Psychological Review
1991, Vol. 98, No. 1, 54–73

0033-295X/91/$3.00

Social Perception and Social Reality: A Reflection–Construction Model

Lee Jussim
Rutgers University

This article presents a reflection–construction model of relations between social perception and social reality. The introduction suggests that 1 theme underlying much social psychological theorizing and research is the belief that social perception is a major force in the creation (construction) of social reality. Strong constructivist perspectives largely ignore or discount accuracy in social perception. To redress this limitation, a new theoretical model is presented, the reflection–construction model, which explicitly specifies several ways in which social perception may relate to social reality. This model incorporates phenomena such as the ability of social perception to accurately predict without influencing social reality; to create social reality through self-fulfilling prophecies, self-sustaining prophecies, and self-defeating prophecies; and to lead to biased judgments regarding social reality. When interpreted through the reflection–construction model, empirical research on relations between social perception and social reality often provides more evidence of accuracy than of self-fulfilling prophecy or biases. The evidence, therefore, supports a weaker version of the social constructivist view.

"If men define situations as real, they are real in their consequences." Social scientists have been especially fond of this famous quote by philosopher W. I. Thomas (e.g., R. A. Jones, 1977; Markus & Zajonc, 1985; Merton, 1948), probably because it reflects a popular theme of modern social psychology: the power of human beings to construct their own social realities. In contrast, I know of no articles quoting the following comment by Bertrand Russell (1935/1974, p. 65): "It is also clear that, if everyday experience is not to be *wholly* illusory, there must be some relation between appearance and the reality behind it." The total absence of quotes similar to this one seems to reflect an implicit corollary of the constructivist perspective: Social perception may often be largely impervious to social reality.

How are social perception and social reality related? Is social reality so malleable that it is readily transformed by erroneous social beliefs? Is social perception highly resistant to social reality? To address these questions, I first document a strong social constructivist tradition within social psychology and trace some of its roots. Next, I present the reflection–construction model, which integrates the potential for social perception to construct social reality with the potential for social perception to be highly sensitive to social reality. Merely by incorporating causal relations already known to exist, this model generates new insights into relations between social perception and social reality. It also provides a framework for interpreting previous research on relations between social perception and social reality.

Social Construction: The Alleged Power of Belief to Create Social Reality

For about 35 years, one of the major themes of social psychological theorizing and research has been that social reality is constructed by the participants involved in interpersonal interaction. There are at least two versions of this social constructivist perspective, a *strong version* and a *weak version*. The strong version assumes that social perception *creates* social reality as much or more than it reflects social reality (e.g., see Fiske & Neuberg, 1990; Fiske & Taylor, 1984; E. E. Jones, 1986; Markus & Zajonc, 1985; Miller & Turnbull, 1986; Snyder, 1984). The strong social constructivist perspective implicitly or explicitly emphasizes the *inaccuracy* of social beliefs. The one exception is the specious accuracy that comes from beliefs leading to their own fulfillment.

The weak version of the social constructivist perspective also acknowledges that people's errors, prejudices, and misbegotten beliefs *sometimes* create social reality. It also suggests, however, that people's perceptions often may accurately reflect social reality and, even when erroneous, these perceptions do not necessarily have much influence on social reality (e.g., Brophy, 1983; Higgins & Bargh, 1987; Jussim, 1989; Schneider, Hastorf, & Ellsworth, 1979).

Strong or Straw Constructivist Perspective?

In much of the remainder of this article, I present a theoretical perspective and review empirical evidence suggesting virtually no support for the strong constructivist perspective. But is this news? Does anyone really believe that social perception is as inaccurate and as powerful an influence on social reality as I have just suggested characterizes the strong constructivist per-

I wrote this article while I was supported by a National Academy of Education Spencer Fellowship.

I gratefully acknowledge the insightful comments on earlier drafts provided by Jack Aiello, Richard Ashmore, Richard Contrada, David Funder, Monica Harris, Dave Kenny, Jon Krosnick, Ann O'Leary, Ronald Taylor, and the anonymous reviewers.

Correspondence concerning this article should be addressed to Lee Jussim, Department of Psychology, Rutgers University, New Brunswick, New Jersey 08903.

spective? Or is my presentation of the strong constructivist perspective just a straw man?

Consistent with the existence of a strong constructivist perspective, (a) many theorists explicitly emphasize the importance of constructivist phenomena and promote the strong constructivist perspective, (b) much empirical research emphasizes error and bias in social perception, (c) theoretical articles directly and explicitly suggest that social beliefs create social reality as much or more than social reality influences social beliefs, and (d) evidence suggesting accuracy is often overlooked. These first 2 points are discussed next, and the latter 2 points are addressed later in this article.

First and foremost, the existence of the strong constructivist perspective is dramatically illustrated by the explicit claims made by many prominent theorists addressing relations between social perception and social reality. Consider the following quotes:

> Social perception is a process dominated *far more* by what the Judge brings to it than by what he takes in during it. (Gage & Cronbach, 1955, p. 420, emphasis added)

> It [social perception] often has significant and nearly direct influence on the perceived target. It creates social reality . . . *the hallmark of the cognitive perspective in social psychology is the constructive nature of social cognition.* (Markus & Zajonc, 1985, pp. 212–213, emphasis added)

> Constructivism asserts that we do not discover reality, we invent it. (Hare-Mustin & Maracek, 1988, p. 455)

This viewpoint may be best summarized by an amusing, but (perhaps) only half-joking, comment by Hamilton (cited in Miller & Turnbull, 1986, p. 247): "If I didn't believe it, I wouldn't have seen it."

Also, other researchers clearly have interpreted much current theory and research as reflecting the strong form of the constructivist perspective:

> we are left with the uncomfortable conclusion that the give-and-take of *social interaction cannot disconfirm prior impressions of others.* In this respect at least, reality becomes irrelevant, if not denied. (Bond, 1987, pp. 39–40, emphasis added)

> the current Zeitgeist emphasizes purported flaws in human judgment to the extent that it might be "news" to assert that people can make global judgment of personality with any accuracy at all. (Funder, 1987, p. 83)

> accuracy of perception implies a reality to be perceived, and the current resurgence of phenomenological approaches to social psychology tends to deny any such reality (M. Cook, 1984, p. ix)

> the literature has stressed the power of expectancies to shape perceptions and interpretations in their own image (E. E. Jones, 1986, p. 42)

Second, consistent with the strong constructivist perspective, many of the major phenomena addressed by social psychology emphasize error and bias: fundamental attribution error, false consensus, false uniqueness, self-serving bias, self-fulfilling prophecy, self-justification, self-consistency bias, hindsight bias, illusion of control, mindlessness, illusory correlation, illusion of invulnerability, base-rate fallacy, conjunction fallacy, hypothesis-confirming bias, and so on. Perhaps for these reasons, whole books have addressed the ways in which social beliefs may be self-fulfilling and the shortcomings of human judgment and inference (R. A. Jones, 1977; Kahneman, Slovic, & Tversky, 1982; Nisbett & Ross, 1980).

On the basis of the written claims made by theorists addressing relations between social perception and social reality, the emphasis on error and bias, the relative dearth of research on accuracy, and the ways in which others have interpreted previous theoretical perspectives and empirical research, I conclude that the strong constructivist perspective is no straw man. Similarly, although much of the research on errors and biases has focused on *processes* of social judgment, it often has been misinterpreted as demonstrating inaccuracy in the contents of social judgment (Funder, 1987). This type of misinterpretation may further attest to the often subtle influence of the Zeitgeist created by the strong constructivist perspective. Of the few articles suggesting that social perception often may be reasonably accurate, many have been written as direct challenges to this Zeitgeist (e.g., Funder, 1987; Malloy & Albright, 1990; McArthur & Baron, 1983; McCauley, Stitt, & Segal, 1980). Regardless of whether anyone actually believes in the strong constructivist perspective, clearly many choose research topics, write, and interpret research as if they believed it.

Historical Roots: The New Look in Perception

Both the strong and weak social constructivist perspectives, at least within social psychology, received much of their impetus from the "New Look in Perception" research of the 1940s and 1950s (Markus & Zajonc, 1985). The New Look challenged the prevailing view of the times that perception was essentially a passive process involving objective perception of stimuli (social or otherwise). In contrast, the New Look viewed goals, needs, fears, sets, and expectations as potentially important influences on perception—influences that at least sometimes undermined the objective nature of perception and produced errors and biases (for reviews, see F. H. Allport, 1955; Bruner, 1957a, 1957b; Erdelyi, 1974).

The New Look's claim that perception involves "going beyond the information given" (Bruner, 1957a) provided the spirit of much of the next 30 years of social cognition research. Bruner's famous dictum often has been interpreted as indicating that (a) people often disregard the information given and (b) people "see" things that are not even there (e.g., Crocker, 1981; Fiske & Neuberg, 1990; Fiske & Taylor, 1984; Higgins & Bargh, 1987; E. E. Jones, 1986; Markus & Zajonc, 1985; Nisbett & Ross, 1980; Snyder, 1984). The titles of two of the main sections in Higgins and Bargh's review of social cognition and social perception attest to the pervasiveness of such interpretations: "Do People Even Care About the Information Given?" and "Do People Never Seek the Truth?"

Thus, "going beyond the information given" often has been interpreted in ways that support the strong constructivist perspective. In fact, however, going beyond the information given does not *necessarily* involve bias, error, or inaccuracy in perception. Bruner (1957b, p. 124) claimed, and most current theorists agree, that "all perceptual experience is necessarily the end product of a categorization process" (see Gibson, 1979, and McArthur & Baron, 1983, for exceptions). However, I know of no theorists who assume that the contents of a category are

inaccurate by definition (unless the category is for a social group, i.e., stereotype, a point that is discussed later).

Although perceivers may make errors when assigning stimuli to a category, they also may appropriately assign stimuli to categories. If the content of the category is accurate (e.g., cars usually have four wheels, seats, an engine, and travel much more rapidly than bicycles; professional basketball players are usually tall and athletic), and if a stimulus is appropriately assigned to a category (e.g., that contraption in my front yard is my car; the men on TV are professional basketball players), no error occurs. If I infer that the men on TV are tall (clearly going beyond the information given—they are only a few inches tall on my TV, and there is usually no average-height person with whom to compare them), I am likely to be reasonably accurate.

Thus, "going beyond the information given" need not mean perception is inaccurate. Indeed, a person who failed to categorize the men on TV as professional basketball players (i.e., failed to go beyond the information given) probably would be far less accurate in judging their height. Inferences of any type—accurate, inaccurate, scientific, intuitive, and so on—constitute "going beyond the information given." If scientists, themselves, did not "go beyond the information given" in their empirical data, there would be no theories!

F. H. Allport, in his 1955 review of the New Look, foresaw this tendency for social psychology to overemphasize the strong form of the social constructivist perspective:

> Where the perception is bound so little by the stimulus and is thought to be so pervasively controlled by socially oriented motives, roles, and social norms, the latitude for individual and group differences, for deviating and hence non-veridical awareness, is very great. (p. 367)

He also warned against it:

> What we are urging here is that social psychologists, in building their theories of perception, assume their share of the responsibility for reconciling and integrating their "social-perceptual" concepts, fraught with all their deviations and special cognitive loadings, with the common and mainly veridical character of the basic human perceptions. (p. 372)

In the next section, I present a reflection–construction model of relations between social perception and social reality that provides just such an integration. It is called *reflection–construction* because it suggests that not only may social perception create and construct social reality, social perception may accurately reflect social reality. I use the terms *social perception* and *social beliefs* loosely to refer to a wide variety of constructs, such as expectancies, categories, stereotypes, prototypes, schemata, intuitive and implicit theories and hypotheses, and so on. These constructs have many similarities. Schemata and expectancies, for example, are viewed as organized knowledge structures that, among other things, guide the processing of new information (e.g., Darley & Fazio, 1980; Darley & Gross, 1983; Fiske & Taylor, 1984; E. E. Jones, 1986; Markus & Zajonc, 1985; Snyder, 1984). Expectancies have been discussed as hypotheses (Darley & Gross, 1983; Snyder, 1984); stereotypes have been discussed as categories, schemata, prototypes, and implicit personality theories (G. Allport, 1954; Ashmore & Tumia, 1980; Brewer, Dull, & Lui, 1981; Cohen, 1981; Fiske & Neuberg, 1990; Fiske & Taylor, 1984; Grant & Holmes, 1981); and stereotypes are often assumed to be a source of expectations regarding individuals belonging to particular social groups (e.g., G. Allport, 1954; Fiske & Neuberg, 1990; Fiske & Taylor, 1984; Jussim, Coleman, & Lerch, 1987; McCauley et al., 1980; Miller & Turnbull, 1986; Snyder, 1984; Snyder, Tanke, & Berscheid, 1977).

