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SALIENCE, ATTENTION, AND ATTRIBUTION: TOP OF THE HEAD PHENOMENA[1]

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I. Introduction

The last 20 years of research in social psychology testify to an enduring interest in issues of causal perception. How does an individual take in information about the social environment and put it together to make inferences about what causes things to happen as they do and what causes people to behave as they do? How thorough is the social perceiver's search of the environment and how sophisticated is this causal analysis? Heider (1958) first raised these issues systematically in his *Psychology of Interpersonal Relations*. He suggested that an understanding of how people assess causality and infer the dispositions of the people around them could be elucidated by uncovering the naive epistemology of the social perceiver. He drew upon Brunswik (1934) "lens" model of perception as a model of social perception, maintaining that the object of scientific study should be how the mind selects, organizes, and imputes meaning to the many social stimuli that impinge upon it. Heider assumed that the goal of the naive perceiver is to develop and stabilize perceptions of the enduring properties of persons and things through an examination of action, intention, ability, and environment.

As testimony to the heuristic value of Heider's ideas, two general lines of research evolved from his initial writings. One has likened the social perceiver to a naive scientist (Kelley, 1967, 1971). According to Kelley, the lay attributor "generally acts like a good scientist, examining the covariation between a given effect and various possible causes" (Kelley, 1971, p. 2). The perceiver assesses the distinctiveness of an outcome and the extent to which it covaries across time, persons, and modalities, in attempting to reach an explanation for the outcome. Though Kelley acknowledged that the attributor must occasionally make inferences on the basis of incomplete or faulty data, he concluded that with a few exceptions, "the lay attributor still uses [these data] in a reasonable and unbiased manner" (Kelly, 1971, p. 2). The research generated by Kelley's model (e.g., Garland, Hardy, & Stephenson, 1975; McArthur, 1972) has found some support for its predictions.

A second position, which also derives in part from Heider's work, has been slower to develop, at least within social psychology. This position maintains that

instead of using the "scientific-like" processes outlined by Kelley, many perceivers seek a single, sufficient, and salient explanation for behavior, often the first satisfactory one that comes along (Jones & Davis, 1965; Kanouse, 1972). Within cognitive psychology, for example, judgment researchers have found that instead of employing base rate or consensus information logically, people are often more influenced by a single, colorful piece of case history evidence (Kahneman & Tversky, 1973; Nisbett, Borgida, Crandall, & Reed, 1976). Instead of using correlational evidence appropriately, subjects' subjective estimates of correlation magnitudes are often determined largely by positive instances (Jenkins & Ward, 1965; Smedslund, 1963). Instead of reviewing all the evidence that bears upon a particular problem, people frequently use the information which is most salient or available to them, that is, that which is most easily brought to mind (Tversky & Kahneman, 1974).

Within social psychology, the evidence that salient stimuli are used as a basis for causal inference has come largely from research on self-perception. In a study by Kiesler, Nisbett, and Zanna (1969), for example, a subject who has just agreed to proselytize against air pollution hears another subject say, "I'll proselytize for auto safety because it is important to me" (belief-relevant condition) or "I'll do it because this is a worthwhile study" (belief-irrelevant condition). The subject's anti-air-pollution beliefs are correspondingly strengthened by the "belief" manipulation, but not by the "belief-irrelevant" condition, thus testifying to the impact of a logically irrelevant but salient stimulus upon the expression of personal and, one would have thought, strongly held attitudes. A large number of studies fits this salience format, and in most cases the conclusion to be drawn is that making almost any cognition or behavior salient will influence the subject's attitudes and behavior (e.g.,Bandler, Madaras, & Bem, 1968; Davison & Valins, 1969; Nisbett & Schachter, 1966; L. Ross, Rodin, & Zimbardo, 1969; Schacter & Singer, 1962; Storms & Nisbett, 1970; Valins, 1966; Valins & Ray, 1967).

The fact that salient stimuli have such seemingly important effects on perceptions of causality has led theorists explicitly to acknowledge and generalize this principle. Jones and Davis (1965), for example, stated that:

> The perceiver seeks to find sufficient reason why the person acted and why the act took a particular form. Instead of the potentially infinite regress of cause and effect which characterizes an impersonal, scientific analysis, the perceiver's explanation comes to a stop when an intention or motive has the quality of being reason enough [p. 220].

Kanouse (1972) hypothesized that:

> Individuals may be primarily motivated to seek a single, sufficient, or satisfactory explanation for any given event, rather than one which is the best of all possible explanations...when more than one explanation is potentially available to an individual, which one he adopts may depend primarily on which of the various possible explanations is most salient [p. 131].

Our own position, which we will develop in this chapter, is that individuals frequently respond with little thought to the most salient stimuli in their environment. We believe that the causal attributions people make, the opinions people express, and the impressions they form of others in work or social situations are often shaped by seemingly trivial but highly salient information and that, accordingly, such attitudes and impressions show relatively little cross-situational consistency (e.g., Schuman & Johnson, 1976; Wicker, 1969).

We will call these kinds of attributions, opinions, and impressions "top of the head" phenomena. When someone says, "I gave you an answer off the top of my head," that person means that the answer or observation has very little thought behind it and that the person has responded with the first thing that came to mind. A "top of the head" answer implies that the respondent has spent little time on the matter, gathered little or no data beyond that of the immediate situation, and responded with an opinion nonetheless. The further implication is that the individual is not be be blamed, should the opinion be changed or forgotten.

The thesis of this chapter is, in part, that social psychologists study "top of the head" phenomena in their experimental investigations. They create artificial, isolated moments in time, in which the subject is invited to participate. By developing a relatively bland environment which contains only one or two interesting, attention-getting stimuli (the manipulations), the experimenter is able to predict and control the reactions of the subjects in that environment. In the experimental world, then, what is made salient becomes the basis of the subjects' opinions and impressions. This characterization of experimentation is scarcely new and constitutes the basis of much criticism of experimental social psychology. Our position, however, is quite different from that of such critics. We believe that this experimental portrait of a fragmented world, in which individuals respond with little thought to the most salient stimuli in their environment, mirrors reality.

One of the authors recently took part in a survey of women's professional experiences at Harvard. Questions included such items as, "Are your committee assignments heavier, lighter, or the same as other people's?" "Have you ever been the victim of overt sex discrimination?" "Are your colleagues appreciative of your work?" Six months later, when the tallied results were distributed, and this author looked them over, she realized she had no idea how she had responded to a majority of the items. Had it been a good day or a bad day? Was it a semester with lots of committee assignments or not? Had anyone recently complimented her on her work? Had she been mistaken for a secretary on that particular day?

Before we are accused of a radically situationist approach to behavior, let us hasten to add that we are attempting to explain the behavior of, at best, all of the people some of the time, or perhaps more modestly, some of the people some of the time. It is patently obvious that there are issues, decisions, and opinions to

which we direct a substantial amount of attention, effort, and time, and while the product of such extensive rumination may not be perfectly rational using some objective criterion, one can demonstrate an information search, a consideration of alternatives, and other characteristics of what we call "good decisions" in the process the individual goes through. These are not the kinds of situations we are attempting to describe. We are characterizing that tremendous number of unself-conscious opinion statements and impressions that form the substance of our chatter, rather than our reflections, and of our unthinking reactions, rather than our thoughts.

Our chapter is an analysis of this "top of the head" phenomenon particularly as it relates to self-perception and the perception of others. We will maintain that "top of the head" phenomena are far more common than we would like to admit, that they can be predicted quite reliably, that they account for an enormous amount of our experimental findings, and that they bear a significant impact on our causal attributions, learning, memory, evaluations, and imputation of personal characteristics to others.

We will make the claim that causal perception is substantially determined by where one's attention is directed within the environment and that attention itself is a function of what information is salient. In this context, we will suggest that the Jones–Nisbett actor–observer effect is substantially a manifestation of perceptual salience, and we will then broaden this conclusion to suggest that causal agents are seen as efficacious to the extent that information about them is salient. We will then review evidence suggesting that whether the social perceiver attributes causality to the dispositional attributes of actors or to situational factors in the environment can also be predicted by focus of attention: Observers will perceive situations as more causally important to the extent that situations are made salient; observers will perceive dispositions of actors as more important to the extent that actors are made salient.

In the fifth section, we will review the effects that differential attention has on social perceptions other than causal perceptions. We will show that when the salient stimulus is a person, differential attention affects evaluations of attitudinal and behavioral consistency, affective judgments, and perceived representativeness.

Sixth, we will examine the literature which assesses how these effects are mediated. We will suggest that information about salient stimuli is both more plentiful and more available, but that this latter factor—availability—is what mediates the attention–causality relationship. We propose that what may make information more available is either (*a*) encoding through more than one mode, specifically both iconic and semantic encoding, or (*b*) encoding which differs from the encoding of other stimuli, that is, images as opposed to semantic encoding. We will then apply some of these ideas to the question of what makes particular cognitions salient.

