinary, that is common versus unusual, is your statement to the clerk? (1 = unusual use of SCARCITY, 10 = common use of SCARCITY).

/ ___ / ___ / ___ / ___ / ___ / ___ / ___ / ___ / ___ / ___ / ___ /
   1   2   3   4   5   6   7   8   9  10

Unusual use of SCARCITY  Common use of SCARCITY
Imagine that you will be staying at a motel next week, and have just called the front desk to ask some questions. When the clerk answers the phone, you realize that you have misplaced your list of questions. When the clerk asks you to call back later, you want to convince him to wait as you look for the list of questions. So you say "Please hold because you sound nice, the kind of person I would like, that could help with this other question."

How effective will be your statement to the clerk? (1 = ineffective use of LIKING, 10 = effective use of LIKING).
Imagine that you will be staying at a motel next week, and have just called the front desk to ask some questions. When the clerk answers the phone, you realize that you have misplaced your list of questions. When the clerk asks you to call back later, you want to convince him to wait as you look for the list of questions. So you say "Please hold because front desk people usually have the answer to this type of question, and they have helped with it."

How effective will be your statement to the clerk? (1 = ineffective use of SOCIAL PROOF, 10 = effective use of SOCIAL PROOF).

Ineffective use of SOCIAL PROOF

Effective use of SOCIAL PROOF
Imagine that you will be staying at a motel next week, and have just called the front desk to ask some questions. When the clerk answers the phone, you realize that you have misplaced your list of questions. When the clerk asks you to call back later, you want to convince him to wait as you look for the list of questions. So you say "Please hold because this other question has to do with an important research project at the Ohio State University."

How effective will be your statement to the clerk? (1 = ineffective use of AUTHORITY, 10 = effective use of AUTHORITY).

/____/____/____/____/____/____/____/____/____/____/
1 2 3 4 5 6 7 8 9 10

Ineffective use of AUTHORITY

Effective use of AUTHORITY
Imagine that you will be staying at a motel next week, and have just called the front desk to ask some questions. When the clerk answers the phone, you realize that you have misplaced your list of questions. When the clerk asks you to call back later, you want to convince him to wait as you look for the list of questions. So you say "Please hold because this is the only time this entire week that I'll be able to get through with this other question."

How effective will be your statement to the clerk? (1 = ineffective use of SCARCITY, 10 = effective use of SCARCITY).

/___/___/___/___/___/___/___/___/___/___/

1 2 3 4 5 6 7 8 9 10

Ineffective use of SCARCITY

Effective use of SCARCITY
APPENDIX G

Figure 13: Embodiment Ratings for Appeals to Desk Clerks
Figure 13. Comparability of appeals to scarcity, liking, authority, and social proof for desk clerks: Study 2.
APPENDIX H

Questionnaire Booklets for Chapter 3 Experiments: Effects of Scarcity and Valence on Ratings of Picture-Mindedness
Experiment 3 Questionnaire
P-M Test

Name ___________________________ Sex M F Major ____________

For each of the statements below, please indicate whether the statement is true for you or not true for you. Please circle "Y" (yes) if the statement is true for you, or circle "N" (no) if the statement is not true for you.

Y N I occasionally daydream.

Y N I have some pictures of things in my mind.

Y N After I meet someone for the first time I sometimes remember how that person looked better than what that person said to me.

Y N The inner scenes that I can imagine are usually more important to me than what I can observe in the real world.

Y N I sometimes enjoy looking at attractive scenes and people.

Y N The only thing I enjoy doing in my spare time is using my imagination and being creative.

Y N I sometimes enjoy having images of places I've never seen and people I've never met.

Y N During the day I sometimes remember my dreams of the previous night.

Y N I enjoy using my imagination and being creative every moment of every day.

Y N I occasionally like to replay pleasant past experiences in my mind.

Y N I think that the old "silent movies" were usually less enjoyable than today's films.

Y N I enjoy TV with only the sound turned on because I usually like having to make up the picture part in my mind.