The Reflection–Construction Model of Relations Between Social Perception and Social Reality

Basic Assumptions

Figure 1 presents the reflection–construction model. The model focuses on relations among perceivers' beliefs (expectations, hypotheses, schemata, etc.) regarding particular targets and those targets' attributes and behaviors. The model starts with background information, which refers to anything on which perceivers might base their beliefs (e.g., targets' past behavior or targets' social group membership, achievement or personality test scores, rumor and hearsay, etc.). Path A represents the extent to which such background information predicts targets' future behavior or attributes, independent of the influence of the perceiver; Path B represents the extent to which perceivers base their beliefs on the background information; Path C represents the influence of perceivers' beliefs on targets' behavior or attributes; Path D represents the influence of perceivers' beliefs on judgments of targets' subsequent behavior or attributes; and Path E represents the extent to which perceivers' judgments regarding the target are based on that target's behavior or attributes.[1]

In practice, each path depicted in the model may represent several paths. There may be many types of background information, perceivers develop impressions regarding more than a single characteristic, there may be many types of target behavior that are influenced, and so on. Also, the model assumes at least some minimal time lag between the variables. Awareness of background information precedes the development of social perceptions, which precedes targets' behavior, which precedes the perceivers' judgment of the target.

The reflection–construction model is mute with respect to the particular values each of these paths take. In a given situation, anywhere from all to none may be positive, all to none may be negative, and all to none may be zero. Several technical assumptions, however, will simplify presentation and discussion of the model. First, I assume that the background information is scaled so that relations with targets' behavior are nonnegative. This is not a conceptual assumption, it is a scaling factor. I also assume that no variable in the model completely determines any other variable. Although the model would still be applicable, such situations virtually never occur in the social sciences. Last, I focus on understanding sources of correlations

[1] Because the reflection–construction model is a path model, much of the remaining theoretical analysis draws heavily on the logic and math underlying principles of path analysis, such as decomposition of effects and correlations, and direct, indirect, and total effects (e.g., see Alwin & Hauser, 1975; O. D. Duncan, 1975; Kenny, 1979; and Pedhazur, 1982, for extended discussions of these principles).

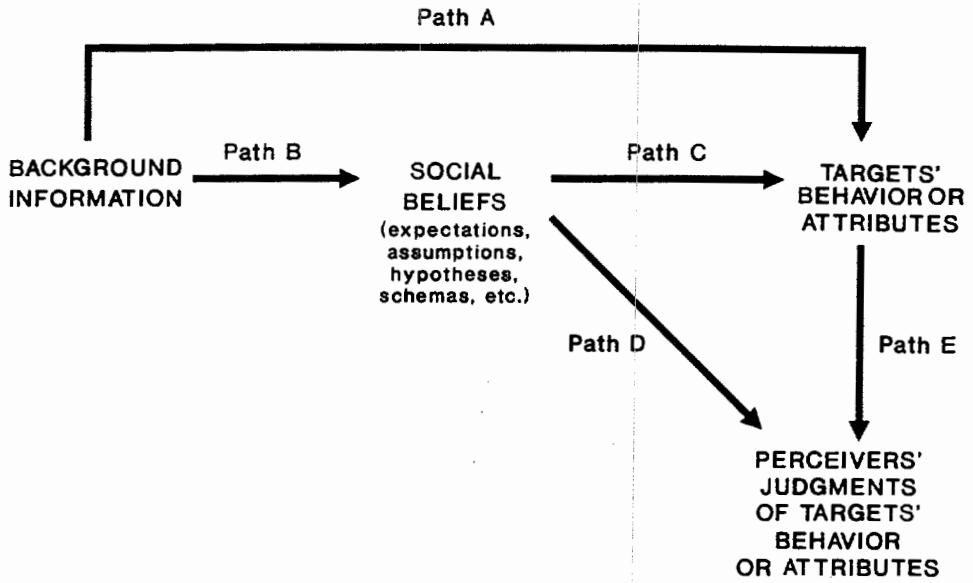

Figure 1. Model 1: The reflection–construction model of relations between social perception and social reality.

among the variables in the model, and therefore I assume that all path coefficients are standardized.

The reflection–construction model draws on one of the main ideas of the lens model (Brunswick, 1952), which suggested that veridical perception involves the use of cues probabilistically related to objective reality. Thus, the model provides a framework for identifying relations between social perception and social reality; the actual relations in any particular situation is an empirical question. Last, the model is only applicable when empirical data are available for all relevant paths. If, for example, a certain social attribute is not simply unknown, but absolutely unknowable, it would be impossible to estimate paths representing accuracy or influence.

Applicability to a Single Social Context

This model is most applicable to a single social context. The term *single social context* describes two sets of boundaries within which the reflection–construction model is useful. One boundary involves time. A social context has a clear beginning and end. The earliest possible beginning for a single social context is the moment at which a perceiver first develops expectations (beliefs, schemata, etc.) regarding a target. This may occur prior to face-to-face interaction, as when, for example, teachers develop expectations for students on the basis of their records from previous years or when experimenters provide information about targets to research subjects. Sometimes, however, perceivers would have no basis even to consider the existence of a target prior to face-to-face interaction, such as when two people casually meet for the first time at a social event. In such cases, the earliest beginning of the social context would be the initial face-to-face meeting.

The model is equally appropriate when the social context begins at a time more or less arbitrarily set by a researcher. Consider a hypothetical researcher who focuses on relations among parents' sex role stereotypes and the behavior of their 9-year-old children over the course of a year. Parents' stereotypes and children's behavior may be assessed at the children's 9th birthday and again several times throughout the following year.

In such a study, the social context begins on the child's 9th birthday. This study would address the extent to which parents' sex role stereotypes accurately predicted and influenced their children's behavior between the ages of 9 and 10. It cannot disentangle the extent to which parents' stereotypes constructed versus reflected their children's behavior or attributes prior to the children's 9th birthday. Disentangling issues of reflection and construction prior to 9 years of age would require obtaining data on the parents and children prior to the children's 9th birthday.

The researcher also decides on an end of the social context under study. This end may occur while the perceiver and target are still involved in an ongoing relationship. For example, the hypothetical 1-year study of parents' sex role stereotypes would end on the children's 10th birthday. Alternatively, however, the social context may end substantially after the termination of all interaction among perceivers and targets. It includes situations such as teachers' expectations influencing students' achievement even after the students have moved on to the next grade level and have different teachers.

The second boundary of single social context specifies perceivers and targets. The reflection–construction model is useful for assessing relations among the beliefs held by one particular set of perceivers (e.g., parents and teachers) and the behaviors or attributes of one particular set of targets (e.g., children and students). Thus, single social context may include situations as limited as those that occur in a laboratory experiment or a job interview and situations as extensive as those that occur among teachers and students over the course of a year or more, and even as long-term as those that occur among parents and chil-

dren. Despite the vast differences, these situations are similar in one important way: They all involve understanding relations among the beliefs that a particular set of perceivers hold regarding a particular set of targets and those targets' actual behaviors or attributes.

A single social context need not involve face-to-face interaction among perceivers and targets. Situations lacking any face-to-face interaction might include laboratory studies of person perception (in which information regarding targets may be presented verbally, in writing, by slides or videotapes, etc.); evaluations of materials submitted by applicants to colleges or jobs; whenever perceivers form impressions of individuals in the media (including both real individuals, such as political figures, and fictitious people, such as characters in sitcoms, dramas, movies, etc.); and when people develop beliefs about others through rumor, hearsay, and gossip.

Despite the extensive variety of situations it includes, the boundaries defined by *single social context* are important because they contribute to understanding just when particular perceivers are accurate, biased, and influence targets. For example, when teachers develop impressions of students, the model suggests that they are accurate if they successfully identify preexisting differences among those students. These teachers would be considered accurate even if those preexisting differences resulted from the self-fulfilling effects of other teachers' (or parents') expectations. This is the appropriate criterion for accuracy within a single social context. If Mary has received straight *A*s and scored in the top 5% on standardized achievement tests in previous years, she should be perceived as having been an excellent student by a new teacher, even if the self-fulfilling effects of the high expectations held by previous teachers or her parents contributed to her high achievement.

The reflection–construction model, therefore, is useful for determining the extent of accuracy versus self-fulfilling prophecy from a given starting point to a particular endpoint among a particular set of perceivers and targets. Although one of the strengths of the reflection–construction model is that it can be readily adapted to address relations between social perception and social reality in a wide variety of social interaction contexts, it is not useful for identifying the ultimate extent to which individual differences result from influences of social beliefs.

Levels of Analysis

The reflection–construction model may be readily applied to interactions occurring at many levels of analysis—individual, dyadic, perceiver to group, and group to group. At the individual level, the target and perceiver are the same person. Thus, the model could address relations among self-perceptions (self-concept, self-evaluations, etc.), background information (the information on which those self-perceptions might be based), the individual's behavior or attributes, and the individual's judgments regarding his or her behavior or attributes. The model could be used to address phenomena such as self-efficacy (Bandura, 1977), personal prophecies (Ruvolo, 1989), and self-verification (Swann, 1987).

The reflection–construction model also may address intergroup relations. To what extent are the beliefs one group holds about another accurate versus self-fulfilling? For example, the concerns of college administrative personnel may increase as fraternity drinking and hazing practices increase. But does the increase in administrative concern create or reflect fraternity practices? Does the administration exaggerate the extent to which fraternity hazings and drinking occur and create problems? The reflection–construction model could be used to address exactly these types of questions regarding intergroup perceptions.

It is crucial, however, not to confound levels of analysis. For example, consider a football coach who chooses to start one quarterback over another not because their talents differ, but because one is more confident. If confidence really enhances performance, then from the athlete's standpoint a self-fulfilling prophecy has occurred (individual level of analysis). But at the dyadic level (coach to athlete), the coach simply has accurately identified an appropriate basis for selecting one athlete over another.

Similarly, consider a situation in which state and local governments fund public schools through property taxes. In general, such a policy will lead to greater spending per pupil in wealthy areas than in poor areas. If funding influences quality of education, then such policies may create a self-fulfilling prophecy whereby sociopolitical factors exacerbate differences in the intellectual achievement of upper-class and lower-class students. At the dyadic level, however, third-grade teachers are simply accurate if they evaluate the previous performance of *A* students as higher than that of *D* students, regardless of the causes of that achievement differential. Although the reflection–construction model may be applied to any level of analysis, the remainder of this article focuses on dyadic interactions.

The reflection–construction model seems to be quite simple; it has only four conceptual variables and five conceptual paths. Furthermore, effects corresponding to every path have been documented (e.g., see Brophy & Good, 1974; Darley & Fazio, 1980; Fiske & Neuberg, 1990; Jussim, 1989). In some ways, therefore, this model is "old wine in a new bottle"—it depicts various plausible relations between social perception and social reality. Next, however, I show that simply by integrating these effects known to exist, this model provides some entirely new insights into relations between social perception and social reality.

Accuracy of Prediction

In contrast to most previous reviews of relations between social beliefs and social reality (e.g., Darley & Fazio, 1980; Fiske & Neuberg, 1990; E. E. Jones, 1986; Miller & Turnbull, 1986; Snyder, 1984), the reflection–construction model explicitly allows for the possibility that perceivers may be accurate. This model incorporates several conceptually separable aspects of accuracy. The first concerns the bases of social perception. Social perceptions based on more valid information can be considered more accurate than those based on less valid information (Brophy, 1983; Dusek, 1975). However, even perceptions based on valid information sometimes inaccurately predict future behavior (Kahneman & Tversky, 1973). Consequently, how much perceivers predict targets' behavior or attributes without causing that behavior or those attributes is a second aspect of accu-

racy. How the model identifies each of these aspects of accuracy is discussed next.