In the seventh section, we will examine the generalizability of salience

effects. Are they reserved for situations that are redundant, unsurprising, unarousing, uninvolving, and uninformative, or do they also arise in more involving, engrossing, arousing, informative situations as well? In short, we will be addressing the question: Are salience effects engaged not only by certain cues, but by certain situations as well? Finally, we will raise the question: Is there a style of processing information that is reflected in these salience effects? Social perceivers experience salience effects as absurd, since they fly in the face of our beliefs about self-conscious, intentional, rational choice behavior. We will attempt to salvage both views of the information processor—the salience viewpoint and the naive scientist viewpoint—by suggesting that they reflect two qualitatively different kinds of information processing.

II. Salience and Causality

The hypothesis that causal analysis is affected by what is salient originated with Heider (1958). In explaining how the naive perceiver construes meaning from the social environment, Heider (1958) noted that the perceiver is prone to certain biases, as a function of some bits of information being more salient than other bits of information.

> It seems that behavior in particular has such salient properties it tends to engulf the total field rather than be confined to its proper position as a local stimulus whose interpretation requires additional data of a surrounding field—the situation in social perception [p. 54].

Partly on the basis of these observations, Jones and Nisbett (1972) developed what can be interpreted as a perceptual theory of actor–observer differences in perceived causality. Jones and Nisbett hypothesized a chronic difference in actors' and observers' accounts of the causes of behavior. Specifically, they suggested that actors interpret their own behavior largely in situational terms (e.g., I yelled because everyone caused me trouble today), whereas observers interpret an actor's behavior in dispositional terms (e.g., he yelled because he is a hostile person). Though Jones and Nisbett proposed several possible mediators of their actor–observer effect, the one that has received the most attention is the hypothesized differences in what information is perceptually prominent.

Actors' sensory receptors are directed outward away from their own behavior and toward the environment. Accordingly, actors should have available to them more information and more salient information about their environment than about themselves, since they literally cannot see themselves behaving. When asked the reasons why they engaged in a particular behavior, actors should think back over their store of information and attribute causality to their environment, since environmental information is most salient, plentiful, and available.

The sensory receptors of observers viewing an actor, on the other hand, are focused on the actor who is a dynamic figure against a situational ground. As Heider noted, for an observer, the actor's behavior is salient. The observer's attention is drawn to the actor, and accordingly the observer gathers more information about the actor's behavior than about the actor's environment. When asked the reasons why the actor engaged in a particular behavior, observers should think back over their store of information and attribute causality to the actor, since actor information is most salient, plentiful, and available. In summary, then, both actors and observers overrepresent that information which is perceptually salient in order to make a causal explanation of an event.

If it is the case that actor–observer differences are mediated by perceptual salience, then it should be possible to alter perceptions of causality by manipulating what information is salient. Storms (1973) developed a test of the perceptual explanation of the actor–observer effect. He created a situation where two (actor) subjects exchanged information about themselves, while two other subjects acted as observers; each observer watched only one actor, A or B. Following the interaction some subjects saw a videotaped playback of only one subject's behavior; the other groups were controls and saw no videotape. Actors then rated themselves (and observers rated their matched actor) on a series of scales in which they were asked how much of the actor's behavior was due to situational factors and how much to dispositional qualitites of the actor. The actor–observer hypothesis predicts that observers would attribute the actor's behavior to his dispositions and that actors would attribute their own behavior to situational factors. In support of this, actors saw themselves as more influenced by situational factors than did their matched observers. More significantly, the test of the salience explanation is in the videotape condition. When the group observed a playback of one actor's behavior (e.g., actor A), this information was redundant for two people, actor B and observer A, since they had observed actor A throughout the initial interaction. Hence, these two people should retain or strengthen their expected attributions. For two other people, however, this was relatively new information; actor A had not seen himself, nor had observer B watched actor A during the earlier interaction. Storms found that with this new information, actor A was less situational in describing himself, and observer B was more situational in describing actor B, as compared with the subjects for whom the information was redundant. The Storms study, then, provides strong evidence that the differences in actors' and observers' attributions are mediated by what information is perceptually salient.

III. Salience and Perception of Causal Agents

We can extend the perceptual salience interpretation of Jones and Nisbett to

make a more general statement about the relationship between perception and causality. Such an extension would maintain that causal agents are seen as efficacious in proportion to their perceptual salience. That is, if the differences between actors' and observers' attributions are mediated by the information that engulfs one's visual field, then whatever one attends to within one's environment should influence the perceptions of causality. If one attends to a part of the environment to the relative exclusion of another, the information from that part should be most salient. This information, in turn, should provide a basis for the explanation one adopts in deciding who caused what in the situation. Our overall hypothesis, then, is that point of view or attention determines what information is salient; perceptually salient information is then overrepresented in subsequent causal explanations. This hypothesis extends the salience principle both beyond the dispositional–situational distinction and beyond the actor–observer comparison. Evidence for this hypothesis comes from studies on both the perception of others and the perception of self.

A. EVIDENCE FOR PERCEPTION OF OTHERS

A perceiver will regard another as causal to the extent that the person's behavior is salient, and what is salient depends on attention. Perceptions of a person's relative causality should depend, then, on the perceiver's focus of attention. To demonstrate this general link, Taylor and Fiske (1975) conducted two studies. In the first study, perceptual salience was manipulated by seating position (see Fig. 1). Six observers watched a dialogue, seated so that for two observers, one actor was salient, for two, the other was salient, and for two, the actors were equally salient. Since all subjects watched the conversation simultaneously, the only informational differences were the actors' relative visual salience. Dependent measures included estimates of how much the actor set the tone of the conversation, determined the kind of information exchanged, and caused his partner to behave as he did. Dispositional–situational causality scales also were included. Consistent with the hypotheses, the actor who engulfed the visual field was rated as more causal. The same results were obtained in a second operationalization of salience. In study 2, subjects observed two actors on a split screen video playback, so that both actors were equally visible; differential attention was manipulated by telling some subjects to pay particular attention to the actor on the left and others, to pay particular attention to the actor on the right. Although the dispositional–situational causality measures yielded no results in either study, again, the general causality results provided strong support for the salience–causality link. Subjects attributed causality to the salient stimulus person.

Taking the hypothesis to less contrived, more common settings, one would predict that any salient individual in a group would be perceived as dispropor-

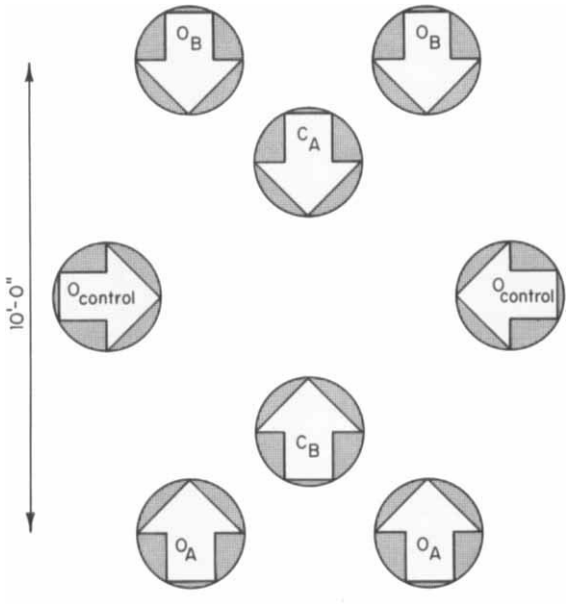

Fig. 1. Seating arrangement for confederates (C) and observers (O), with arrows indicating visual orientation. A and B indicate matched actors and observers. From Taylor and Fiske (1975).

tionately causal. Rather than relying on direct control of observers' attention, that is, by seating arrangement or by instruction, one can manipulate salience by relying on principles of spontaneous selective attention. Novelty elicits spontaneous attention, as research in cognitive psychology has shown consistently (e.g., Berlyne, 1960; Jeffrey, 1968). Thus, a novel individual within a small group should be salient to observers and subsequently perceived as disproportionately causal in the group.

In order to test the effects of person novelty on observers' perceptions of causality, Taylor, Fiske, Close, Anderson, and Ruderman (1977) investigated perceptions of solo blacks, women, and men. An individual who is the only *X* (e.g., black) in an otherwise all *Y* (e.g., white) group should draw off a disproportionate amount of attention, since this solo *X* is novel. Accordingly, the solo *X* should be perceived as disproportionately causal. Similarly, the only male or female in an opposite-sex group is novel, should elicit attention, and consequently be perceived as particularly influential. In the first study, Taylor *et al.* manufactured a small group. Six men were tape-recorded in a brainstorming session for a publicity campaign. The number, timing, and quality of their suggestions were carefully controlled. College-age men of approximately equal attractiveness were photographed. Their photographs were then paired with the

taped voices to create a coordinated slide and tape presentation. The result was an engrossing and movielike experience. By changing the race of one or more of the faces one could vary the perceived racial composition of the group without altering the content of the discussion. Three experimental conditions were developed, consisting of a group of six whites, an integrated group of three blacks and three whites, and another group with five whites and a solo black. The test of the novelty hypothesis comes in comparing perceptions of the solo black and perceptions of the same black in an integrated group, that is, when he was not novel. The data supported the hypotheses. A solo black was perceived as talking more, being more influential, and giving a clearer impression than was the same person when he was not a solo or when he was part of the majority.