Y N One important difference between a human being and an ape is the ability of the human being to form pictures in her mind.

Y N I sometimes imagine scenes that can affect me personally.

Y N Sometimes I like to replay movies in my mind.
Name______________________________

Sex _F_ _M

Expected college major____________________

The P-M test you just took is the Picture-Mindedness Test, a test that takes into account a combination of different experiences to measure a trait of personality, a person's inclination to have pictures in the mind. Like other personality traits, such as extroversion or dishonesty, the amount of picture-mindedness is different for different persons.

NOW COUNT THE NUMBER OF YESES (Ys) TO OBTAIN YOUR PICTURE-MINDEDNESS SCORE

Write your score below:

My Picture-Mindedness Score____________________

READ THE MEANING OF YOUR SCORE BELOW:

Picture-Mindedness Test: National Scoring Standards for the United States

<table>
<thead>
<tr>
<th>P-M Score</th>
<th>Meaning of Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 Yes (Y) or more than 8</td>
<td>Highest: Picture-Mindedness Always Indicated</td>
</tr>
<tr>
<td>6 to 7 Yes (Y)</td>
<td>Next highest: Picture-Mindedness Certain, With Few Exceptions</td>
</tr>
<tr>
<td>5 Yes (Y)</td>
<td>Average: Picture-Mindedness Likely, Some Exceptions</td>
</tr>
<tr>
<td>Less than 5 Yes (Y)</td>
<td>Below average: Picture-Mindedness Unlikely</td>
</tr>
</tbody>
</table>

I have understood my picture-mindedness score:

__________________________________________

(signature)

Please go to the next page
The P-M test you just took is the Picture-Mindedness Test, a test that takes into account a combination of different experiences to measure an ability, a person's aptitude for producing pictures in the mind. Like other abilities, such as the ability to dance or to fight, the amount of picture-mindedness is different for different persons.

Now look back to the first page, the P-M test.

Now count the number of yeses (Ys) to obtain your Picture-Mindedness Score.

Write your score below:

My Picture-Mindedness Score__________

Read the meaning of your score below:

Picture-Mindedness Test: National Scoring Standards for the United States

<table>
<thead>
<tr>
<th>P-M Score</th>
<th>Meaning of Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 Yes (Y) or more than 8</td>
<td>Highest: Picture-Mindedness Always Indicated</td>
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</tr>
<tr>
<td>5 Yes (Y)</td>
<td>Average: Picture-Mindedness Likely, Some Exceptions</td>
</tr>
<tr>
<td>Less than 5 Yes (Y)</td>
<td>Below average: Picture-Mindedness Unlikely</td>
</tr>
</tbody>
</table>

I have understood my picture-mindedness score:

__________________________

(signature)

Please go to the next page
Name_________________________________________________________________

Sex   F   M

1. I am convinced that I have picture-mindedness: (check your rating)

0..... 1..... 2..... 3..... 4..... 5..... 6..... 7..... 8..... 9
Not at Somewhat Fairly much Very much Completely all
PICTURE-MINDEDNESS TEST

What is The Picture-Mindedness Test?
You just took the test of picture-mindedness.
The test measures a trait of your personality, your personal inclination to have pictures in your mind. Like other personality traits, picture-mindedness can be reflected in various everyday activities.
Psychologists have established that having pictures in the mind can be a big advantage and very helpful because:

1. If you are reading you can see the things you are reading about.

2. If you are driving, you can imagine other cars and people and avoid accidents.

3. If you are talking with friends, you can use interesting scenes to better concentrate on what they are saying.

4. If you are trying to figure things out, you can view the things you are thinking about.

5. If you are trying to study a textbook, it will be more vivid and more real for you.

6. Learning to relax is easier, if you can bring up pleasant pictures in your mind.

7. Good health depends on having the ability to picture healthy activities.

8. Everyone experiences stress now and then. Overcoming stress requires the ability to see vivid pictures of a happier future.