I consider a belief to be accurate when it predicts—without causing—targets' behavior or attributes. If in 1988 I predicted that the New York Mets baseball team would be champions of their division, I was simply accurate—my belief did not influence their performance. Similarly, teachers' expectations may predict students' achievement not because of self-fulfilling prophecies, but because teachers are competent at identifying genuine preexisting differences among students.

This model clearly distinguishes between accuracy and self-fulfilling prophecy as sources of predictive validity in social perception. According to the model,

$$r(P, T) = \text{Path C} + [\text{Path A} \times \text{Path B}], \quad (1)$$

where $r(P, T)$ is the correlation (r) between perceivers' beliefs (P) and targets' behavior or attributes (T). Path C represents the influence of the perceiver's beliefs on the target's behavior or attributes (this includes, but is not restricted to, self-fulfilling prophecies). Although it is possible to consider self-fulfilling prophecies as accuracy (Swann, 1984), it is also useful to distinguish between the specious accuracy of beliefs that lead to their own fulfillment and beliefs that successfully predict targets' behavior or attributes without causing that behavior or those attributes. Only the latter phenomenon is discussed here as accuracy.

The model incorporates accuracy because it shows that perceivers' beliefs will predict (i.e., correlate with) targets' characteristics when both variables (perceivers' beliefs and targets' characteristics) are spuriously related to background information regarding the targets' characteristics (Path A × Path B). This spurious relationship represents accuracy: predictive validity without influence. The model depicts a relatively simple idea: If perceivers base their social beliefs on factors that successfully predict targets' behavior or attributes, those beliefs also will predict targets' behavior or attributes.

Accuracy as a source of behavioral confirmation. The reflection–construction model highlights two different sources of targets' behavioral confirmation of a perceivers' beliefs. In the past, the term *behavioral confirmation* only has been used to refer to self-fulfilling prophecies (e.g., Miller & Turnbull, 1986; Snyder, 1984). This model shows, however, that targets also may behaviorally confirm a perceiver's beliefs because those beliefs were based on information (Path B) that was an appropriate basis for prediction (Path A).

For example, teachers may develop expectations on the basis of validated standardized achievement test scores. Because such test scores successfully predict student achievement (Anastasi, 1982), so will teachers' expectations, even in the absence of self-fulfilling prophecies. The extent to which teachers' expectations predict achievement solely because both their expectations and student achievement were based on students' previous achievement represents predictive accuracy without (self-fulfilling) influence.

Identifying accurate and inaccurate social beliefs. Whenever Paths A and B are both positive, perceivers' beliefs are accurate to some degree. Equation 1 shows that if Paths A and B are positive, an increase in either path increases accuracy. The reflection–construction model shows that even when the predictive validity of background information, independent of self-fulfilling prophecy (i.e., Path A), is quite low, Path B must be high to maximize accuracy.

For example, targets' physical attractiveness may predict their sociability and warmth even when perceivers are completely unaware of targets' attractiveness (Goldman & Lewis, 1977; Kennedy, 1989). In terms of the model, the background information of physical attractiveness may predict targets' behavior (e.g., Path A may be positive), even without any self-fulfilling prophecy (e.g., Path C is zero). In face-to-face interaction, perceivers who base their initial expectations on targets' physical attractiveness will accurately predict the warmth differences between attractive and unattractive targets (although it is possible that perceivers would exaggerate such differences). Perceivers who did not use physical attractiveness as a basis for initial expectations would inaccurately predict no differences between attractive and unattractive targets.

This can be readily demonstrated by entering specific numbers for Equation 1. For example, assume that Path A is .3, representing a modest predictive validity of attractiveness for warmth. In the absence of self-fulfilling prophecy (Path C is 0), when Path B is .7, .3, and 0, the correlations between expectations and targets' behavior are .21, .09, and 0, respectively.

The relevance of this analysis for accuracy of expectations, even expectations based on social group membership (i.e., stereotypes), should now be obvious: Unless the background information is irrelevant to targets' characteristics (i.e., unless Path A is near 0), expectations based on that information will accurately predict differences among targets: expectations that do not use the valid information will fail to accurately predict differences among targets.

Three combinations of Paths A and B reflect erroneous beliefs: (a) Path B is nonzero, and Path A is zero (beliefs are based on irrelevant information); (b) Path B is zero, and Path A is positive (perceivers fail to base their beliefs on relevant information); and (c) Path B is negative, but Path A is positive (perceivers use relevant background information to develop beliefs in the opposite direction). In all these cases, the values of the obtained coefficients will indicate the degree of inaccuracy. For example, when Path A is positive, a .5 value for Path B is far less accurate than the optimal 1.0 but far more accurate than a value of 0.0. Even a 0.0 value for Path B is not as inaccurate when Path A is .1 as when Path A is .7. Theoretically, the reflection–construction model views accuracy as a quantitative rather than qualitative characteristic of social perception; that is, there are usually degrees of accuracy.

The model also shows that Path A provides an upper limit on accuracy of perceivers' predictions. Consider a situation in which the predictive validity of background information is 0.3. Even if this information is maximally used (i.e., Path B is 1.0), then 0.3 is the extent to which perceivers' beliefs will predict without causing targets' behavior. Thus, for example, physically attractive college women are warmer and more socially skilled than unattractive college women (e.g., Goldman & Lewis, 1977; Kennedy, 1989). In the absence of any information other than physical attractiveness, perceivers will be more accurate if they assume an attractive college woman is warmer and more socially skilled. If the correlation between attractiveness and

warmth is about .3, then as shown by Rosenthal's (1984) binomial effect size display, even these most accurate expectations will be wrong for about 35% of all targets.

Self-Fulfilling Prophecy and Other Influences of Social Beliefs on Targets' Behavior or Attributes

Self-fulfilling prophecies involve one person leading another to act in ways consistent with the first person's initially erroneous social beliefs (Darley & Fazio, 1980; Merton, 1948; Snyder, 1984). Path C in Figure 1 represents the causal influence of perceivers' beliefs on targets' behavior. Positive values for Path C represent self-fulfilling prophecy.

Changing targets' behavior. The reflection–construction model highlights several important aspects of self-fulfilling prophecies. First, self-fulfilling prophecies involve perceivers *changing* targets' behavior, at least in comparison with what targets' behavior would have been had no self-fulfilling prophecy occurred. This model provides a clear distinction between expectations influencing targets' actual behavior and expectations influencing perceivers' judgments of targets' behavior. This distinction has been largely overlooked in educational perspectives on teachers' expectation effects (e.g., Brophy, 1983; Brophy & Good, 1974; Cooper, 1979; West & Anderson, 1976). In addition, the term *self-fulfilling prophecy* has been used to refer to perceptual biases in the absence of behavioral confirmation (Sherman, Judd, & Park, 1989; Williams, 1976).

Most theoretical perspectives on expectancies, however, emphasize the importance of distinguishing between changing targets' actual behavior and changing the perceivers' own judgments of that behavior (Darley & Fazio 1980; E. E. Jones, 1986; Jussim, 1986, 1989; Merton, 1948; Miller & Turnbull, 1986; Snyder, 1984). The distinction is important because self-fulfilling prophecies refer to erroneous expectations changing objective social reality; influences of expectations on judgments refer only to images of social reality that occur in the mind of the perceiver. Such effects are clearly distinguished in the reflection–construction model: Path C represents expectations changing targets' behavior, and Path D represents an influence of expectations on judgments of targets' behavior.

This model demonstrates that simple correlations between perceivers' expectations and targets' behavior are relatively uninformative; they may represent self-fulfilling prophecy and no accuracy at all, accuracy and no self-fulfilling prophecy at all, or virtually any combination of both. Therefore, studies reporting only zero-order correlations among perceivers' expectations and the behavior of targets with whom they interact (Brophy & Good, 1974; Crano & Mellon, 1978; Hoge & Butcher, 1984; Humphreys & Stubbs, 1977) are incapable of distinguishing between accuracy and self-fulfilling prophecy.

One nonobvious implication of this model is that even when perceivers' expectations are uncorrelated with targets' future behavior, a self-fulfilling prophecy may have occurred. This would happen when perceivers develop expectations in the direction opposite that indicated by the background information (e.g., Path B is negative whereas Path A is positive). If a self-fulfilling prophecy occurs, Path C, too, is positive. Because Paths A and C are positive and Path B is negative, the total correlation between perceivers' expectations and targets' behavior may be near zero, even when a self-fulfilling prophecy occurs (see Equation 1).

Conceptually, this means that a self-fulfilling prophecy negates a preexisting difference among targets. Although I know of no research documenting such effects, they are hypothetically possible. For example, a White manager may believe Blacks are lazy (Path B is negative) when in fact Blacks work harder than Whites (Path A is positive). If a self-fulfilling prophecy occurs (Path C is positive—the manager actually discourages hard work among Black employees), the overall correlation between the manager's belief and employees' effort (which equals Path C + [Path A × Path B]) may be near zero.

Self-sustaining prophecies. Self-sustaining prophecies refer to situations in which perceivers' beliefs lead targets to continue engaging in some behavior when they would have otherwise changed. Cooper (1979) first speculated that expectancies might have sustaining effects (rather than leading to changes in target behavior), but he provided no means for empirically identifying them. After all, how can one identify a causal process involving a lack of change? In fact, however, the reflection–construction model shows that self-sustaining prophecies can be readily identified. Whenever Paths B and C are positive, perceivers' expectations have led to sustaining effects. This is because

$$r(B, T) = \text{Path A} + [\text{Path B} \times \text{Path C}], \qquad (2)$$

where $r(B, T)$ is the correlation (r) between background information (B) and targets' behavior or attributes (T). Therefore, whatever perceivers base their expectations on will correlate more strongly with targets' behavior if a self-fulfilling prophecy occurs than if one does not occur. If background information includes targets' previous behavior, such effects mean that self-fulfilling prophecies increase the stability of (i.e., limit changes in) targets' behavior.

Several studies provide evidence of self-sustaining prophecies (Jussim, 1989; West & Anderson, 1976; Williams, 1976). For example, teachers' perceptions of students' talent at math were largely based on scores on the math section of a standardized test (Jussim, 1989). In terms of the reflection–construction model, Path B, relating standardized test score to teacher perceptions of talent, was .42.[2] There also was evidence of self-fulfilling prophecy (in reflection–construction terms, Path C was also positive); teachers' perceptions of students' talent had an effect of .17 on students' scores on a subsequent standardized achievement test. Thus, the stability of standardized test scores was increased by .07 (.42 × .17) as a result of the self-fulfilling prophecy. These are sustaining effects; students' future achievement was more similar to their past achievement than it would have been had no self-fulfilling prophecy occurred. Sustaining effects could also be obtained for several of the other background variables in this study, as well as for those used in at least two other investigations (West & Anderson, 1976; Williams, 1976).[3]

[2] This represents the sum of the direct and indirect effects of standardized test scores on teacher perceptions of talent (see Jussim, 1989).

[3] Self-sustaining effects were not actually estimated in any of these studies. It is unlikely that West and Anderson (1976) or Williams (1976) were aware of the phenomena because the first published description

This analysis has two additional implications for understanding teacher-expectation effects. First, most naturalistic studies find (a) evidence of small self-fulfilling prophecy effects and (b) that teachers base their expectations on students' previous performance (Brattesani, Weinstein, & Marshall, 1984; Jussim, 1989; West & Anderson, 1976; Williams, 1976). In terms of the reflection–construction model, these studies have consistently found evidence that Paths B and C are positive, although Path C tends to be relatively small. Thus, the empirical evidence suggests that sustaining effects may be quite common, but small.

Second, this analysis shows that studies examining change scores, such as changes in IQ or standardized test performance (e.g., Rosenthal & Jacobson, 1968; Sutherland & Goldschmid, 1974), may underestimate self-fulfilling prophecies. The reflection–construction analysis of sustaining effects shows that part of the stability of students' achievement may result from self-fulfilling prophecies. Showing that teachers' expectations led to changes in students' achievement is sufficient, but not necessary, to infer a self-fulfilling prophecy.