The results of that study were fleshed out by a replication of the novelty–causality effect. Another group discussion was recorded, with three men and three women participating. To change the group's sex composition, not only the slides had to change but also the voices. Accordingly, opposite-sex people mimicked the exact phrasing and tone of voice of the original speeches. When a natural-sounding imitation was obtained, it was spliced in and substituted for the original voice, leaving the discussion intact. Upon completion of this painstaking process, subjects could be shown a slide and tape show depicting one man and five women, three men and three women, five men and one woman, or any other sex composition of a six-person group. The discussion ostensibly took place among colleagues in a teachers' lounge, and the topics ranged from unionization to gossip. The test of the novelty hypothesis compared perceptions of the solo male and solo female with perceptions of the same individual when she/he was not a solo. As in the first study, the solo was perceived as disproportionately influential, talkative, and prominent, whether male or female. These studies combine to show strong support for the salience–causality link in person perception.

B. EVIDENCE FOR SELF-PERCEPTION

Similarly, the attention–causality effect holds for self-perception. An impressive quantity of data collected by Duval, Wicklund, and their associates (Duval & Hensley, 1977; Duval & Wicklund, 1972, 1973; Wicklund, 1975b) shows that when the self is salient, self-attributions of causality are exaggerated. For example, Duval and Wicklund (1973, study 2) manipulated self-attention by placing a large mirror in front of some subjects and not others. Subjects were read a series of ten hypothetical situations, all having positive outcomes or all having negative outcomes. The situations involved fairly serious consequences, such as a traffic accident, a drastic change in class grades, or making a profit on stocks. In all situations, either the subject or another person was potentially responsible for the hypothetical outcomes. The test of the attention hypothesis hinged on the percentages of causality which subjects assigned to

themselves in the self-attending (mirror) and control (no mirror) conditions. For both positive and negative situations, self-attending subjects assigned disproportionate causality to themselves.

Other manipulations of self-attention cover a wide range of techniques, although the mirror is most common (Table II, to be discussed later, gives examples). Consistently, these studies find that self-attending subjects overrate their causal role on a variety of tasks (see Duval & Hensley, 1977, for a review). Thus, studies in self- and other-perception indicate that attributions of causality follow from differential attention.

IV. Salience and Attributions for Causes of Behavior

In further support of a salience interpretation of causal attribution, one would predict that relative prominence determines perceived locus of causality. Earlier, we examined actor–observer differences from this perspective. In that case, the situation is prominent for the actor, and the actor is prominent for the observer. Then we demonstrated the general principle that relative salience determines attributions of causality in self- and other-perception. Following a salience framework, one would predict further that observers attribute to the situation, to the extent that it is salient, and to the actor's dispositions, the more the actor is salient. This hypothesis has been investigated in a variety of contexts.

A. MANIPULATIONS OF RELATIVE SALIENCE

Before assessing the support for this hypothesis, it is worth noting that salience has been operationalized in a variety of different ways. First, there is a set of studies which depend on the principles of spontaneous selective attention. Cognitive psychology has shown that bright, moving, complex, and novel objects elicit attention (e.g., Berlyne, 1958; Koffka, 1935; Titchener, 1908/1966). Social psychologists have applied these principles to social manipulations of salience, and Table I summarizes these applications of spontaneous attention.[2]

[2]The efforts to relate the determinants of figural emphasis to differential attention have produced consistent results thus far. That is, the conditions that lead to differential attention to objects within a visual field, namely brightness, motion, complexity, and novelty, also produce differential attention to persons within a visual field. In most of these studies, however, differential attention has been inferred from experimental condition differences on dependent measures, rather than measured directly. Only Langer, Taylor, Fiske, and Chanowitz (1976, studies 1 and 2) and Taylor and Langer (1977, study 2) actually measured attentional differences as a function of novelty. The results of studies in which attention is spontaneously directed could be improved upon and strengthened by tapping attention directly, as for example through looking time, assessed using subject-controlled presentation periods (e.g., Berscheid, Graziano, Monson, & Dermer, 1976; Fiske, 1978), a corneal reflector, or a videotape of a subject's eye movements.

TABLE I
SOCIAL MANIPULATIONS OF SPONTANEOUS ATTENTION

Manipulation	Results	Reference
Brightness	Salient actor less situational	McArthur & Post (1977, study 1)
	Salient actor more causally prominent	
	Salient actor more positively evaluated	
	Differential recall for salient actor	
Motion	Salient actor less situational	McArthur & Post (1977, study 2)
Complexity	Salient actor less situational	McArthur & Post (1977, study 3)
Novelty		
Contextual novelty (i.e., solo status)	Salient actor more situational	McArthur & Post (1977, study 4–5)
	Salient actor more situational	Taylor, Fiske, Close, Anderson, & Ruderman (1977, study 1–2)
	Salient actor more causally prominent	
	Salient actor evaluatively exaggerated	
	Salient actor more representative	
	More recall for salient actor	
Statistical novelty (visual rarity of other)	Differential attention to salient person	Langer, Taylor, Fiske, & Chanowitz (1976, study 1–2)
	Salient person more positively evaluated	Langer, Taylor, Fiske, & Chanowitz (1976, study 3)
	Attentional interpretation of discomfort from social novelty	
	Novelty elicits staring and avoidance	Taylor & Langer (1977)
(false feedback about self)	Self-novelty increases conformity	Duval (1976)

A second approach to the social manipulation of attention involves directly restricting the range of cues available to the subject. Table II summarizes the wide range of research using this method. We will draw upon a number of these studies in the next few sections.

B. ATTRIBUTIONS OF DISPOSITIONAL AND SITUATIONAL CAUSALITY

To reiterate, the perceptual salience hypothesis predicts that observers will perceive the actor's dispositions as causal to the extent that the actor is salient. Similarly, observers will perceive the situation as causal, to the extent that it is salient.

Clear support for this prediction comes from a series of studies conducted by McArthur and Post (1977). In their experiments, subjects observed two individuals, who had just met each other, talking together casually. One of the two individuals was highlighted while the other was not. Specifically, brightness was manipulated by having one stimulus person seated in a bright light and another in

TABLE II
SOCIAL MANIPULATIONS OF DIRECTED ATTENTION

Manipulation	Results	Reference
Visual perspective		
Seating position	Salient actor more causally prominent	Taylor & Fiske (1975, study 1)
Videotape playback	Self-salience increases conformity	Duval (1976)
	Self-salience decreases situational causality	Storms (1973)
	Environment salience (i.e., other actor) increases situational causality	
Mirror	Self-salience increases attitude–behavior consistency	Carver (1975)
	Self-salience increases self-relevant cognitions	Davis & Brock (1975)
	Self-salience decreases attitude–behavior consistency	Liebling, Seiler, & Shaver (1974, 1975)
	Self-salience inhibits aggression	Scheier, Fenigstein, & Buss (1974, study 1)
	Self-salience facilitates performance	Wicklund & Duval (1971, study 3)
	Self-salience increases equity restoration	Chase & Gibbons (1977)
	Self-salience increases altruism, if salience "content-free"	Gibbons, Rosenfield, & Wicklund (1977)
	Self-salience increases dispositional and attitudinal self-attributions	Pryor, Gibbons, Wicklund, Fazio, & Hood (1977)
	Self-salience inhibits or facilitates performance depending on level of evaluation anxiety	Liebling & Shaver, 1973

Continued

TABLE II—*Continued*

Manipulation	Results	Reference
Auditory perspective		
Audiotape playback	Self-salience exaggerates self-evaluation	Ickes, Wicklund, & Ferris (1973)
	Self-salience increases conformity to positive reference group	Wicklund & Duval (1971, study 1)
	Self-salience increases information search in difficult decisions	Wicklund & Ickes (1972)
Experimenter instruction	Self-salience increases attitude–behavior consistency for women	Cupchik & Leventhal (1974)
	Environment salience increases situational, decreases dispositional causality	Regan & Totten (1975)
	Salient actor causally prominent	Taylor & Fiske (1975, study 2)
	More recall for salient actor	
Placement of props		
Camera present	Self-salience increases self-relevant cognitions	Davis & Brock (1975)
	Self-salience increases self-relevant cognitions	Geller & Shaver (1976)
	Self-salience increases dissonance	Insko, Worchel, Songer, & Arnold (1973)
	Self-salience increases conformity to counterattitudinal behavior	Wicklund & Duval (1971, study 2)
Audience present	Self-salience worsens performance, more so if evaluation apprehension and mirror present	Innes & Young (1975)
	Self-salience inhibits aggression, when audience salient	Scheier, Fenigstein, & Buss (1974, study 2)

a dim light. Movement was manipulated by having one person rocking in a rocking chair, while the other person remained motionless. Pattern complexity was manipulated by having one person wearing a boldly patterned shirt, and the other, a solid gray shirt. Novelty was manipulated by having one male in a group wearing a shirt different in color from those of the other persons in the group. In a fifth study, they also looked at how a solo male in an otherwise female group and how a solo female in an otherwise male group were perceived. In studies 1–3, McArthur and Post found that a salient actor was viewed less situationally than a nonsalient actor, when the operationalizations were relative brightness and movement. The effect held partially for the complexity manipulation as well.