Please complete this page by checking two of the above points to indicate the best advantages of picture-mindedness.

After you have checked two important points, go to the next page.
AB

PICTURE-MINDEDNESS TEST

What is The Picture-Mindedness Test?

You just took the test of picture-mindedness.

The test measures your ability, your personal aptitude for producing pictures in your mind. Like your other abilities, picture-mindedness can affect how well you perform in various everyday activities.

Psychologists have established that having pictures in the mind can be a big advantage and very helpful because:

1. If you are reading you can see the things you are reading about.

2. If you are driving, you can imagine other cars and people and avoid accidents.

3. If you are talking with friends, you can use interesting scenes to better concentrate on what they are saying.

4. If you are trying to figure things out, you can view the things you are thinking about.

5. If you are trying to study a textbook, it will be more vivid and more real for you.

6. Learning to relax is easier, if you can bring up pleasant pictures in your mind.

7. Good health depends on having the ability to picture healthy activities.

8. Everyone experiences stress now and then. Overcoming stress requires the ability to see vivid pictures of a happier future.

Please complete this page by checking two of the above points to indicate the best advantages of picture-mindedness.

After you have checked two important points, go to the next page.
PICTURE-MINDEDNESS TEST

What is The Picture-Mindedness Test?

You just took the test of picture-mindedness.

The test measures a trait of your personality, your personal inclination to have pictures in your mind. Like other personality traits, picture-mindedness can be reflected in various everyday activities.

Psychologists have established that having pictures in the mind can be a big disadvantage and very unhelpful because:

1. If you are reading, you may see things that interfere with what you are reading about.

2. If you are driving, you may think you see people and cars that aren't there and have accidents.

3. If you are talking with friends, you may not be able to concentrate on what they are saying.

4. If you are trying to figure things out, you may not be able to focus just on the things you are thinking about.

5. If you are trying to study a textbook, it will be less vivid and less real for you.

6. Learning to relax is harder, if you have to deal with all kinds of pictures in your mind.

7. Good health depends on freedom from pictures of unhealthy activities.

8. Everyone experiences stress now and then. Overcoming stress requires freedom from vivid pictures of sad events in the past.

Please complete this page by checking two of the above points to indicate the worst disadvantages of picture-mindedness.

After you have checked two important points, go to the next page.
PICTURE-MINDEDNESS TEST

What is The Picture-Mindedness Test?

You just took the test of picture-mindedness.

The test measures your ability, your personal aptitude for producing pictures in your mind. Like your other abilities, picture-mindedness can affect how well you perform in various everyday activities.

Psychologists have established that having pictures in the mind can be a big disadvantage and very unhelpful because:

1. If you are reading, you may see things that interfere with what you are reading about.

2. If you are driving, you may think you see people and cars that aren't there and have accidents.

3. If you are talking with friends, you may not be able to concentrate on what they are saying.

4. If you are trying to figure things out, you may not be able to focus just on the things you are thinking about.

5. If you are trying to study a textbook, it will be less vivid and less real for you.

6. Learning to relax is harder, if you have to deal with all kinds of pictures in your mind.

7. Good health depends on freedom from pictures of unhealthy activities.

8. Everyone experiences stress now and then. Overcoming stress requires freedom from vivid pictures of sad events in the past.

Please complete this page by checking two of the above points to indicate the worst disadvantages of picture-mindedness.

After you have checked two important points, go to the next page.
Who has picture-mindedness?

Only a few people clearly have picture-mindedness; psychological research has found picture-mindedness in fewer than one person in every hundred.

Whether anyone is one of those very few persons with picture-mindedness can be best determined by psychological testing.

Please go on to the next page
Who has picture-mindedness?

Most people clearly have picture-mindedness; psychological research has found picture-mindedness in practically everyone; only one person in every hundred lacks picture-mindedness.