Disconfirmation. This model clearly distinguishes between behavioral disconfirmation (the target fails to confirm the expectancy) and *self-defeating* prophecies (expectancies that cause their own disconfirmation). Merton (1948) first mentioned "suicidal" prophecies (identical to self-defeating prophecies here) in a footnote, and expectancy theorists have examined the issue of whether expectations sometimes *cause* their own downfall (Miller & Turnbull, 1986; Snyder, 1984). These perspectives, however, failed to distinguish between situations in which an expectancy causes its own disconfirmation and those in which it is simply disconfirmed (without causing the disconfirmation). The current model highlights the importance of this distinction.

Perceivers may expect differences among targets (Path B is nonzero) that fail to materialize (Paths A and C are both zero). For example, when targets are aware that the perceiver holds an erroneous expectation about them or when targets have a clear conception of their own characteristics, they *fail* to confirm perceivers' expectations (Hilton & Darley, 1985; Swann & Ely, 1984). Similarly, when perceivers are motivated to be accurate, their erroneous expectations fail to influence targets (Neuberg, 1989). In this study, accuracy motivation consisted of nothing more than the experimenter's emphasizing the importance to the subject of developing an accurate expectation. That such a mild source of motivation could undermine the self-fulfilling effects of perceivers' expectations suggests that even weak motivation to be accurate often may undermine expectancy effects.

These experiments involved inducing expectations (Path B was nonzero) that were erroneous (Path A was zero) but that failed to influence targets (Path C was also zero). Similarly, even though perceivers often assume that physically attractive targets are more intelligent than unattractive targets (Dusek & Joseph, 1983; Eagly, Ashmore, Makhijani, & Kennedy, 1990), there is no difference in standardized achievement test scores or grades between attractive and unattractive people (e.g., Clifford, 1975; Feingold, 1982; Maruyama & Miller, 1981; Sparacino & Hansell, 1979). Simple disconfirmation represents the straightforward idea that a perceivers' expectations, even when erroneous, may have no influence on targets' behavior.

Self-defeating prophecies are a different phenomenon altogether; they involve an expectation causing its own disconfirmation (Path C is negative). Expected traffic jams may be a classic example of such self-defeating prophecies. If some special event is expected to tie up city traffic, this expectation is often conveyed through the media to the public with the explicit purpose of discouraging people from driving and thereby decreasing traffic.

Such self-defeating prophecies seem most likely to occur when the expectancy leads the perceiver to intentionally act in ways designed to negate its validity. This is obviously true of the traffic example but may occur in interpersonal situations, too. For example, perceivers evoked higher performance from partners they believed to be mentally ill than they evoked from "normal" partners (Farina & Ring, 1965). Presumably, perceivers exerted special effort to cooperate and work with their allegedly mentally ill partners, thereby evoking stronger performance.

Similarly, when perceivers expected targets to be unfriendly, they adopted compensatory interaction strategies and actually evoked friendlier behavior from them (in comparison with unlabeled targets or those believed to be friendly; Ickes, Patterson, Rajecki, & Tanford, 1982). In such situations, the expectancy causes target behavior to change in a direction opposite the expectancy (Path C is *negative*). The reflection–construction model illustrates quite clearly that expectations creating a social reality opposite those expectations are different phenomena than expectations failing to cause behavioral confirmation.

Social psychological perspectives have generally emphasized how expectations create social reality. Usually this means creating a social reality that conforms to expectations; sometimes it means creating a social reality that contrasts with expectations (e.g., Darley & Fazio, 1980; E. E. Jones, 1986; Miller & Turnbull, 1986; Snyder, 1984). Educational perspectives have emphasized that teachers' expectations rarely lead to self-fulfilling prophecies because they are accurate (e.g., Brophy, 1983; Brophy & Good, 1974; Cooper, 1979; West & Anderson, 1976). In fact, however, the reflection–construction model demonstrates that even these educational perspectives present a too-narrow view of the limitations to self-fulfilling prophecies: Even erroneous expectations may have little or no impact on targets. Thus, the current model goes beyond previous theoretical perspectives by incorporating all three ways in which erroneous expectations may relate to objective social reality. Erroneous expectations may (a) lead to self-fulfilling prophecies (Path C is positive), (b) lead to self-defeating prophecies (Path C is negative), and (c) have no influence at all on targets (Path C is zero).

---

of sustaining effects that I am aware of appeared in Cooper (1979). When I published my teacher-expectation study (Jussim, 1989), I had accepted the claim that sustaining effects could not be empirically identified and made no attempt to do so. However, all three studies (Jussim, 1989; West & Anderson, 1976; Williams, 1976) provide sufficient information in their results (path coefficients relating students' previous achievement to teachers' expectations, and path coefficients relating teachers' expectations to students' future achievement) that sustaining effects can be obtained on the basis of their reported analyses.

Reflection–Construction Analysis of Empirical Research on Self-Fulfilling Prophecies

Interpersonal expectation effects are one of the main pillars of the constructivist perspective because of their supposed power to create social reality. Consider the conclusions reached by some of the most prominent theorists in the field:

> Attempts to understand the personal characteristics of others, in interactions with them, are complicated by the fact that one tends to find what one expects. This happens not only because information processing is selective, but also because expectancies cause one to act in ways that elicit behavior interpretable as confirming those expectancies, even when the expectancies might have been mistaken. (E. E. Jones, 1986, p. 41)

> teachers' expectancies influence students' academic performance to a greater degree than students' performance influences teachers' expectancies. (Miller & Turnbull, 1986, p. 236)

> events in the social world may be as much *effects* of individuals' beliefs as they are *causes* of these beliefs. (Snyder, 1984, p. 294)

The reflection–construction model provides the first clear framework for rigorously and empirically assessing the validity of these strong claims. Specifically, the quotes by Miller and Turnbull (1986) and Snyder (1984) suggest that Path C often is as strong or stronger than Path B (the quote by E. E. Jones, 1986, ignores accuracy altogether). Interestingly, however, when the reflection–construction model is applied to understanding the experimental and naturalistic evidence on self-fulfilling prophecies, a different conclusion emerges: Path B is usually stronger than Path C.[4]

Experimental studies. Many experimental studies have shown that the beliefs perceivers develop on the basis of erroneous information provided by experimenters sometimes lead to self-fulfilling prophecies (see reviews by Darley & Fazio, 1980; E. E. Jones, 1986; R. A. Jones, 1977; Miller & Turnbull, 1986; Snyder, 1984). Such research shows that, in principle, erroneous expectancies may influence the behavior of targets. Such research, however, was not intended to address the accuracy of social beliefs. Consequently, such research cannot possibly address the relative sizes of Paths B and C. Because accuracy limits the potential for self-fulfilling prophecy, these studies provide no evidence regarding the extent, or even the existence, of self-fulfilling prophecies in daily life.

These points are worth considering only because researchers and the lay public have indeed often interpreted classic experimental demonstrations of self-fulfilling prophecies as providing information about expectancy effects in daily life. For example, in an article titled "The Self-Fulfillment of the Self-Fulfilling Prophecy," Wineburg (1987) documented some of the extreme claims regarding naturally occurring teacher–student relations made on the basis of Rosenthal and Jacobson's (1968) seminal Pygmalion experiment. Similarly, Snyder et al.'s (1977) classic experiment is also frequently cited, not as evidence that erroneous stereotypes might lead to their own fulfillment but as evidence that they *do* lead to their own fulfillment. For example, Skov and Sherman (1986, p. 116) cited the Snyder et al. experiment as a basis for the following claim: "Once such an [erroneous] expectation is held about an individual, *of course,* self-fulfilling prophecy during interaction should *ensure* that the hypothesis is behaviorally confirmed" (emphasis added). Similarly, many of the strong proconstructivist claims quoted throughout this article were based mainly on reviews of experimental research!

Psychologists are generally fully aware of the dangers involved in generalizing from experimental studies of limited ecological validity to daily life. With expectancy effects, however, many articles have been written as if the experimental studies readily generalize to naturally occurring social perception and social interaction. Why such ready leaps of faith? Again, it seems, the strong social constructivist perspective has provided a Zeitgeist in which such interpretations seem reasonable and appropriate.

Meta-analyses. Several researchers have performed meta-analyses assessing the strength of self-fulfilling prophecy effects. All effect sizes described in this section are reported in terms of the Pearson correlation coefficient, *r*, to render them more readily interpretable and comparable with findings from studies using correlational methods to investigate naturally occurring teacher expectations (Rosenthal, 1984). This research generally indicates expectancy effects (on target behavior) of between .1 and .3 among both experimental and naturalistic studies (e.g., Raudenbush, 1984; Rosenthal & Rubin, 1978; Smith, 1980).

Even these effect sizes, however, may overestimate the power of expectancy effects in daily life. Many of the expectancy "effects" estimated for naturalistic studies were based on zero-order correlations (Rosenthal & Rubin, 1978; Smith, 1980). The reflection–construction model shows that some of the correlation between teacher expectations and student achievement may result from effects of achievement on beliefs. Therefore, the "effect" sizes estimated for naturalistic studies probably overestimate the influence of naturally occurring expectancies on social reality.

Two meta-analyses have focused explicitly on conditions af-

---

[4] One must exercise caution when comparing standardized coefficients because their size partially depends on the variances of each variable. Restriction of range on one variable may artificially lower its relation to another. Researchers can, therefore, obtain almost any pattern of coefficients they prefer simply by restricting the range of disliked variables and increasing it for preferred variables.

Nonetheless, throughout this article, I compare standardized coefficients for several reasons. First, most previous researchers have focused on identifying and assessing self-fulfilling prophecies and perceptual biases (as opposed to accuracy). It seems far more likely, therefore, that if there was any intentional bias, it would have been in favor of finding expectancy effects. And yet, one of the major points of this review is that, when viewed through the reflection–construction model, even these studies generally provide more evidence of accuracy than of self-fulfilling prophecy or perceptual bias!

Second, I sometimes compare effects of background information on teachers' expectations (Path B) with effects of teachers' expectations on students (Path C). Teachers' expectations are identical (within a given study) in both sets of analyses, so it is impossible for them to be more variable in one analysis than in another. Student achievement is usually both background information and outcome (e.g., achievement at the beginning and end of the school year, respectively), and the variance in student achievement is usually relatively stable over the course of 1 year (e.g., Brattesani, Weinstein, & Marshall, 1984; Jussim, 1989; Williams, 1976).

fecting the size of self-fulfilling prophecy effects. The first investigated whether grade level of student and timing of the expectancy induction influenced the size of teacher expectation effects in 18 experiments (Raudenbush, 1984). The strongest self-fulfilling prophecy effects occurred with students in the first, second, and seventh grades and when the expectancy induction occurred early in the school year. However, even these strongest effects were under .2.

Another recent meta-analysis focused on how individual differences among perceivers and targets moderated self-fulfilling prophecy effect sizes (Cooper & Hazelrigg, 1988). It was found that self-fulfilling prophecies were more likely to occur among perceivers who had more of a need for social influence and among targets who were more skilled at decoding nonverbal cues. However, the largest effect size for any personality moderator was under .2.

Meta-analytic effects compared with correlations among teacher expectations and student achievement. In contrast to these relatively small effects of expectations, research generally reveals moderate to high correlations (.4–.9) between teacher expectations and student achievement (Brophy & Good, 1974; Crano & Mellon, 1978; Hoge & Butcher, 1984; Humphreys & Stubbs, 1977; Jussim, 1989; Williams, 1976). According to the reflection–construction model, the correlation between teachers' expectations and students' achievement equals accuracy plus self-fulfilling prophecy (see Equation 1). Algebraic manipulation of Equation 1 shows that

$$\text{Path A} \times \text{Path B} = r(B, T) - \text{Path C}, \qquad (3)$$

where $r(P, T)$ is the correlation (r) between perceivers' beliefs or expectations (P) and targets' behavior or attributes (T). In other words, accuracy equals the zero-order correlation between expectations and targets' behavior minus self-fulfilling prophecy.