Manipulations of novelty, however, produce the opposite pattern: A novel individual's behavior is viewed more situationally than that of the nonnovel person. McArthur and Post (1977) found that the person in the novel shirt (study 4) and the solo male and female (study 5) were all seen as influenced by the situation rather than by dispositional factors. Taylor *et al.* (1977) also found a trend such that solo blacks' behavior was regarded as under the influence of situational factors. McArthur and Post (1977) attempted a resolution to this apparent contradition. They suggested that in attention experiments, one must consider the salience of the actor's background in addition to the salience of the actor's behavior. In the "novelty" studies, the actor is distinctive solely by virtue of the context. As such, we would expect a more situational interpretation of the actor's behavior, and indeed these are the cases where the reversals are found. Research by Arkin and Duval (1975) makes a similar point. The salience of the situation was manipulated by making items in the environment either stationary or moving. When the situation was dynamic, both actors and observers made high situational attributions, whereas when the situation was stable, the usual actor–observer differences emerged. [Interestingly, in a different context, Kelley (1971) and Snyder and Frankel (1976) make a similar argument.] In sum, the McArthur and Post effort at resolution seems to explain the apparent reversals within the salience findings quite satisfactorily: Causality is attributed to dispositions when attention is focused upon an actor and to situational factors when the situation is salient.

However, there are cases in which items assessing dispositional and situational causality simply fail to show effects at all (e.g., Taylor & Fiske, 1975). We can summarize by saying that we do not yet know what conditions are necessary to demonstrate the relationship between attention and attributions of differential dispositional or situational causality. There are psychometric problems with the dispositional-situational distinction. Taylor and Koivumaki (1976) found that the dispositional-situational distinction failed to fulfill the requirements of end points of a single continuum. The two sources of causality failed to operate in an hydraulic fashion. Taylor and Fiske (1975) found that many subjects failed to understand the distinction and/or did not perceive it as meaningful. There is some evidence that natural language causal inferences cannot easily be coded into

dispositional or situational categories (Garland *et al.*, 1975). Bell (1975) has suggested that the dispositional–situational distinction may mean different things to actors than to observers. Observers may be answering the question, "Why did *X* happen," whereas actors may be answering the question, "Given that I caused *X*, what were my reasons." Miller, Smith, and Uleman (1977) have found extremely low and nonsignificant correlations among variables purportedly measuring the same thing, measures which included a single continuum with dispositional and situational at the two ends, two separate continua, and open-ended measures coded into dispositional and situational categories. Future research efforts to examine causal attribution should seek less confusing and cumbersome measurement procedures.

V. Salience and Noncausal Perception

Generally, causal attribution has been the focus of empirical investigations of the effects of differentially salient stimuli. However, some other perceptions than causal ones have been investigated and appear to be affected by differential attention as well, most notably evaluations of personal qualities, perceived representativeness, and attitudinal consistency. The evidence bearing on these perceptions will be covered in the following sections.

A. ATTENTION AND EVALUATION

The evidence relating attention to evaluations suggests that attributes are evaluated more extremely in either a positive or a negative direction when one overattends to a stimulus. However, the evidence is largely inferential, rather than direct, since research in person perception has, for the most part, not been designed to examine the relationship between attention and evaluation (Fiske, 1977). Requirements for such a test are, first, a comparison person or condition against which to evaluate a salient other and, second, behavior which is clearly positive or negative. In most of the studies on attention and person perception, actors' behaviors have ranged from neutral to fairly pleasant, leading one to predict either positive exaggeration of attributes or possibly greater variance in ratings on evaluations.

For the most part, positive exaggeration has been the rule when exaggeration has been found. McArthur and Post (1977) found that the brightly lit actor was rated more positively than the dimly lit one, but the effect was not found with their other manipulations of figural emphasis. Likewise, Storms (1973) and Taylor and Fiske (1975), using the same questions, found no evaluative exaggeration of the salient person. However, in all three experiments, the behaviors were bland and the conversations rather uninteresting, and thus these nonresults are predictable.

Some of the studies of novelty (statistical or contextual rarity) have found

extremity in evaluations. Langer *et al.* (1976), for example, found that evaluations of both a physically crippled person and a pregnant woman were positively inflated compared with ratings of the same individual in "normal" attire; this trend toward artificially high ratings of the physically stigmatized has been noted by others as well (Kleck, Ono, & Hastorf, 1966). Though this effect has not previously been interpreted in attentional terms (Kleck, 1969), the appropriateness of such an interpretation should be clear, given that research demonstrates high differential attention to the physically stigmatized (Langer *et al.*, 1976). Taylor *et al.* (1977, study 1) found that a solo black was rated more positively than was a black in a mixed group or a comparable white. In their study 2, Taylor *et al.* (1977) found that a person perceived positively or negatively in a sex-integrated group was viewed even more positively or negatively when he or she was the only member of that sex in the group. This is the only effort thus far to examine divergent evaluations of others in both directions (positive and negative) within a single study, but together with the other supportive data, it strengthens the viability of the attention-extremity hypothesis.

Self-perception research also supports the hypothesis that attention increases the strength of evaluations. Duval and Wicklund (1972) hypothesized and found that under conditions of objective self-awareness, that is, self-focused attention, negative self-relevant thoughts increased (see also Ickes, Wicklund, & Ferris, 1973). However, more recently (Wicklund, 1975b) evidence has accumulated that positive self-relevant thoughts can be increased by self-focused attention too, that is, after a success experience or other form of positive feedback (McDonald, 1976; Gibbons, Rosenfield, & Wicklund, 1977).

The effects of attention upon evaluations are not confined to the person-perception and self-perception arena. There is evidence that attention to other kinds of stimuli, such as cognitions, increases their evaluative strength as well. Tesser, in a series of studies summarized in Tesser (1978), has in some cases instructed subjects to think about a particular stimulus (e.g., an object such as a picture or an attitude) and in other cases, he has prevented subjects from so doing through a distraction task (e.g., Sadler & Tesser, 1973; Tesser & Cowan, 1977). He finds that the more time a subject has to think about the stimulus, the more extreme evaluation of the stimulus becomes (e.g., Tesser & Conlee, 1975; Tesser & Leone, 1977). The experiments he reports range across a wide variety of stimulus items. Similar effects have been observed by M. Ross (1975); Zajonc, Markus, and Wilson (1974); Perlman and Oskamp (1971); Brickman, Redfield, Harrison, and Crandall (1972); and Grush (1976). In sum, the evidence is strongly supportive of the hypothesis that attention increases the strength of evaluations.

B. ATTENTION AND PERCEIVED REPRESENTATIVENESS

Tversky and Kahneman (1974) define a stimulus as representative if it is

perceived as a typical instance of its class. For example, Franco might be perceived as a typical instance of a dictator. Most of the studies relating person perception and attention do not lend themselves to a test of the hypothesis that attention increases perceived representativeness, in that it is not clear of what class the salient stimulus person might be representative. A few studies do lend themselves to examination of the question, specifically those which manipulate novelty by means of membership in a particular social category (e.g., sex), and the results suggest that attention does indeed increase perceived representativeness.

Taylor *et al.* (1977), in their study 1, found that subjects viewed black stimulus persons in somewhat stereotyped terms; when asked if the stimulus persons had played any particular roles in the group, subjects reported that blacks were more likely to be the group comedian and less likly to be the group leader. These attributes were somewhat more likely to be true of the solo black than blacks in the mixed group, though largely by dint of sheer frequency of being cast in a special role. That is, a solo black was seen as playing a special role in the group by 75% of the subjects, compared with 50% role ascription to blacks in the mixed group. The role that distinguished the solo black from other group members was most often that of "group organizer," an assistant who kept the group rolling and brought it back to its topic.