Whether anyone is one of those many persons can be best determined by psychological testing.
Name ________________________________

Sex   F   M

1. Having picture-mindedness makes me feel: (check your rating)

0... 1... 2... 3... 4... 5... 6... 7... 8... 9

Much worse  Worse  Neither better  Better  Much better
nor worse

2. Having picture-mindedness is: (check your rating)

0... 1... 2... 3... 4... 5... 6... 7... 8... 9

Very  Somewhat  Neither bad  Somewhat  Very
bad  bad  nor good  good  good

3. Having picture-mindedness is: (check your rating)

0... 1... 2... 3... 4... 5... 6... 7... 8... 9

Very  Somewhat  Somewhat  Somewhat  Very
unfavorable  unfavorable  unfavorable  favorable  favorable

4. Having picture-mindedness is: (check your rating)

0... 1... 2... 3... 4... 5... 6... 7... 8... 9

Very  Somewhat  Somewhat  Somewhat  Very
unhelpful  unhelpful  helpful  helpful  helpful
1. Who else has picture-mindedness? (check your rating)

0.... 1.... 2.... 3.... 4.... 5.... 6.... 7.... 8.... 9
Very few A few people Many people Most people Nearly all people

2. Picture-mindedness is a trait of personality. (check your rating)

0.... 1.... 2.... 3.... 4.... 5.... 6.... 7.... 8.... 9
Not at Somewhat Fairly much Very much Completely all

3. Picture-mindedness is an ability. (check your rating)

0.... 1.... 2.... 3.... 4.... 5.... 6.... 7.... 8.... 9
Not at Somewhat Fairly much Very much Completely all
THOUGHT LISTING

In the space below, list all of the thoughts and ideas you had while learning about your picture-mindedness. DO NOT TURN BACK TO PREVIOUS PAGES NOW!

You might have had positive or negative thoughts and ideas.

All your thoughts should be listed. Write the first thought about your picture-mindedness on the first line, the second thought on the second line and so forth. Short phrases are OK. Ignore grammar and spelling.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Please go on to the next page
Study 3 Questionnaire
P-M Test

Name ___________________________ Sex M F Major ________

For each of the statements below, please indicate whether the statement is true for you or not true for you. Please circle "Y" (yes) if the statement is true for you, or circle "N" (no) if the statement is not true for you.

Y  N  I occasionally daydream.

Y  N  I have some pictures of things in my mind.

Y  N  After I meet someone for the first time I sometimes remember how that person looked better than what that person said to me.

Y  N  The inner scenes that I can imagine are usually more important to me than what I can observe in the real world.

Y  N  I sometimes enjoy looking at attractive scenes and people.

Y  N  The only thing I enjoy doing in my spare time is using my imagination and being creative.

Y  N  I sometimes enjoy having images of places I've never seen and people I've never met.

Y  N  During the day I sometimes remember my dreams of the previous night.

Y  N  I enjoy using my imagination and being creative every moment of every day.

Y  N  I occasionally like to replay pleasant past experiences in my mind.

Y  N  I think that the old "silent movies" were usually less enjoyable than today's films.

Y  N  I enjoy TV with only the sound turned on because I usually like having to make up the picture part in my mind.

Y  N  One important difference between a human being and an ape is the ability of the human being to form pictures in her mind.

Y  N  I sometimes imagine scenes that can affect me personally.

Y  N  Sometimes I like to replay movies in my mind.
TR

Name ________________________________

Sex  F  M

Expected college major ________________________________

The P-M test you just took is the Picture-Mindedness Test, a test that takes into account a combination of different experiences to measure a trait of personality, a person's inclination to have pictures in the mind. Like other personality traits, such as extroversion or dishonesty, the amount of picture-mindedness is different for different persons.