When these results are interpreted in terms of the reflection–construction model, the evidence shows clearly that teacher expectations do not predict student achievement mainly because those expectations are self-fulfilling. Path C, representing self-fulfilling prophecy effect sizes, generally is .1 to .3 (Raudenbush, 1984; Rosenthal & Rubin, 1978; Smith, 1980). Therefore, Paths A and B, representing predictive accuracy, account for most of the .4–.9 correlations between teacher expectations and students' future achievement. The reflection–construction model indicates that much of the correlation between teacher expectations and student achievement probably represents accuracy.

Path analyses. Thus far, I have only applied the model to results obtained across a wide variety of studies and have provided only indirect evidence of accuracy of teacher expectations. More direct evidence would be provided by research that meets four criteria: (a) It must examine naturally occurring expectations, because accuracy is irrelevant to experimental research involving the intentional induction of erroneous expectations; (b) zero-order correlations between teachers' expectations and students' future achievement must be reported (to compare them to self-fulfilling prophecy effects); (c) it must use students' previous performance as a basis for teachers' expectations and students' future performance (because this is such an obvious potential source of a spurious relation—Path A × Path B—between teachers' expectations and student achievement); and (d) it must estimate effects of teachers' expectations on students' future performance beyond effects accounted for by students' previous performance (i.e., it must estimate Path C when controlling for Path A).

Two path-analytic studies have met these criteria (Jussim, 1989; Williams, 1976). In both studies, zero-order correlations between teachers' expectations and students' later achievement were reduced 60%–100% when controlling for spurious predictors of both, such as past performance and student motivation. Therefore, Equation 3 shows that in these two studies, (a) the accuracy of teachers' expectations (Path A × Path B) was much higher than self-fulfilling prophecy (Path C), (b) accuracy accounted for 60%–100% of the zero-order correlations between teachers' expectations and student achievement, and (c) self-fulfilling prophecy accounted for about 0%–40% of the zero-order correlations between teachers' expectations and student achievement. The only two studies that met the criteria necessary for identifying predictive accuracy showed that teachers' expectations predicted students' future achievement mainly (although not completely) because they were accurate.

Four path-analytic studies have examined both self-fulfilling prophecies and the extent to which teachers base their expectations on valid information, such as previous grades and achievement test scores (Brattesani et al., 1984; Jussim, 1989; West & Anderson, 1976; Williams, 1976). All four showed that student achievement more strongly influenced teachers' expectations (Path B) than teachers' expectations influenced student achievement (Path C).

This reflection–construction interpretation of the empirical evidence, therefore, leads to two broad conclusions: (a) There is no evidence documenting larger self-fulfilling prophecy effects than effects of students' achievements on teachers' expectations (i.e., no classroom evidence documenting larger Path C effects than Path B effects); (b) there is substantial evidence showing that teachers' expectations are based on students' behavior and achievements to a much larger extent than those expectations cause targets' behavior or achievements (i.e., substantial evidence that Path B is larger than Path C).

Two Frequently Cited but Problematic Studies: More Evidence for the Strong Constructivist Perspective?

Two naturalistic studies are frequently cited as attesting to the power of teachers' expectations to create their own reality. Rist (1970) observed a kindergarten teacher segregate children along social class lines and direct most of her attention to the upper-class children. Furthermore, he observed this "caste" system to persist at least through second grade.

The evidence that this study provides in support of powerful self-fulfilling effects of teachers' expectations is extremely limited for several reasons. First, it focused on a very small sample, a *single* kindergarten class of 30 students (plus first- and second-grade followups of subsets of these students) involving one teacher each year. More important, Rist's (1970) observations addressed how the teacher acted on her expectations far more than how the students reacted to the treatment. In a footnote (p. 443), Rist indicated that at the end of the kindergarten year, there were no statistically significant differences in IQ among

the students Rist himself categorized as recipients of high versus low teacher expectations!

Rist (1970) also indicated that by the end of first grade, the high-expectancy students were assigned to a higher reading group than were the low-expectancy students. Once students were assigned to a high-track or low-track group, however, they generally stayed there through second grade. Because low-track groups are actually taught less, it seems likely that by the end of second grade, there may have been genuine performance differences between recipients of high and low teachers' expectations. It is impossible to know the extent of such differences, however, because Rist did not provide quantitative analyses.

A naturalistic study by Crano and Mellon (1978) also is frequently cited as evidence of powerful self-fulfilling prophecy effects. On the basis of a cross-lagged panel correlational analysis, they concluded that teachers' expectations influenced student achievement to a greater extent than student achievement influenced teacher expectations. Unfortunately, although Crano and Mellon could not have known it at the time, the use of cross-lagged panel correlations as a basis for determining causal predominance was discredited shortly after their study was published (Rogosa, 1980). Current researchers, however, should be aware that their study provides no evidence regarding causal relations among teacher expectations and student achievement.

Thus, two of the naturalistic studies most frequently cited (e.g., Darley & Fazio, 1980; E. E. Jones, 1986; Miller & Turnbull, 1986; Myers, 1987; Snyder, 1984) as attesting to the power of self-fulfilling prophecies provide little such evidence. However, the naturalistic studies using more rigorous or appropriate methods and analytic techniques (Brattesani et al., 1984; West & Anderson, 1976; Williams, 1976) generally have been overlooked in social psychological perspectives on interpersonal expectancies and find far more evidence of accuracy than self-fulfilling prophecy. Why have these flawed studies been emphasized while the more informative research demonstrating accuracy has been largely overlooked? This may yet again reflect the influence of the strong constructivist perspective.[5]

Naturally Occurring Self-Fulfilling Prophecies in Contexts Other Than the Classroom

Perhaps self-fulfilling prophecy effects are stronger in contexts other than in the classroom. Teachers are trained experts, and opportunities abound for objective assessments of students. In comparison to perceivers in many social situations, teachers may be more likely to develop accurate expectations. Even when inaccurate, teachers may have numerous opportunities to revise their erroneous expectations because students can demonstrate their competence many times over the course of the school year.

In contrast, however, most social perceivers may never rigorously measure many social characteristics of others. In daily interactions, people do not give others formal tests of warmth, extraversion, or even intelligence in the same way that teachers explicitly assess, for example, success at arithmetic. Perhaps, therefore, social perceivers more readily maintain erroneous expectations and create social reality to a larger extent in many contexts outside the classroom.

However, I know of only one study assessing effects on targets' behavior of perceivers' naturally occurring expectations in situations other than the classroom (Berman, 1979). Berman assessed the extent to which clinicians' expectations regarding the outcome of therapy were accurate or self-fulfilling. A group of 44 therapists was divided into 22 pairs. Each pair of therapists then interviewed two patients. After this interview, Berman assessed each therapist's expectations regarding the likely outcome of therapy for each of the two patients they interviewed. Each therapist then treated one of the two patients for 1 month.

If therapists' expectations were accurate, they should correlate with the outcome of the patients they did not treat. In fact, however, this study yielded no evidence of accuracy. None of the correlations of therapist expectancy with any of the outcome measures reached statistical significance (they ranged from $-.25$ to .25).

If therapists' expectations created self-fulfilling prophecies, they should correlate more strongly with the outcome of the patients they treated than with the outcome of the patients they did not treat. The results regarding self-fulfilling prophecy were mixed. Therapists' expectations significantly correlated with two of the six patient-reported outcome measures (both correlations were about .3) and none of the four therapist-reported outcome measures.

The implications of this study are limited by the relatively small sample, the relatively brief time frame, and the lack of assessment of patient outcome independent of both patient and therapist. Nonetheless, it is also interesting for several reasons. First, the methodology of having perceivers provide expectations for targets and then only interact with a subset of those targets may be extremely useful for disentangling self-fulfilling prophecy from accuracy in many other settings. Second, it is currently the only naturalistic study providing greater evidence of self-fulfilling prophecy than of accuracy. Third, the relatively modest self-fulfilling effects of therapists' expectations is consistent with results obtained from the classroom studies.

The naturalistic evidence regarding self-fulfilling prophecies in contexts other than the classroom is limited to this single study. Furthermore, given the limitations of Berman's (1979) study, his findings probably should be viewed as preliminary and suggestive. Research on naturally occurring self-fulfilling prophecies in therapist–patient relations and in virtually all other naturalistic situations is sorely needed.

Judgments Regarding Targets

Regardless of whether targets objectively confirm perceivers' beliefs, strong social constructivist perspectives suggest that perceivers often will interpret targets' behavior as confirming their beliefs (Darley & Fazio, 1980; Fiske & Neuberg, 1990; Fiske & Taylor, 1984; E. E. Jones, 1986; R. A. Jones, 1977; Miller & Turnbull, 1986; Snyder, 1984). Previous theoretical perspec-

[5] Brattesani, Weinstein, and Marshall (1984) and Williams (1976) focused nearly all of their attention on their results providing evidence of self-fulfilling prophecies and perceptual biases. This, too, may reflect an influence of the Zeitgeist created by the strong constructivist perspective!

tives (e.g., E. E. Jones, 1986; Miller & Turnbull, 1986; Snyder, 1984), however, often have failed to distinguish between two different sources of expectancy confirmation: (a) expectations causing perceivers to evaluate the target in expectancy-consistent ways and (b) perceivers judging targets on the basis of their behavior, when that behavior was objectively consistent with the expectation. Furthermore, expectations causing perceivers to evaluate the target in expectancy-consistent ways generally have been interpreted as evidence of perceptual bias ("going beyond the information given" in inappropriate ways). In fact, however, the reflection–construction model demonstrates that even when expectations directly influence perceivers' judgments regarding targets, those judgments may still be accurate. These aspects of the model are discussed next.

Judging targets on the basis of their behavior. Path E depicts the extent to which perceivers' judgments are based on targets' behavior or attributes. Consequently, a high value for Path E represents accuracy in perceivers' judgments of targets. The size of Path E represents the extent to which, for example, job applicants or college applicants are evaluated on the basis of their qualifications, judgments of targets' sociability and warmth are based on their behavior, the grades teachers assign to students are based on students' performance on tests and assignments, and so on.

The reflection–construction model shows that perceivers may believe their expectations have been confirmed without biasing or influencing their interpretation of targets' behavior (Path D is zero). If targets' behavior influences perceivers' judgments of targets, Path E will be positive. If targets' behavior also is consistent with perceivers' expectations, either because of self-fulfilling prophecy or accuracy, a positive value for Path E represents expectancy confirmation—that is, accurately perceiving the targets' behavior, which actually confirmed the expectation. This is expectancy confirmation but does not represent a perceptual bias; there has been no direct influence of perceivers' expectations on their interpretations of targets' behavior (Path D is zero).

Research in three areas—stereotypes, performance evaluations, and the social relations model—has demonstrated the power of Path E in many situations. Experimental studies of the role of stereotypes in person perception show that stereotype-based expectancies often are highly responsive to disconfirming evidence regarding individual targets. Whether individual targets are men and women, Blacks and Whites, old and young, or upper class and lower class, perceivers generally judge them far more on the basis of their observable relevant personal characteristics than on their membership in these social groups (e.g., Ashmore & Tumia, 1980; S. Cook, 1984; Feldman, 1972; Insko, Nacoste, & Moe, 1983; Jussim et al., 1987; Krueger & Rothbart, 1988; Linville, 1982; Linville & Jones, 1980; Locksley, Borgida, Brekker, & Hepburn, 1980; Rasinski, Crocker, & Hastie, 1985; Rokeach & Mezei, 1966).

Although people sometimes interpret *ambiguous* information in ways consistent with their expectations (e.g., Bodenhausen, 1988; Darley & Gross, 1983; Kulik, 1983), even small amounts of information inconsistent with the stereotype strongly influence perceivers' impressions of a particular person (Krueger & Rothbart, 1988; Locksley et al., 1980; Rasinski et al., 1985). Even the famous Goldberg effect (essays attributed to John McKay are evaluated more favorably than identical essays attributed to Jane McKay) has not held up; a meta-analysis of more than 100 studies showed virtually no effect of male–female labeling on such evaluations (Swim, Borgida, Maruyama, & Myers, 1989).