In their study 2, Taylor *et al.* (1977) found similar and stronger effects with perceptions of solo men and women in work groups. As in study 1, solos were more likely to be cast in special roles than were men and women in mixed groups, and again these roles often had sex-typed content, that is, "She was motherly," "He was a typical macho type." Consistent with these experiments are data from field studies by Kanter (1977) and Wolman and Frank (1975) on solo women in work organizations. They found that solo women were perceived as playing out highly sex-typed social roles in groups *vis-à-vis* their male colleagues. Kanter also found, and the personal experiences of tokens (Taylor, 1977) bears out the observation, that solo women or blacks are often cast as spokespersons for their entire sex or race. Overall, then, there is some support for the proposition that salience by virtue of category membership increases perceptions of category representativeness.

C. ATTENTION AND CONSISTENCY

Attitude change researchers of the 1960s noted with some alarm the striking lack of consistency between attitudes and the behaviors they presumably predict, as well as between attitudes expressed in one situation and attitudes expressed in another. Current research on attention and social perception indicates that the problem might be rephrased. Attitudes are indeed consistent, with each other and with behavior, but to varying degrees, depending on where the subject's attention

is directed. Research suggests that directing attention to a person's attitudes or behavior will increase attitude–attitude or attitude–behavior consistency respectively, but that directing attention to social norms or situational variables which are irrelevant to the subject's attitudes will reduce interattitudinal or attitude–behavior consistency. For example, when an experimental manipulation makes salient certain of the subjects' cognitions, subjects will evidence new attitudes consistent with those cognitions (Salancik & Conway, 1975). Further evidence for this principle comes from dissonance research. When subjects are distracted, little dissonance reduction occurs (Allen, 1965), but when subjects' self-attention is increased, dissonance reduction is greater (Brehm & Wicklund, 1970; Insko, Worchel, Songer, & Arnold, 1973). Research from objective self-awareness theory indicates that self-awareness makes subjects' attitudes more consistent across situations (Pryor, Gibbons, Wicklund, Fazio, & Hood, 1977), presumably because self-attention makes salient one's own cognitions (see also Wicklund, 1975a). However, when the disagreeing attitudes of others are made salient, self-aware subjects are *more* likely than others to conform (Duval, 1976; Wicklund & Duval, 1971).

Turning to the effect of self-attention on attitude–behavior consistency, Wicklund (1975b) argues that self-awareness focuses subjects' attention on any inconsisteny between their ideal and actual selves. An impressive array of studies shows that self-attending subjects are especially likely to behave in more ideal or desirable ways, for example, less physical aggression (Scheier, Fenigstein, & Buss, 1974), greater bystander intervention (Gibbons *et al.*, 1977), more restoration of equity (Chase & Gibbons, 1977), and better task performance (McDonald, 1976; Wicklund & Duval, 1971).

Overall, the data on attitudes, cognitive sets, and self-attention indicate that attitude–behavior and attitude–attitude consistencies and inconsistencies can be explained by focus of attention.

D. COMMENT ON NONCAUSAL PERCEPTIONS

To summarize, this section has reviewed evidence showing that differential attention exaggerates evaluations of a person, increases perceived representativeness, and can increase attitudinal and behavioral consistency. While these kinds of perceptions may not be as central to the perceiver's analysis of a social situation as are causal perceptions, they are important nonetheless. Perceptions of another person's friendliness or representativeness of some category can provide an inferential data base, which itself provides a basis for subsequent causal analysis. For example, having decided that a person is truly nasty will influence the probability of one's interacting with that person in the future and the perceptions of the person's motives for any subsequent behavior. Judging a person as representative of some category (such as blacks) rather than as an individual is

likely to lead to stereotyped interpretations of any subsequent behavior, other attributes, and personal motives. One's own attitude–behavior consistency leads to others drawing inferences about one, which in turn shape one's subsequent behavior. We would hope that in the future more attention will be paid to perceptions in addition to explicitly causal ones, since these other kinds of judgments do influence behavior and are likely to produce subsequent causal analyses.

VI. Salience, Attention, and Attribution: Mediating Processes

Why engulfment of one's attention should produce such a splendid array of effects, ranging from overrated prominence to exaggerated evaluation, is not entirely clear. Accordingly, some attempt to specify the mediating process is clearly warranted. In this section, we will examine various candidates for the mediation of the attention–causality link. We will explore the results from studies on amount and availability of recall, as well as distraction during encoding and decoding. The evidence suggests that memorial availability may be determined by encoding modality and that availability, in turn, has a direct effect upon perceptions of causality.

A. ATTENTION AND VOLUME OF RECALL

One effort to specify the mediating processes for the effects of attention on social perception is Taylor and Fiske (1975). Taylor and Fiske reasoned that differential attention might lead to differential volume of encoded information about a salient stimulus; when a perceiver was subsequently asked to record impressions, for example, "Who caused the conversation to proceed as it did?" the perceiver might simply have more data stored on the salient actor and, therefore, overrepresent that actor as the causal agent.

The evidence that differential recall accompanies differential salience is weak, but in the predicted direction. Taylor and Fiske (1975, study 2) found that more was recalled about an attended-to actor than about an unattended-to actor in two separate operationalizations of attention. In study 1, because of a ceiling effect, there was no differential recall. McArthur and Post (1977) measured recall in all five of their figural emphasis studies, and found that only in the "brightness" experiment was there differential recall of the figurally prominent individual's statements. In study 1, Taylor *et al.* (1977) examined recall of blacks' and whites' suggestions in a racially integrated situation versus a situation with a solo black person in an otherwise white group. There was a marginal effect for subjects to remember more of what the solo black said in comparison with the other group members. Berscheid *et al.* (1976) found that more was

recalled about the attended-to person (i.e., a future dating partner). In sum, of the ten efforts to measure volume of recall, five showed the predicted effect, five showed no effect, and there were no reversals. If these results are tabulated by taking the standard normal deviates of their respective probabilities (Rosenthal, 1978), the combined probability level for such a pattern is $p < .0001$. Thus, the overall pattern of recall effects supports the hypothesis. However, the failures to find the attention–recall effects are somewhat surprising.

Thus, differential attention can covary with differential recall, but is does not do so reliably. Furthermore, biased causal attributions have been obtained in studies that have not found differential recall. Accordingly, the hypothesis that differential amounts of encoded information mediate perceived causality is rendered an unlikely candidate for the process.

B. ATTENTION AND AVAILABILITY OF RECALL

Pryor and Kriss (1977) investigated whether or not availability of information might mediate between differential attention and biased attributions. They reasoned that, whereas subjects may well take in equivalent amounts of information about the salient and nonsalient aspects of their environment, they may have information about the salient part of the environment stored in a more easily retrieved form. To test this hypothesis, Pryor and Kriss first demonstrated that more salient stimuli (sentence subjects, as opposed to sentence objects) are more available (more quickly identified in a reaction time task). In study 2, they showed that the more salient stimuli were also more likely to be viewed as causes, thus confirming the tenability of their hypothesis. Consistent with previous studies, volume of recall was unaffected by the salience manipulation, clarifying that ease of retrieval and not amount of information encoded is the important variable. While the Pryor and Kriss investigation does not resolve the issue of mediation entirely—first, because the design does not test mediation (as will be discussed), and second, because the stimuli involved are limited to words in sentences rather than social stimuli—the study is nonetheless inventive and highly suggestive (see also Geller & Shaver, 1976).

Rholes (1977) conducted a study which is also consistent with the Pryor–Kriss argument. In a first study he had subjects learn word lists containing certain critical words (priming words), for example, "doctor." In a second and ostensibly unrelated study, the same subjects were asked to assign causality in descriptive passages, for example, "the physician chastised the patient." When particular words had been made available to subjects (e.g., doctor, in study 1), their synonyms were more often cited as causes (e.g., physician, in study 2). Higgins, Rholes, and Jones (1977) and Salancik (1974), using similar formats, found similar results.

Taken together, these studies suggest that total amount of information taken

in need not be affected by differential attention (though it can be). What the availability explanation suggests is that somehow the information connected with the salient person or attribute is stored at the top of the mental heap or in some easily retrieved form. What form this might take has yet to be addressed; some speculations will be offered later on. In conclusion, the evidence for selective retrieval in the attention studies is stronger than that for selective encoding, although the latter, as we have already seen, can occur, too.

C. COMMENT ON MEDIATION STUDIES

The mediation studies, while inventive and highly suggestive, also point out how underdeveloped our tests of mediation are. In their research, social psychologists have constructed demonstration studies, sets of antecedent conditions which produce anticipated effects, which are not inconsistent with particular hypothesized processes. However, rarely is any independent evidence gathered which makes the imputed process more tenable than any of several other process models which are consistent with the same data (Taylor, 1976).

While the studies cited above are certainly superior to the average method of assessing mediation, they do not enable us to choose among the causal paths in Fig. 2. Although Pryor and Kriss make a good argument against (b) in their study, they cannot distinguish between (a) and (c), (c) being the mediational path that is proposed. A superior methodology would be to demonstrate that the independent variable → dependent variable link disappears when the mediating process is interfered with, and some procedures appropriate to testing this point are partial correlations, covariance analysis, and path analytic techniques.