HOW COUNT THE NUMBER OF YESES (Ys) TO OBTAIN YOUR PICTURE-MINDEDNESS SCORE

Write your score below:

My Picture-Mindedness Score ________________________________

READ THE MEANING OF YOUR SCORE BELOW:

Picture-Mindedness Test: National Scoring Standards for the United States

<table>
<thead>
<tr>
<th>P-M Score</th>
<th>Meaning of Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 Yes (Y) or more than 8</td>
<td>Highest: Picture-Mindedness Always Indicated</td>
</tr>
<tr>
<td>6 to 7 Yes (Y)</td>
<td>Next highest: Picture-Mindedness Certain, With Few Exceptions</td>
</tr>
<tr>
<td>5 Yes (Y)</td>
<td>Average: Picture-Mindedness Likely, Some Exceptions</td>
</tr>
<tr>
<td>Less than 5 Yes (Y)</td>
<td>Below average: Picture-Mindedness Unlikely</td>
</tr>
</tbody>
</table>

I have understood my picture-mindedness score:

______________________________

(signature)

Please go to the next page
The P-M test you just took is the Picture-Mindedness Test, a test that takes into account a combination of different experiences to measure an ability, a person's aptitude for producing pictures in the mind. Like other abilities, such as the ability to dance or to fight, the amount of picture-mindedness is different for different persons.

**NOW LOOK BACK TO THE FIRST PAGE, THE P-M TEST.**

**NOW COUNT THE NUMBER OF YESES (Y's) TO OBTAIN YOUR PICTURE-MINDEDNESS SCORE**

Write your score below:

My Picture-Mindedness Score

**READ THE MEANING OF YOUR SCORE BELOW:**

Picture-Mindedness Test: National Scoring Standards for the United States

<table>
<thead>
<tr>
<th>P-M Score</th>
<th>Meaning of Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 Yes (Y) or more than 8</td>
<td>Highest: Picture-Mindedness Always Indicated</td>
</tr>
<tr>
<td>6 to 7 Yes (Y)</td>
<td>Next highest: Picture-Mindedness Certain, With Few Exceptions</td>
</tr>
<tr>
<td>5 Yes (Y)</td>
<td>Average: Picture-Mindedness Likely, Some Exceptions</td>
</tr>
</tbody>
</table>

Less than 5 Yes (Y) Below average: Picture-Mindedness Unlikely

I have understood my picture-mindedness score:

________________________

(signature)

Please go to the next page
1. Who else has picture-mindedness? (check your rating)

0.... 1.... 2.... 3.... 4.... 5.... 6.... 7.... 8.... 9
Very few A few people Many people Most people Nearly all people

Who else has picture-mindedness? (check your rating)

0.... 1.... 2.... 3.... 4.... 5.... 6.... 7.... 8.... 9
1 in a 100 99 in a 100 people people

2. Picture-mindedness is a trait of personality. (check your rating)

0.... 1.... 2.... 3.... 4.... 5.... 6.... 7.... 8.... 9
Not at Somewhat Fairly much Very much Completely all

3. Picture-mindedness is an ability. (check your rating)

0.... 1.... 2.... 3.... 4.... 5.... 6.... 7.... 8.... 9
Not at Somewhat Fairly much Very much Completely all
Experiment 4 Questionnaire
In a few minutes Picture-Mindedness will be explained and you will be asked a few questions to determine whether you have Picture-Mindedness.

Who has picture-mindedness?

Only a few people clearly have picture-mindedness; psychological research has found picture-mindedness in fewer than one person in every hundred. Whether anyone is one of those very few persons with picture-mindedness can be best determined by psychological testing.

Please go on to the next page
In a few minutes Picture-Mindedness will be explained and you will be asked a few questions to determine whether you have Picture-Mindedness.

Who has picture-mindedness?

Most people clearly have picture-mindedness; psychological research has found picture-mindedness in practically everyone; only one person in every hundred lacks picture-mindedness.

Whether anyone is one of those many persons with picture-mineded can be best determined by psychological testing.

Please go on to the next page
THOUGHT LISTING

In the space below, list all of the thoughts and ideas you have right now about picture-mindedness.

You might have positive or negative thoughts and ideas.