Research on how expectations influence evaluations of employee performance also suggests that Path E of the reflection–construction model often may be quite strong (Fenner, Lerch, & Kulik, in press). In this study, there was no restriction of range of perceivers' expectancies (see Footnote 4). Employees' past performance information, which was presented to perceivers as a basis for expectations, was as variable as that of the employees' performance perceivers subsequently judged. Nonetheless, this research showed that the small influence of expectations on perceivers' evaluations of employees was dwarfed by huge effects of employees' actual performance.

Research using the social relations model (Kenny & Albright, 1987; Kenny & La Voie, 1984) also has provided evidence of considerable accuracy in perceivers' impressions of targets. One recent study focused on college students who had known each other for, on average, more than 1 year and directly compared the roles of the perceiver and target in determining perceivers' impressions of targets (Malloy & Albright, 1990). Although some evidence was found that perceivers constructed their impressions of targets, the main influence on perceivers' judgments was targets' characteristics. Other research using the social relations model also has found accuracy in perceivers' impressions of targets (Kenny & Albright, 1987), even when addressing impressions that perceivers develop after a single interaction with a stranger (DePaulo, Kenny, Hoover, Webb, & Oliver, 1987) and even when used to reanalyze data from studies originally interpreted as showing minimal accuracy (Kashy & Kenny, 1990).

Expectations influence judgments: Constructive accuracy. Even when social beliefs directly cause perceivers to judge targets' behavior in expectancy-confirming ways (Path D is positive), and even when such judgments are completely divorced from targets' actual behavior (Path E is zero), there is a possibility that accuracy rather than perceptual bias is being demonstrated. This is because

$$r(T, J) = \text{Path E} + [\text{Path C} \times \text{Path D}] + [\text{Path A} \times \text{Path B} \times \text{Path D}], \quad (4)$$

where $r(T, J)$ is the correlation (r) between targets' behavior or attributes (T) and perceivers' judgments of targets (J). This means that even when Path E is zero, if either [Path C × Path D] or [Path A × Path B × Path D] is very high, the correlation between targets' behavior and perceivers' judgment of that behavior will be very high. Equation 4 yields the following conditional inequality: If [Path C > 0] or [Path A × Path B] > 0, higher values for Path D increase the correlation between targets' behavior and perceivers' judgments of that behavior. Conceptually, this means that when social beliefs successfully predict targets' behavior (either through accuracy or self-fulfilling prophecy), correspondence between judgments of targets' behavior and targets' actual behavior increases if social beliefs also influence judgments. Note that this type of accuracy requires social beliefs to directly influence judgments of targets'

behavior. Thus, I call this *constructive accuracy*, meaning that perceivers may use their (accurate) knowledge and experience to create a valid image of reality, even when they do not directly base their judgments on the objective stimulus information.

In some ways, this model simply applies Bayes's theorem to the specific case of interpersonal perception. When there is uncertainty to judgments, expectations based on accurate background information should influence judgments. This is another version of the idea that base rates should influence judgments when individuating information is less than perfectly diagnostic (e.g., Kahneman & Tversky, 1973; McCauley et al., 1980; Tversky & Kahneman, 1974). Nonetheless, the current model suggests the need for a reinterpretation of research showing that expectations influence judgments. Such research generally has been interpreted as evidence of bias, inaccuracy, prejudice, and so on (e.g., Bodenhausen, 1988; Darley & Fazio, 1980; Fiske & Neuberg, 1990; Fiske & Taylor, 1984; E. E. Jones, 1986), whereas the current model shows that expectations influencing judgments may enhance accuracy.

Empirical research on false consensus has demonstrated a related phenomenon. False consensus (sometimes discussed as *projection*) involves perceivers allegedly erroneously assuming that others are similar to them in the absence of much evidence (e.g., Ross, Greene, & House, 1977). In fact, however, if perceivers' attributes actually correlate with targets' attributes, the more perceivers assume others are similar to them (i.e., the greater the false-consensus effect or projection), the more highly their judgments of others will correlate with those others' actual attributes (Hoch, 1987).

Expectations influence judgments: Bias. Perceptual biases occur when perceivers view targets as conforming more closely to their social beliefs than is warranted on the basis of targets' behavior or attributes (Crocker, 1981; Darley & Fazio, 1980; Fiske & Taylor, 1984; E. E. Jones, 1986; Miller & Turnbull, 1986). In reflection–construction terms, this means that social beliefs correlate more strongly with perceivers' judgments of targets than with targets' actual behavior or attributes.

The reflection–construction model indicates that bias occurs only under specific circumstances: when the influence of social beliefs on judgments more than makes up for the extent to which failing to judge targets' exclusively on the basis of their behavior lowers the correspondence among targets' actual behavior and perceivers' judgment of that behavior. This is because

$$r(B, J) = \text{Path D} + [\text{Path C} \times \text{Path E}] + [\text{Path A} \times \text{Path B} \times \text{Path E}], \quad (5)$$

where $r(B, J)$ is the correlation (r) between perceivers' social beliefs (B) and their judgments of targets (J). Equation 5 yields the following conditional inequality: If Path D > [Path C − (Path C × Path E)] + [(Path A × Path B) − (Path A × Path B × Path E)], perceivers' social beliefs will correlate more strongly with their own judgments of targets' behavior than with targets' actual behavior [$r(B, J) > r(B, T)$]. This conditional inequality and Equations 1 and 5 show that a perceptual bias occurs only when Path D more than makes up for the extent to which the correspondence between targets' behavior and perceivers' judgments is lessened as a result of failure to judge targets totally on the basis of their behavior.

There are two important conceptual points here: (a) Research showing that social beliefs (stereotypes, schemata, expectations, prototypes, etc.) influence judgments of targets independent of targets' actual behavior is necessary but not sufficient to demonstrate that social beliefs lead to biased perceptions; (b) bias occurs only when such influence is so strong that it leads social beliefs to correlate more strongly with perceivers' judgments than with targets' actual behavior.

Bias may increase constructive accuracy. The reflection–construction model also leads to the seemingly paradoxical insight that perceptual biases may enhance constructive accuracy. Whenever social beliefs are accurate or create self-fulfilling prophecies, the more they influence judgments of targets, the more closely those judgments will correspond to targets' objective behavior. Equation 4 shows that whenever Path A × Path B or Path C is positive, higher values for Path D (expectations influencing judgments) lead to higher correlations between targets' behavior or attributes and perceivers' judgment of that behavior or those attributes. As Equation 5 and its conditional inequality have shown, however, if Path D is sufficiently high, a perceptual bias will occur whereby perceivers judge targets' behavior as more consistent with their expectations than is warranted on the basis of their behavior. Thus, higher values for Path D, seemingly paradoxically, simultaneously may bias judgments and increase their correspondence to targets' actual behavior (see also Harvey, Town, & Yarkin, 1981, for a discussion of why many types of biases do not necessarily reflect errors).

The principle that bias sometimes enhances constructive accuracy can be illustrated through the simple example of a coin toss. If a penny comes up heads 50.2% of the time, one should always predict heads. If one cannot see the outcome of the toss and must guess, the answer that will lead to the greatest accuracy, that is, correspondence between judgment and reality, always will be "heads." Such a perceiver could be described as having an extreme *heads bias*. Such a perceiver, however, would also be more accurate than other perceivers using any strategy other than one that used such an extreme heads bias.

This logic is equally applicable to social perception and can be demonstrated through an example of people viewing a National Basketball Association (NBA) game on TV. Successful categorization of the figures on TV as professional basketball players leads perceivers to believe they are quite tall, which, when applied to individual players, generally will be accurate. Even though categorization generally leads to greater accuracy (in comparison to failing to realize they were NBA players and that NBA players are generally tall), when perceivers make errors they may be more likely to overestimate than to underestimate the height of the players.

Figure 2 presents a hypothetical example of how bias may lead to constructive accuracy in judgments. Consider a situation in which perceivers view the U.S. Open Golf Tournament and the NBA championship series on TV. Model 2 shows (a) perceivers use category of sports profession (basketball vs. golf) as a basis for beliefs regarding height (Path B is .8), (b) professional basketball players generally are taller than golfers (Path A is .8), (c) no self-fulfilling prophecy effect of expectations on NBA players' height (Path C is 0), (d) the belief that NBA members are tall (whereas golf players generally are not) directly influences judgments of the height of particular indi-

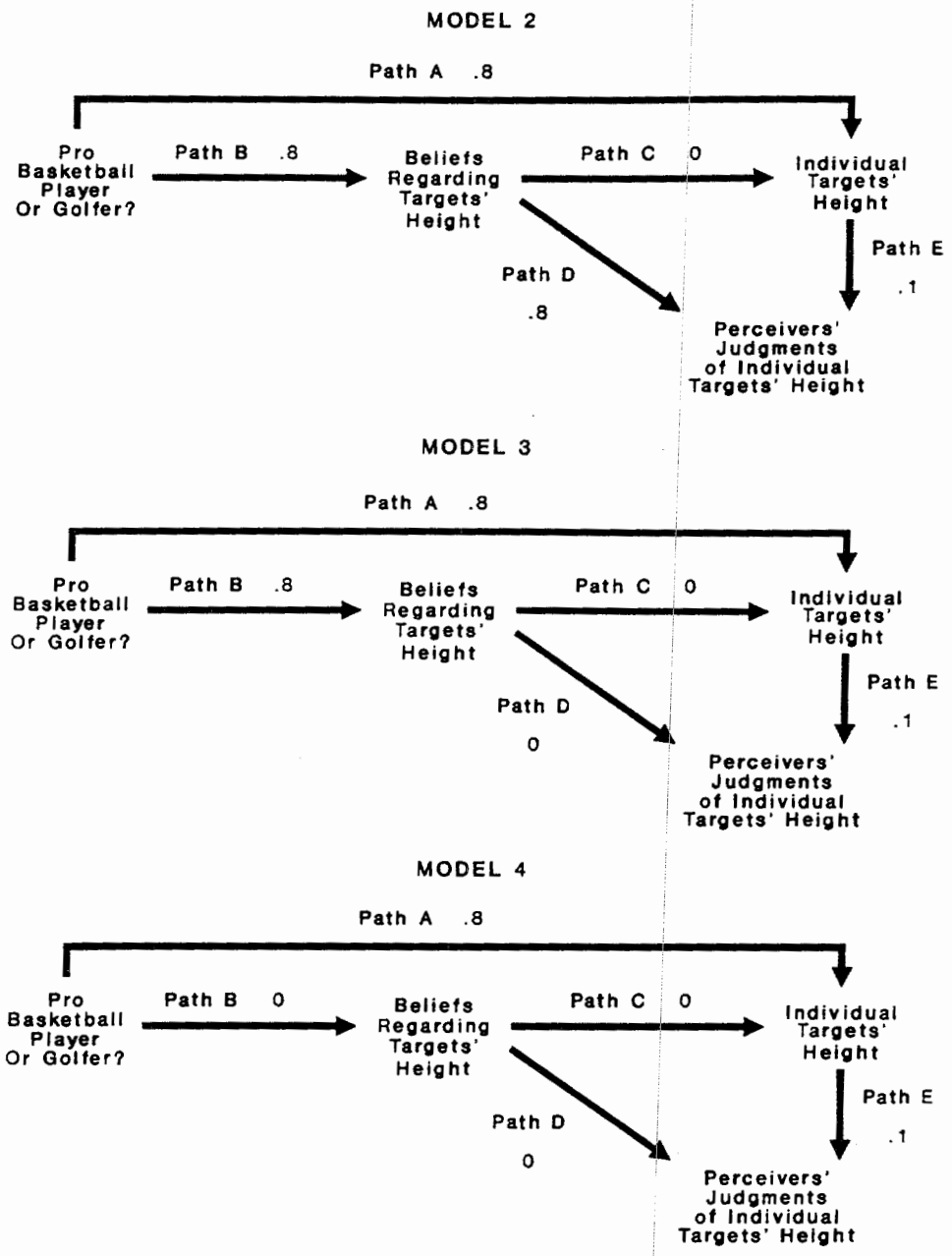

Figure 2. Three models showing how category-based judgments may enhance constructive accuracy. (All models are hypothetical. Accuracy of judgments of height is greatest in Model 2.)

viduals playing basketball or golf (Path D is .8), and (e) actual height has a minor influence on judgments (Path E is .1). These particular coefficients were chosen for simplicity and for illustrative reasons: the same broad implications of the model hold for any set of coefficients.