D. DISTRACTION AND MEDIATION

To return to the mediation issue, one possibility regarding the effects of attention upon perceptions of causality is that the relationship can be made to disappear under either of two sets of conditions: distraction during encoding or distraction during retrieval. That is, if little information gets in in the first place,

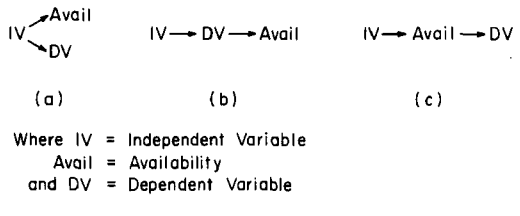

Fig. 2. (a–c) Range of possible relations among availability, manipulated independent variables, and measured dependent variables.

subjects should have little to go on for their ascriptions of prominence and causality. And if salient information is not available because retrieval is blocked by distraction, again there should be little opportunity for bias to manifest itself.

Fiske and Taylor (1977) accordingly reran their point-of-view experiment with two additional manipulations. Subjects took part in the standard point-of-view procedure, with half the subjects receiving a distraction task while they observed the interaction (e.g., counting the number of pronouns used by both speakers) and half receiving no distraction. Crossed with this variable was a second variable of availability–no availability; for half the subjects, as they filled out the dependent measures, there was an engaging video presentation going on, a manipulation which should harm the ability to retrieve aspects of the prior conversation. The remaining half of the subjects were not distracted as they filled out the dependent measures (perceived causality). Fiske and Taylor found, somewhat to their surprise, that neither distraction manipulation eliminated the point-of-view effect. The video distraction task simply resulted in subjects' spending more time recording their impressions of the conversation. However, data from the pronoun distraction condition revealed some suggestive points about mediation. Subjects who performed the distraction task remembered virtually nothing about the content of the conversation they observed. Yet they manifested the point-of-view effect as strongly as the nondistracted subjects. The results of this study strongly suggest that the point-of-view effect depends upon visual and not verbal information. The next section pursues this argument further.

E. FURTHER PERSPECTIVES ON MEDIATION: IMAGING AND DIFFERENTIAL ATTENTION

A brief digression is now necessary. As noted earlier, Jones and Nisbett posited several possible mediators of actor–observer effects. In addition to the attentional explanation, they suggested that actors and observers have differing levels and kinds of information about their own versus another's behavior which may mediate whether dispositional or situational attributions are made. Taylor and Koivumaki (1976) and Nisbett, Caputo, Legant, and Maracek (1973), however, found that neither degree of acquaintanceship nor affective involvement predicted differential dispositional or situational attributions. Taylor and Achitoff (1974) found that perceived similarity to the actor also did not reduce observers' inclination to make dispositional attributions for an actor's behavior.

Two studies (Regan & Totten, 1975; Taylor & Achitoff, 1974) have successfully altered observers' attributions about actors' behaviors. In both cases, observers were encouraged to take the role of the actor and try to see the world as the actor saw it. Under these circumstances observers do make situational attributions for actors' behavior. Taylor (1975b) has argued that what subjects in the

Regan and Totten and Taylor and Achitoff studies did was to adopt the actor's point of view in the mind's eye. They constructed a visual image and scanned it in a fashion similar to what subjects do when they scan their actual environment. When it came to attributing causality, they, like subjects in real perspective experiments, overattributed the information which had been salient to them.

This conjectural explanation has some supportive evidence behind it. Kosslyn (1973, 1975; Kosslyn, Holyoak, & Huffman, 1976; Kosslyn & Pomerantz, 1977) has demonstrated that many of the properties of constructed images are analogous to those of percepts. He showed, for example, that it takes longer to identify an attribute of an image that is small than one that is large. It takes longer to identify a property of the left side of an image if one is attending to the right side than if one is attending to the left side. Social material is also affected by the imaging process. Pinto and Abelson (1976, unpublished observations; Abelson, personal communication) asked people to imagine that they were observing a series of actions from a balcony, as the actor in the story, or with no particular vantage point. They were read a series of actions including ones that were best seen from far away, as well as ones which could be best experienced by the main character (or actor) in the story. Vantage point influenced recall of the story with balcony subjects remembering more "far visual" details and actor subjects remembering more "body sensation" details. Taylor, Etcoff, Fiske, and Laufer (1978) asked people to imagine that they were one of four persons in a story: a cab driver, his passenger, a motorcyclist, or a Toyota driver positioned behind the motorcyclist. In essence, this is an imaged point-of-view manipulation. The story contained a large amount of information, variously best "seen" by particular characters. At the end of the story, the cab and motorcycle crashed into each other. Taylor *et al.* found that subjects remembered the information best "seen" from their particular vantage point, and this was true regardless of whether subjects were actors (cabbie or motorcyclist) or observers (passenger or Toyota driver). Furthermore, subjects tended to attribute blame in the accident to the person who had engulfed their imaged field, that is, the cabbie and passenger to the motorcyclist and the motorcyclist and Toyota driver to the cabbie.

What is intriguing about this image explanation is that not only might it explain the discrepencies among the actor–observer studies, it might also elucidate the attention → availability → causality links. It may well be that when attention is manipulated, though verbal material is stored in a relatively unbiased fashion, only the salient aspects of the environment are encoded in image form. When it comes time to attribute causality or evaluate attributes, the subject is able to retrieve visual instances of only the salient portions of the environment and thus they become overrepresented in the informational basis of the explanation. Thus, for example, when asked "Who talked more?" the subject can bring to mind more pictures of the salient actor's talking than instances of the other

person's talking. Likewise, when asked "How pleasant was this person?," the subject can bring to mind more instances of the salient person's behavior (if the individual was pleasant) or more instances of unpleasant behavior (if the individual was unpleasant), thus creating evaluative extremity. It should be possible to test this hypothesis by demonstrating biased recollection of visual material in the absence of biased recollection of semantic material. Additionally, reaction times for recognition of portions of the salient environment should be faster than reaction times for the nonsalient portions of the environment.

Alternatively, it may be that the effects of differential attention upon social cognitions are jointly mediated by visual and verbal information. We have already seen that somewhat more verbal information is retained about salient than nonsalient stimuli. It is also likely that more visual information is retained about a salient than a nonsalient stimulus. Accordingly, it may be the case that information about a salient stimulus is more available than information about a nonsalient stimulus because it has been doubly encoded, in both words and images. That is, information may be more easily brought to mind if it is retrievable through more than one mode.

To summarize, what are the possible relationships between differential attention and attributions of causality? The relationship may be direct (nonmediated); it may be mediated by differential verbal recall; it may be mediated by differential visual information; or it may be doubly mediated, by both visual and verbal recall. We are not yet in a position to select an explanation. However, preliminary results from path analytic models suggest that dual mediation, rather than either single path or the direct (nonmediated) path, may be the best explanation (Fiske, Taylor, & Kenny, 1978).

F. COGNITIVE SALIENCE AND MEDIATION

These alternative explanations help fill out the mediational path between salient visual stimuli and their effects upon various dependent variables, but the explanation obviously applies only for visual manipulations of salience. It does not explain how salient cognitions operate upon perceptions of causality and related dependent variables. We, like Nisbett and Valins (1972), propose that a cognition, once made salient, functions as an hypothesis. A search, however sketchy, is then made for data. This search is undoubtedly biased in predictable ways.

An overuse of confirming evidence is one such bias. In the L. Ross, Lepper, and Hubbard (1975) study, for example, subjects were given false feedback leading them to believe that they were either very good or very bad at a social sensitivity task. Later, after subjects were told that the feedback was false, the authors found that subjects nonetheless imputed to themselves attitudes con-

sistent with the feedback. L. Ross *et al.* (1975) reasoned that once subjects had received the false feedback, they retrieved previous incidents which were consistent with the feedback. When they were told the feedback was false, they simply erased one piece of what was now a highly buttressed opinion; this opinion was consistent with the feedback and based on evidence which was true and salient, but only as a result of the biased search (see also Taylor, 1975a).

These conjectures are also consistent with the literature on perceived covariation. Smedslund (1963) and Jenkins and Ward (1965) suggest that in estimating degree of correlation $++$ instances are the primary sources of data considered, with $+-$, $-+$, and $--$ instances going relatively ignored. An explanation for this pattern is that hits are easier to see or are more salient than are nonoccurences of events. That is, as L. Ross (1977) notes, we do not chronically attend to things that do *not* happen; rather, we are biased in favor of effects.