All your thoughts should be listed. Write the first thought about picture-mindedness on the first line, the second thought on the second line and so forth. Short phrases are OK. Ignore grammar and spelling.

Please go on to the next page
APPENDIX I

Tables 18, 19, 20, 21: Cell Numbers and Analyses of Covariance for Chapter 3 Experiments
Table 18

Experiment 3 (Picture-Mindedness Rating): Cell Sizes

<table>
<thead>
<tr>
<th>Scarcity Level</th>
<th>Positive</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>20</td>
<td>14</td>
</tr>
<tr>
<td>Low</td>
<td>19</td>
<td>18</td>
</tr>
</tbody>
</table>
Table 19

Experiment 3: Analysis of Variance of Picture-Mindedness Ratings

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valence</td>
<td>1</td>
<td>63.92</td>
<td>25.77</td>
<td>.0001</td>
</tr>
<tr>
<td>Scarcity</td>
<td>1</td>
<td>2.33</td>
<td>.94</td>
<td>.3362</td>
</tr>
<tr>
<td>Valence X Scarcity</td>
<td>1</td>
<td>4.84</td>
<td>1.95</td>
<td>.1668</td>
</tr>
<tr>
<td>Error</td>
<td>67</td>
<td>2.48</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 20

Experiment 3 Subsample (Picture-Mindedness Rating): Cell Sizes

<table>
<thead>
<tr>
<th>Scarcity Level</th>
<th>Picture Mindedness Valence</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Positive</td>
<td>Negative</td>
</tr>
<tr>
<td>High</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>Low</td>
<td>19</td>
<td>18</td>
</tr>
<tr>
<td>Source</td>
<td>df</td>
<td>MS</td>
</tr>
<tr>
<td>----------------------</td>
<td>----</td>
<td>------</td>
</tr>
<tr>
<td>Valence</td>
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<td>74.38</td>
</tr>
<tr>
<td>Scarcity</td>
<td>1</td>
<td>5.28</td>
</tr>
<tr>
<td>Valence X Scarcity</td>
<td>1</td>
<td>11.08</td>
</tr>
<tr>
<td>Error</td>
<td>58</td>
<td>2.53</td>
</tr>
</tbody>
</table>
APPENDIX J

Tables 22 and 23: Cell Numbers and Analysis of Covariance for Experiment 5
<table>
<thead>
<tr>
<th>Scarcity Level</th>
<th>Argument Quality</th>
<th>Weak</th>
<th>Strong</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td></td>
<td>33</td>
<td>40</td>
</tr>
<tr>
<td>Low</td>
<td></td>
<td>37</td>
<td>33</td>
</tr>
</tbody>
</table>
Table 23

Experiment 5: Analysis of Covariance of Operator Redialing

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argument Strength</td>
<td>1</td>
<td>993.03</td>
<td>47.88</td>
<td>.0001</td>
</tr>
<tr>
<td>Scarcity</td>
<td>1</td>
<td>57.01</td>
<td>2.75</td>
<td>.0996</td>
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<tr>
<td>Argument Strength X Scarcity</td>
<td>1</td>
<td>476.91</td>
<td>23.00</td>
<td>.0001</td>
</tr>
<tr>
<td>Covariate</td>
<td>1</td>
<td>462.40</td>
<td>22.30</td>
<td>.0001</td>
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<tr>
<td>Error</td>
<td>138</td>
<td>20.74</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX K

Table 24: Cell Numbers for Experiment 7
Table 24
Experiment 7 (Twist Purchasing): Cell Sizes

<table>
<thead>
<tr>
<th>Scarcity Level</th>
<th>Argument Quality</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Weak</td>
<td>80</td>
</tr>
<tr>
<td>High</td>
<td>Strong</td>
<td>74</td>
</tr>
<tr>
<td>Low</td>
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<td>72</td>
</tr>
<tr>
<td></td>
<td>Strong</td>
<td>79</td>
</tr>
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LIST OF REFERENCES