Model 3 is exactly the same with one exception: There is no direct influence of category-based beliefs on judgments of the height of particular individuals (Path D is 0 instead of .8). Model 3 represents perceivers who realize that professional basketball players are taller than most others but who do not allow this stereotype to influence judgments of particular individuals on TV. Model 4 depicts perceivers who do not hold a stereotype of professional basketball players as being particularly tall. For them, Path B is zero. These perceivers have no basis for generating different predictions for golfers and basketball players. Therefore, this example also assumes that their expectations regarding height have no influence on their judgments of individual targets' height; thus, Path D is zero.

The correlation between expectations and targets' objective height is .64 in Models 2 and 3 and 0 in Model 4. Because there is no self-fulfilling prophecy here, these correlations represent pure accuracy of prediction without influence (this is an exam-

behavior and attributes" (pp. 31–32) approaches to accuracy suggested by the reflection–construction model are clearly consistent with Brunswick's (1952) probabilistic conception.

The reflection–construction model also goes beyond Brunswick's (1952) lens model in several ways. First, Brunswick's model completely overlooked self-fulfilling prophecies. Second, the lens model did not focus on perceptual biases. Consequently, Brunswick's model primarily addressed ways in which perception reflected reality; it largely overlooked or de-emphasized constructive phenomena.

Although much of the current article challenges the strong constructivist perspective, it should not be interpreted as suggesting that social perception only reflects social reality. At least sometimes, social perception indeed creates social reality. In contrast to the lens model, the reflection–construction model provides a clear framework for disentangling the extent to which social perception reflects or creates social reality.

Limitations to the Reflection–Construction Model

The reflection–construction model is not intended to address many important issues involved in understanding relations among social perception and social reality. For example, it is mute with respect to (a) many of the social and psychological processes by which social perception relates to social reality and (b) identifying conditions under which different phenomena (e.g., self-fulfilling prophecy vs. accuracy) are more or less likely to occur. Numerous theorists have addressed normatively appropriate processes for social judgment, hypothesis testing, and inference (e.g., Kahneman et al., 1982; Kenny & Albright, 1987; Klayman & Ha, 1987; Kruglanski, 1989; Nisbett & Ross, 1980). Others have addressed the processes by and conditions under which expectations influence social judgment and lead to self-fulfilling prophecies (e.g., Bodenhausen, 1988; Brophy, 1983; Cooper & Good, 1983; Darley & Fazio, 1980; Fiske & Neuberg, 1990; Harris & Rosenthal, 1985; Jussim, 1986; Snyder, 1984).

In contrast, within a single social context (whether laboratory or naturalistic), the reflection–construction model primarily addresses questions such as (a) How much does social perception correspond to social reality because of accuracy or self-fulfilling prophecy? (b) How much is social perception based on social reality? (c) How powerful are self-fulfilling prophecy effects? (d) Have perceivers' expectations led to biases or accuracy in impressions of targets, or both? The reflection–construction model could be adapted to address many process issues simply by adding intervening variables and steps between the conceptual variables already presented and by estimating the model under different conditions hypothesized to enhance or reduce the influence of any of the phenomena the model already incorporates.

Similarly, the model is most appropriate for disentangling relations between social perception and social reality within a single social context. It is not intended to address ultimate questions concerning the extent to which, for example, self-fulfilling prophecies over the life span lead to individual differences in personality attributes, academic or occupational achievement, or behavior in general.

Strong and Weak Constructivist Perspectives

Empirical research shows that (a) the extent to which naturally occurring teachers' expectations create self-fulfilling prophecies generally is quite limited; (b) even meta-analyses that have addressed conditions under which self-fulfilling prophecy effects are most powerful have found small effects; (c) stereotypes have been shown to be accurate about as often as they have been shown to be inaccurate; (d) perceivers often judge targets, not on the basis of stereotypes, but on the basis of targets' behavior and attributes; and (e) expectations influence judgments regarding individuals.

When the reflection–construction model is used as a framework for interpreting empirical research on accuracy, bias, and self-fulfilling prophecy, it shows that (a) among studies that assessed both self-fulfilling prophecy and accuracy, teacher expectations have predicted student achievement more because they are accurate than because they create self-fulfilling prophecies; (b) when social beliefs are inaccurate, their influence on judgments represents bias alone; and (c) when social beliefs are valid, the more they influence judgments, the more accurate those judgments will be if perceivers do not or cannot judge targets solely on the basis of their attributes or behavior.

My conclusion that self-fulfilling and biasing effects of social beliefs are relatively small, especially when compared to accuracy, should not be misinterpreted as indicating that they are trivial or unimportant. Whether effects of .1 to .3 are considered important depends on both theoretical and practical considerations beyond the scope of this article (e.g., see Funder, 1987; Jussim, in press; Rosenthal, 1985, 1989). Because of their relevance to social issues such as equality of opportunity, and because of their relevance to theoretical issues such as the construction of social reality, such effects are quite important.

Nonetheless, an application of the reflection–construction model to the empirical evidence shows that the weak social constructivist perspective is currently far more viable than the strong constructivist perspective. This model provides a clear framework for assessing Snyder's (1984; Snyder et al., 1977) suggestion that events in the social world result from individuals' beliefs as much as they cause those beliefs. Such a proposal cannot be ultimately proved or disproved. But it can be tested. The reflection–construction model readily translates this generalization into an operational hypothesis: Is (or when is) Path C greater than or equal to Path B? And among naturalistic studies that have assessed both accuracy and self-fulfilling prophecy, only one (Berman, 1979) has found that the influence of social perception on social reality exceeded the influence of social reality on social perception. Several have found that the influence of social reality on social beliefs exceeds the influence of social beliefs on social reality (Brattesani et al., 1984; Jussim, 1989; West & Anderson, 1976; Williams, 1976). And even the strongest self-fulfilling effects found by Berman (1979) were relatively modest.

This does not mean that strong constructivist claims are wrong; perhaps researchers have not looked in the right places for such strong effects. There is currently only limited evidence regarding whether self-fulfilling prophecy effects accumulate over periods longer than 1 year. For example, if every year one set of students were the beneficiaries of positive expectancy effects and another set were victims of negative expectancy effects, huge self-fulfilling prophecy effects would occur over several years. Rist's (1970) study of the treatment received by a group of children in kindergarten through second grade hints

at such an accumulative process, but the study has so many limitations that it must be viewed only as suggestive.

I know of only two other studies that have addressed the issue of accumulation of expectancy effects. Both a field experiment (Rosenthal & Jacobson, 1968) and naturalistic research (West & Anderson, 1976) showed that rather than accumulating, self-fulfilling prophecies dissipated from the lst year to the 2nd year. Clearly, however, whether self-fulfilling prophecy effects accumulate over periods longer than 1 year remains an inadequately addressed empirical question.

Self-fulfilling prophecies and perceptual biases also may occur to large extents in contexts other than the classroom. The minimal naturalistic evidence on this issue represents a limitation to psychologists' understanding of when social perception creates social reality and a challenge for those arguing that such effects are quite large. Perhaps the effects are quite large; researchers will never know, though, until they investigate ways in which naturally occurring social perception creates and reflects reality among husbands and wives, parents and children, friends, clinicians and patients, employers and employees, coaches and athletes, and so on.

Of course, the possibility that conditions exist under which huge self-fulfilling prophecies and biases occur provides no empirical evidence that such conditions actually exist. An absence of evidence is not a basis for supporting a strong constructivist position. Some of the grander claims regarding the power of belief to create social reality may be true, but there is currently little evidence of such powerful effects occurring under naturalistic conditions. Experimental research has identified a host of errors and biases and has convincingly shown that if erroneous, social perception sometimes creates social reality. It is at least possible, however, that accuracy characterizes naturally occurring social perception to a greater extent than once believed.

References

Allport, F. H. (1955). *Theories of perception and the concept of structure.* New York: Wiley.

Allport, G. (1954). *The nature of prejudice.* Cambridge, MA: Addison-Wesley.

Alwin, D., & Hauser, R. M. (1975). The decomposition of effects in path analysis. *American Sociological Review, 40,* 37–47.

Anastasi, A. (1982). *Psychological testing.* New York: Macmillan.

Ashmore, R. D., & Del Boca, F. K. (1981). Conceptual approaches to stereotypes and stereotyping. In D. L. Hamilton (Ed.), *Cognitive processes in stereotyping and intergroup behavior* (pp. 1–35). Hillsdale, NJ: Erlbaum.

Ashmore, R. D., & Tumia, M. L. (1980). Sex stereotypes and implicit personality theory. I: A personality description approach to the assessment of sex stereotypes. *Sex Roles, 6,* 501–518.

Balk, W. L. (1965). The destructive stereotype. *Journal of Industrial Engineering, 16,* 208–211.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Bulletin, 84,* 191–215.

Berman, J. S. (1979). Social bases of psychotherapy: Expectancy, attraction, and the outcome of treatment (Doctoral dissertation, Harvard University). *Dissertation Abstracts International, 40,* 5800B.

Bodenhausen, G. V. (1988). Stereotypic biases in social decision making and memory: Testing process models of stereotype use. *Journal of Personality and Social Psychology, 55,* 726–737.

Bodenhausen, G. V., & Lichtenstein, M. (1987). Social stereotypes and information-processing strategies: The impact of task complexity. *Journal of Personality and Social Psychology, 52,* 871–880.

Bond, M. (1987). Old wine in new skins: Impressions about others can be disconfirmed by social reality! *Psychologia, 30,* 39–43.

Brattesani, K. A., Weinstein, R. S., & Marshall, H. H. (1984). Student perceptions of differential teacher treatment as moderators of teacher expectation effects. *Journal of Educational Psychology, 76,* 236–247.

Brewer, M. B., Dull, V., & Lui, L. (1981). Perceptions of the elderly: Stereotypes as prototypes. *Journal of Personality and Social Psychology, 41,* 656–670.

Brigham, J. C. (1971). Ethnic stereotypes. *Psychological Bulletin, 76,* 15–38.

Brophy, J. (1983). Research on the self-fulfilling prophecy and teacher expectations. *Journal of Educational Psychology, 75,* 631–661.

Brophy, J., & Good, T. (1974). *Teacher–student relationships: Causes and consequences.* New York: Holt, Rinehart & Winston.

Bruner, J. S. (1957a). Going beyond the information given. In H. E. Gruber, K. R. Hammond, & R. Jessor (Eds.), *Contemporary approaches to cognition* (pp. 41–69). Cambridge, MA: Harvard University Press.

Bruner, J. S. (1957b). On perceptual readiness. *Psychological Review, 64,* 123–152.

Brunswick, E. (1952). *The conceptual framework of psychology.* Chicago: University of Chicago Press.

Campbell, D. T. (1967). Stereotypes and the perception of group differences. *American Psychologist, 22,* 817–829.

Clarke, R. B., & Campbell, D. T. (1955). A demonstration of bias in estimates of Negro ability. *Journal of Abnormal and Social Psychology, 51,* 585–588.

Clifford, M. M. (1975). Physical attractiveness and academic performance. *Child Study Journal, 5,* 201–209.

Cohen, C. (1981). Person categories and social perception: Testing some boundaries of the processing effects of prior knowledge. *Journal of Personality and Social Psychology, 40,* 441–452.

Cook, M. (1984). *Issues in person perception.* London: Methuen.

Cook, S. (1984). Cooperative interaction in multiethnic contexts. In N. Miller & M. B. Brewer (Eds.), *Groups in contact* (pp. 155–185). Orlando, FL: Academic Press.

Cooper, H. (1979). Pygmalion grows up: A model for teacher expectation communication, and performance influence. *Review of Educational Research, 49,* 389–410.

Cooper, H., & Good, T. (1983). *Pygmalion grows up: Studies in the expectation communication process.* New York: Longman.

Cooper, H., & Hazelrigg, P. (1988). Personality moderators of interpersonal expectancy effects: An integrative research review. *Journal of Personality and Social Psychology, 55,* 937–949.