A second prominent bias in search behavior is that sample size goes substantially ignored as a basis for evaluating the quality of data (Kahneman & Tversky, 1973). Indeed, people's judgments are often more influenced by colorful and immediate bits of case history information than they are by objectively better, but relatively pallid statistical information (Nisbett *et al.*, 1976). Nisbett *et al.* argued that this is due to the fact that individual instances are concrete, vivid, and salient. We agree with this position and would carry the argument one step further. Case history information is more imageable than statistical information. Accordingly, it may well be encoded both iconically and in verbal form, whereas statistical information may be encoded only in verbal form. When an individual must then use information to make a judgment, the information which has been encoded through more than one mode will be more available. This again suggests the general point that salient information may be encoded through more than one channel, with the result that it will subsequently be more easily brought to mind, since it is retrievable through more than one mode. Accordingly, the dual encoding hypothesis may explain the results of experiments that manipulate the salience of cognitions, as well as those that manipulate perceptual salience.

VII. Generalizability of Salience Effects

The salience-attention literature that we have just reviewed presents a dismally simplistic view of the human thinker. This nonthinker seems to be subject to the arbitrary and whimsical manipulations of an experimenter, drawn in by whatever information is made salient. There is a very real and important question of under what circumstances salient information does have an impact on explanation and understanding. Do salient stimuli have an impact in high information situations? Under conditions where the perceiver is involved in the scenario?

Under conditions of perceiver arousal? Each of these questions has some evidence which bears on the predictions.

A. SALIENCE AND INFORMATION LEVEL

One might hypothesize that salient information would have an impact on attribution only under the most bland and uninvolving of conditions. That is, if the scene is boring and generally highly redundant, subjects' attention might be easily diverted by informationally irrelevant but salient cues, such as movement or color, but not if the situation is generally higher in information level. In the point-of-view setting, for example, we might expect that causal attribution to the person who engulfs one's visual field would be obviated if a more engrossing conversation were taking place. The only evidence on this point is a pilot study by Gartrell (1975) in which, instead of a bland conversation between two persons who participated about equally, subjects viewed a conversation in which one actor's behavior (talkativeness) was clearly determined by the reticence of the other. The more talkative actor became increasingly anxious during the conversation, as he tried to fill up the silences. Under these conditions, there was a clear main effect for which actor had caused the situation to evolve as it had, but the point-of-view manipulation nonetheless strongly predicted the degree to which this was true. Preliminary evidence, then, suggests that even in high-information situations, salience affects attributions, but more data and different manipulations of information level are clearly needed.

B. SALIENCE AND INVOLVEMENT

A second issue raises the question of whether or not subject involvement in the situation would reduce the impact of salience manipulations. There are many ways, of course, of manipulating involvement. One might, for example, manipulate point of view (Fig. 1) in a situation in which subjects have a strongly held position on the issue or a personal relationship with one of the participants. Alternatively, one might manipulate whether or not the outcome of the situation has any personal relevance for the subject. On this latter point there is some data from the field of self-perception. Taylor (1975a) presented false feedback to subjects suggesting that they were attracted to men they had previously rated as medium (less preferred) in attractiveness. She found that subjects rated the less preferred picture much higher than previously, and the initially preferred photo somewhat lower following the feedback. However, in a second experimental condition, the subjects were told that they would actually be meeting and interacting with some of the men in the pictures. Under these circumstances, false feedback not only did not show up as a determinant of the picture ratings, but

subjects actively refuted the implications of the feedback. The false feedback model was quite successful in predicting to a situation of low subject involvement and quite unsuccessful when the level of involvement was higher. In this experiment, then, personal involvement, as operationalized through anticipated future consequences, reduced the impact of the salient stimulus (the false feedback). Whether this would be true of visual salience effects or of other manipulations of involvement is unknown.

C. SALIENCE AND AROUSAL

A third variable of interest in this context is arousal. The effect of arousal on attention is to reduce the range of cues attended to (Easterbrook, 1959; Kahneman, 1973). Attention becomes more focused. Both Hull's and Spence's theories of learning predict that under conditions of arousal, the most obvious or familiar cues will be utilized. Thus we would expect that under conditions of high arousal, attention to salient information should be greater than under conditions of low arousal. The treatment of certain emotional disorders draws on some of these assumptions. For example it is believed that part of the problem experienced by both chronically test-anxious people and stutterers is that their own shortcomings and worries about their disorder are salient to them, rather than appropriate environmental cues, such as the task itself (for test-anxious people) or the words that they are communicating (for stutterers). Under conditions of anxiety, these tendencies may be increased. Wine (1971), for example, found that this was precisely the case in an investigation of task performance anxiety. Chronically self-focused subjects, under conditions of anxiety arousal, further narrowed their self-attention to the detriment of task-related cues. Storms and McCaul (1976) proposed that anxiety exacerbates stuttering and other emotional disorders because the disorder (e.g., stuttering) is the dominant mode of responding in the situation. Liebling and Shaver (1973) also found that self-focused attention interfered with task performance at high levels of evaluation anxiety. One might expect that, for these subjects, self-attributions of blame and responsibility would also increase under conditions of arousal, since self-focused attention is increased. Although there is no direct data as yet on the arousal–causality relationship in attributions, the relationship between arousal and increased attention to salient stimuli is reasonably clear. Whether attributions are similarly affected by arousal should be a focus of subsequent research.

What is interesting about the predictions ventured above is that they are somewhat contradictory. Under most circumstances, we would expect level of information, subject involvement, and subject arousal to be highly correlated, and yet the implications of each variable for the effects of salience are different. Be that as it may, these findings will fill an important gap in a literature which

has, until now, examined the impact of salient stimuli only in relatively uninvolving settings.

D. SALIENCE AND INDIVIDUAL DIFFERENCES

Increased involvement in a situation may, instead of increasing or decreasing the strength of salience effects, merely change the determinants of what is salient. That is, in addition to principles of figural emphasis provoking differential attention, it may be that under conditions of enhanced involvement, differences in individual need states, personality, prior reinforcement schedules, or schema use predict differential attention without necessarily changing the effects of salience upon attributions and evaluations. What might some of these individual differences be (cf., McGuire & Padawer-Singer, 1976)?

Temporary need states clearly influence direction of attention. A thirsty person scans the environment for drinking fountains, while a driver running out of gas looks for gas stations. When people are lonely, they seek familiar faces, while bored people look for novel stimulation. People who are anticipating future interaction with someone spend more time looking at that person than they do to people with whom they anticipate no future interation (e.g., a date versus nondate; Berscheid *et al.*, 1976).

Chronic individual difference orientations may influence attentional behavior. Snyder (1976) has presented convincing evidence that individuals differ consistently in the extent to which they monitor their own behavior and environment. This dimension, termed self-monitoring, may well be one of attentional style, or differential receptivity to cues which call for directed attention to the environment and the self (see also Berscheid *et al.*, 1976). Other chronic individual differences also affect attention style, such as anxiety (Wine, 1971), need for stimulation (Sales, 1971), locus of control (Baker, 1974), and obesity (e.g., Kozlowski & Schachter, 1975).

A previous history of positive or negative reinforcement in an environment either from persons or from objects should influence direction of attention. Individuals can be expected to attend to objects and persons who have positively reinforced them in the past so as to approach them and increase the chance of subsequent reinforcement. Conversely, individuals should attend to those who have negatively reinforced them in the past, presumably for the purpose of avoiding them.

Individual cognitive schemas can affect what information is attended to. Markus (1977) has presented convincing evidence that people take in and process information about themselves faster if it fits a schema they hold about themselves than if it does not (see also Tesser, 1978).

Finally, personal and often long-term interests influence what information

people seek out. The literature on selective exposure (Sears, 1968) indicates that individuals seek out information consistent with their positions on issues if it will be useful to them. Although Sears' review examines primarily selective exposure to written persuasive messages, the principle can be expected to apply to other kinds of search behavior as well, for example, visual exploration of a new environment. That is, we direct our own attention intentionally to seek out information for a given purpose or goal, and one of the main determinants of intentional attention is enduring interests.

It should be clear from the conjectural nature of this section that little research has attempted to interrelate perceiver variables, environmental stimuli, and focus of attention. In our opinion, this area merits investigation, and research should focus on individual differences in sensitivity to certain classes of cues and temporary need states which restrict, enlarge, or specify the kinds of information individuals will attend to, especially under conditions of high involvement.

E. COMMENT ON GENERALIZABILITY OF SALIENCE EFFECTS

Overall, there is no strong basis for predicting that salience effects will disappear under conditions of high involvement. However, even if it is found that salience effects are most likely to emerge under conditions of low involvement, this does not trivialize the effects. Low-involvement behavior is more characteristic of our daily activities than we would like to admit. For example, false feedback studies have real-world analogs in the influence of hormones, blood sugar level, and the like on mood and the course of social interactions. Cocktail party opinions, lunch arguments, and bus ride debates can probably be elucidated by knowledge of what cues or attitudes are made salient in the situation. Langer (1978) has chronicled the astonishing wealth of situations in which we fail to evidence any thinking at all.

Critics of the attentional approach may be right in saying that salience effects pertain to superficial processing. We would argue, by way of rebuttal, that our daily judgments often are superficial, and second that, once formed, an opinion tends to be buttressed rather than reconsidered. A judgment based on attentional phenomena takes on a life of its own, regardless of the fallibility of the original perception. Carefully considered thoughts may well be based on phenomena such as the seemingly trivial salience effects we describe here.

Furthermore, as the data come in, the generality of salience effects is more and more apparent. If people indeed conduct a biased search for cognitions supporting a preliminary attitude, as L. Ross, Lepper, & Hubbard (1975) and we have hypothesized, then the effects of seizing on salient data should actually increase over time. For example, Tesser (1978) finds that thinking about a stimulus polarizes its initial evaluations. Thus in-depth processing, rather than attenuating salience effects, may in fact increase them.

In sum, we are suggesting that the array of situations in which salience effects have been demonstrated thus far is sufficient to justify its status as a research problem and to demonstrate its applicability to real-world situations. Any research which demonstrates that salient stimuli have an impact in more involving, arousing, or informative situations will simply increase the range of already substantial generalization.

VIII. Implications of a Psychology of Salience

The psychology of salience is embarrassing because it suggests first that people commonly utilize irrelevant and trivial social cues for drawing what would seem to be sophisticated inferences, and furthermore that they do so without awareness. Nisbett and Wilson (1977) report a series of experiments which leads one to a similar conclusion. They demonstrated that subjects are consistently unable to report what stimuli had an impact on their behavior. Rather, they report consensually appropriate, plausible explanations for their behavior. The conclusion reached by Nisbett and Wilson is that people may well have no direct access to their thought processes. Further evidence for the unaware social perceiver comes from research on "scripts." Langer (1978) has suggested that people react to many social situations with overlearned, almost reflexive, cognitive reactions, what Abelson (1976) terms well-rehearsed "scripts." For example, when people first meet each other, they exchange a variety of social pleasantries; yet, if they were forced to reconstruct precisely what they did and said to each other, they would probably not be able to do so. Langer's general point is that some of what we call thought may turn out to be as automatic as most of our overlearned motor behavior, like driving or riding a bike.

Despite such evidence, the notion of automatic reactions to salient cues remains unaccepted. Researchers who obtain salience effects or who comment on others' salience effects go to great pains to impute to subjects a more rational, conscious information-processing strategy than we believe is actually occurring or certainly than there is evidence for. Subjects likewise find salience hypotheses absurd, and during debriefs they vehemently deny that their impressions and causal attributions could have been shaped by trivial but salient stimuli. Reasons for such negative reactions seem to be based on several factors. First, the phenomenal self experiences its reactions to social situations as thought out and mulled over, not as automatic. Second, the thought processes one imputes to oneself do not bear any similarity at all to the strategies salience studies suggest one is actually using. Finally, one can conjure up many cases in which it is only through the intentional application of rational thought processes that one has

succeeded in solving a problem. These all contribute to a belief in thoughtful processing.

It is possible, however, to salvage both viewpoints of the social perceiver. Though limitations of space preclude a complete discussion of this issue here, we will offer a few speculations as to how this salvaging operation might proceed. A number of researchers in cognitive psychology have suggested that there may be two modes of processing information, an automatic process and a controlled process (e.g., Atkinson & Shiffrin, 1968; Deutsch & Deutsch, 1963; LaBerge, 1975; Neisser, 1967; Schneider & Shiffrin, 1977; Shiffrin & Schneider, 1977). In the most recent version of this argument, Schneider and Shiffrin (1977) have delineated these processes as follows:

> Automatic processing is activation of a learned sequence of elements in long-term memory that is initiated by appropriate inputs and then proceeds automatically—without subject control, without stressing the capacity limitations of the system, and without necessarily demanding attention. Controlled processing is a temporary activation of a sequence of elements that can be set up quickly and easily but requires attention, is capacity-limited (usually serial in nature), and is controlled by the subject [p. 1].

They further note that controlled processing is used in difficult, unpracticed situations, whereas automatic processing, which does not require attention, develops "following consistent mapping of stimuli to responses over trials" (p. 1), for example, after a lot of practice.

The psychology of salience with which we have been concerned in this chapter may well reflect automatic processing. We would argue that selective attention to movement, brightness, complexity, and novelty (all factors which, as we have seen, influence social perception) lies within the province of automatic processing. They may well be stimulus qualities which the perceiver has never had to learn to respond to, but to which one's attention is instead drawn naturally. Not all automatic processing is unlearned. Selective attention as a function of individual differences, instructional set, and temporary need states may be learned modes of automatic processing. That is, over a lifetime, the perceiver acquires ways of acting upon the environment (selecting out particular cues, scanning for certain attributes) which, after practice, become part of automatic processing as well. Accordingly, these automatic ways of searching out and abstracting meaning from social situations come to occur spontaneously and without awareness, when the appropriate inputs occur. Individual needs and certain social schemas or scripts seem to fall into this category in that they are overlearned and well-practiced. To take a slightly different approach, certain social situations which are frequent, redundant, and boring may be more likely than others to elicit in subjects the automatic mode of processing. As we noted earlier, these characteristics have been true of most of the experimental tests of salience hypotheses. They include conversations in which little happens, dis-

cussions in which the social perceiver has little personal investment, or situations engaging low levels of arousal.

It is important not to overstate the relationship between the cognitive formulations just discussed and the social perceptions we are attempting to explain. Social perception does not consist of a single automatic or controlled process, but rather a set of activities, some of which are controlled and others of which are automatic. For example, just reading the experimenter's questions involves some automatic and some controlled processes (Shiffrin & Schneider, 1977). In the salience phenomena, what we are hypothesizing is that the search of the social environment is automatic, though not necessarily the process of putting together the information that search yields to produce a social judgment. Hence, the evaluation of a social situation seems to the social perceiver to be a rational, conscious process, when the information on which it is based may be a function of salient cues.

If these conjectures are accurate, it would explain both why salience effects are counterintuitive (because the social perceiver is not aware of them) and why perceivers are so certain that they have access to many of their thought processes (because much of the time they in fact do). Approaches like Kelley's Analysis of Variance model may be instances of controlled processing, whereas automatic social processing may be fleshed out by salience effects and by social scripts.

If these speculations are borne out, they further suggest that the role of naive epistemology in theory derivation must be altered. That is, while naive epistemology may continue to play an important theory-generating role (Heider, 1958), its evidentiary role in the verification of hypotheses would seem to be limited to situations in which we are assured that some controlled processing is going on. Automatic processes necessitate the use of measures of reaction time, scanning, recall, and the like—ones that do not rely on the perceiver's awareness of internal processes. Controlled processing, on the other hand, can be elucidated by subject protocols and open-ended dependent measures in which the perceiver may have some insight into the processing.

IX. Summary

Attention within the social environment is selective. It is drawn to particular features of the environment either as a function of qualities intrinsic to those features (such as light or movement) or as a function of the perceiver's own dispositions and temporary need states. These conditions are outlined in Table III. As a result of differential attention to particular features, information about those features is more available to the perceiver. Relative to the quantity of information retained about other features, more is retained about the salient features. Information about salient features (stimuli) may be encoded in more

TABLE III
EFFECTS OF SALIENT INFORMATION ON SOCIAL PERCEPTION

Determinants of selective attention	Mediation	Social perceptions
Properties of stimuli	Higher volume of recall	Heightened learning
Brightness		
Contrast		
Movement		
Novelty		Greater prominence and causality
Properties of situation	Greater availability of information (possibly in image form)	Intraindividual consistency
Environmental cues		
Instructional set		
Properties of perceiver	Possible multimodal encoding of information (semantic and iconic)	Exaggerated evaluations
Temporary need states		Perceived representativeness
Enduring individual differences in traits, reinforcement schedules, schemas		Effects on dispositional and situational causality (unclear)

than one manner, for example, both semantically and iconically. And the information may be encoded in more accessible form, for example, as images in the visual salience studies. Accordingly, when the perceiver is asked to make a judgment about a particular stimulus, one accesses recall to see what kind of information is available. The more instances of a particular behavior one can find, the more confident one is that the behavior reflects an attribute of the stimulus. Accordingly, persons, when they are salient, are seen as more causally prominent (because the perceiver has more instances of their behavior overall), more evaluatively extreme, and possibly more representative of the class of which they are a member. When the salient person is the self, the same effects occur, and the individual is also found to show more consistency in attitudes and behaviors. These processes may occur primarily in situations which are redundant, unsurprising, uninvolving, and unarousing. They seem to occur automatically and substantially without awareness, and as such, they differ qualitatively from the intentional, conscious, controlled kind of search which we like to think characterizes all our behavior.

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