Crano, W. D., & Mellon, P. M. (1978). Causal influence of teachers' expectations on children's academic performance: A cross-lagged panel analysis. *Journal of Educational Psychology, 70,* 39–49.

Crocker, J. (1981). Judgment of covariation by social perceivers. *Psychological Bulletin, 90,* 272–292.

Darley, J. M., & Fazio, R. H. (1980). Expectancy confirmation processes arising in the social interaction sequence. *American Psychologist, 35,* 867–881.

Darley, J. M., & Gross, P. H. (1983). A hypothesis-confirming bias in labelling effects. *Journal of Personality and Social Psychology, 44,* 20–33.

Deaux, K., & Emswiller, T. (1974). Explanations of successful performance on sex-linked tasks: What is skill for the male is luck for the female. *Journal of Personality and Social Psychology, 29,* 80–85.

DePaulo, B. M., Kenny, D. A., Hoover, C. W., Webb, W., & Oliver, P. V. (1987). Accuracy of person perception: Do people know what kinds of impressions they convey? *Journal of Personality and Social Psychology, 52,* 303–315.

Dion, K. K. (1972). Physical attractiveness and evaluations of children's transgressions. *Journal of Personality and Social Psychology, 24,* 207–213.

Duncan, B. L. (1976). Differential social perception and attribution of intergroup violence: Testing the lower limits of stereotyping of Blacks. *Journal of Personality and Social Psychology, 34,* 590–598.

Duncan, O. D. (1975). *Introduction to structural equation models.* New York: Academic Press.

Dusek, J. (1975). Do teachers bias children's learning? *Review of Educational Research, 45,* 661–684.

Dusek, J., & Joseph, G. (1983). The bases of teacher expectancies: A meta-analysis. *Journal of Educational Psychology, 75,* 327–346.

Eagly, A. H., Ashmore, R. D., Makhijani, M. G., & Kennedy, L. (1990). *What is beautiful is good, but . . . : A meta-analytic review of research on the physical attractiveness stereotype.* Manuscript submitted for publication.

Erdelyi, M. H. (1974). A new look at the New Look: Perceptual defense and vigilance. *Psychological Review, 81,* 1–25.

Farina, A., & Ring, K. (1965). The influence of perceived mental illness on interpersonal relations. *Journal of Abnormal Psychology, 70,* 47–51.

Feingold, A. (1982). Physical attractiveness and intelligence. *Journal of Social Psychology, 118,* 283–284.

Feldman, J. (1972). Stimulus characteristics and subject prejudice as determinants of stereotype attribution. *Journal of Personality and Social Psychology, 21,* 333–340.

Fenner, D. B., Lerch, F. J., & Kulik, C. T. (in press). The impact of performance expectations and computerized performance monitoring data on performance evaluation. *Journal of Applied Social Psychology.*

Fiske, S. T., & Neuberg, S. L. (1990). A continuum of impression formation, from category-based to individuating processes: Influences of information and motivation on attention and interpretation. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 23, pp. 1–74). New York: Academic Press.

Fiske, S. T., & Taylor, S. E. (1984). *Social cognition.* Reading, MA: Addison-Wesley.

Funder, D. C. (1987). Errors and mistakes: Evaluating the accuracy of social judgment. *Psychological Bulletin, 101,* 75–90.

Gage, N. L., & Cronbach, L. J. (1955). Conceptual and methodological problems in interpersonal perception. *Psychological Review, 62,* 411–422.

Gibson, J. J. (1979). *The ecological approach to visual perception.* Boston: Houghton-Mifflin.

Goldman, W., & Lewis, P. (1977). Beautiful is good: Evidence that the physically attractive are more socially skillful. *Journal of Experimental Social Psychology, 13,* 125–130.

Grant, P. R., & Holmes, J. G. (1981). The integration of implicit personality theory schemas and stereotype images. *Social Psychology Quarterly, 44,* 107–115.

Hare-Mustin, R. T., & Maracek, J. (1988). The meaning of difference: Gender theory, postmodernism, and psychology. *American Psychologist, 43,* 455–464.

Harris, M. J., & Rosenthal, R. (1985). Mediation of interpersonal expectancy effects: 31 meta-analyses. *Psychological Bulletin, 97,* 363–386.

Harvey, J. H., Town, J. P., & Yarkin, K. L. (1981). How fundamental is the "fundamental attribution error"? *Journal of Personality and Social Psychology, 40,* 346–349.

Higgins, E. T., & Bargh, J. A. (1987). Social cognition and social perception. *Annual Review of Psychology, 38,* 369–425.

Hilton, J., & Darley, J. (1985). Constructing other persons: A limit on the effect. *Journal of Experimental Social Psychology, 21,* 1–18.

Hoch, S. J. (1987). Perceived consensus and predictive accuracy: The pros and cons of projection. *Journal of Personality and Social Psychology, 53,* 221–234.

Hoge, R. D., & Butcher, R. (1984). Analysis of teacher judgments of pupil achievement levels. *Journal of Educational Psychology, 76,* 777–781.

Humphreys, L. G., & Stubbs, J. (1977). A longitudinal analysis of teacher expectation, student expectation, and student achievement. *Journal of Educational Measurement, 14,* 261–270.

Ickes, W., Patterson, M. L., Rajecki, D. W., & Tanford, S. (1982). Behavioral and cognitive consequences of reciprocal versus compensatory responses to preinteraction expectancies. *Social Cognition, 1,* 160–190.

Insko, C. A., Nacoste, R. W., & Moe, J. L. (1983). Belief congruence and racial discrimination: Review of the evidence and critical evaluation. *European Journal of Social Psychology, 13,* 153–174.

Jones, E. E. (1986). Interpreting interpersonal behavior: The effects of expectancies. *Science, 234,* 41–46.

Jones, R. A. (1977). *Self-fulfilling prophecies: Social, psychological, and physiological effects of expectancies.* Hillsdale, NJ: Erlbaum.

Jussim, L. (1986). Self-fulfilling prophecies: A theoretical and integrative review. *Psychological Review, 93,* 429–445.

Jussim, L. (1989). Teacher expectations: Self-fulfilling prophecies, perceptual biases, and accuracy. *Journal of Personality and Social Psychology, 57,* 469–480.

Jussim, L. (in press). Social reality and social problems: The role of expectancies. *Journal of Social Issues.*

Jussim, L., Coleman, L. M., & Lerch, L. (1987). The nature of stereotypes: A comparison and integration of three theories. *Journal of Personality and Social Psychology, 52,* 536–546.

Jussim, L., Milburn, M., & Nelson, W. (in press). Emotional openness: Sex-role stereotypes and self-perceptions. *Representative Research in Social Psychology.*

Kahneman, D., Slovic, P., & Tversky, A. (1982). *Judgment under uncertainty: Heuristics and biases.* New York: Cambridge University Press.

Kahneman, D., & Tversky, A. (1973). On the psychology of prediction. *Psychological Review, 80,* 237–251.

Kashy, D. A., & Kenny, D. A. (1990). Do you know whom you were with a week ago last Friday? A re-analysis of the Bernard, Killworth, and Sailer studies. *Social Psychology Quarterly, 53,* 55–61.

Kennedy, L. (1989). *Is attractiveness destiny? The relationship between physical beauty and personality.* Unpublished master's thesis, Rutgers University, New Brunswick, NJ.

Kenny, D. A. (1979). *Correlation and causality.* New York: Wiley.

Kenny, D. A., & Albright, L. (1987). Accuracy in interpersonal perception: A social relations analysis. *Psychological Bulletin, 102,* 390–402.

Kenny, D. A., & La Voie, L. (1984). The social relations model. *Advances in Experimental Social Psychology, 18,* 141–182.

Klayman, J., & Ha, Y.-W. (1987). Confirmation, disconfirmation, and information in hypothesis testing. *Psychological Review, 94,* 211–228.

Krueger, J., & Rothbart, M. (1988). Use of categorical and individuating information in making inferences about personality. *Journal of Personality and Social Psychology, 55,* 187–195.

Kruglanski, A. W. (1989). The psychology of being "right": The problem of accuracy in social perception and cognition. *Psychological Bulletin, 106,* 395–409.

Kulik, J. A. (1983). Confirmatory attribution and the perpetuation of social beliefs. *Journal of Personality and Social Psychology, 44,* 1171–1181.

LaPiere, R. T. (1936). Type-rationalizations of group antipathy. *Social Forces, 15,* 232–237.

Linville, P. W. (1982). The complexity–extremity effect and age-based stereotyping. *Journal of Personality and Social Psychology, 42,* 193–211.

Linville, P., & Jones, E. E. (1980). Polarized appraisal of out-group members. *Journal of Personality and Social Psychology, 38,* 689–703.

Locksley, A., Borgida, E., Brekke, N., & Hepburn, C. (1980). Sex stereotypes and social judgment. *Journal of Personality and Social Psychology, 39,* 821–831.

Mackie, M. (1973). Arriving at "truth" by definition: The case of stereotype inaccuracy. *Social Problems, 20,* 431–447.

Malloy, T. E., & Albright, L. (1990). Interpersonal perception in a social context. *Journal of Personality and Social Psychology, 58,* 419–428.

Markus, H., & Zajonc, R. B. (1985). The cognitive perspective in social psychology. In G. Lindzey & E. Aronson (Eds.), *The handbook of social psychology* (3rd ed., Vol. 1, pp. 137–230). New York: Random House.

Martin, J. (1987). A ratio measure of sex stereotyping. *Journal of Personality and Social Psychology, 52,* 489–499.

Maruyama, G., & Miller, N. (1981). Physical attractiveness and personality. *Progress in experimental personality research, 10,* 203–280.

McArthur, L. Z., & Baron, R. M. (1983). Toward an ecological theory of social perception. *Psychological Review, 90,* 215–238.

McCauley, C., & Stitt, C. L. (1978). An individual and quantitative measure of stereotypes. *Journal of Personality and Social Psychology, 36,* 929–940.

McCauley, C., Stitt, C. L., & Segal, M. (1980). Stereotyping: From prejudice to prediction. *Psychological Bulletin, 87,* 195–208.

Merton, R. K. (1948). The self-fulfilling prophecy. *Antioch Review, 8,* 193–210.

Miller, D. T., & Turnbull, W. (1986). Expectancies and interpersonal processes. *Annual Review of Psychology, 37,* 233–256.

Mura, E. L., & Levy, D. A. (1987). Dispelling myths: A comparison of personality traits in graduate psychology and business students. *Journal of Social Behavior and Personality, 2,* 127–133.

Myers, D. G. (1987). *Social psychology* (2nd ed.). New York: McGraw-Hill.

Neuberg, S. L. (1989). The goal of forming accurate impressions during social interactions: Attenuating the impact of negative expectancies. *Journal of Personality and Social Psychology, 56,* 374–386.

Nisbett, R., & Ross, L. (1980). *Human inference: Strategies and shortcomings of social judgment.* Englewood Cliffs, NJ: Prentice-Hall.

Pedhazur, E. J. (1982). *Multiple regression in behavioral research* (2nd ed.). New York: Holt, Rinehart, & Winston.

Rasinski, K. A., Crocker, J., & Hastie, R. (1985). Another look at sex stereotypes and social judgment: An analysis of the social perceiver's use of subjective probabilities. *Journal of Personality and Social Psychology, 49,* 317–326.

Raudenbush, S. W. (1984). Magnitude of teacher expectancy effects on pupil IQ as a function of the credibility of expectancy inductions: A synthesis of findings from 18 experiments. *Journal of Educational Psychology, 76,* 85–97.

Regan, D. T., Straus, E., & Fazio, R. (1974). Liking and the attribution process. *Journal of Experimental Social Psychology, 10,* 385–397.

Rist, R. (1970). Student social class and teacher expectations: The self-fulfilling prophecy in ghetto education. *Harvard Educational Review, 40,* 411–451.

Rogosa, D. (1980). A critique of cross-lagged correlation. *Psychological Bulletin, 88,* 245–258.

Rokeach, M., & Mezei, L. (1966). Race and shared belief as factors in social choice. *Science, 151,* 167–172.

Rosenthal, R. (1974). *On the social psychology of the self-fulfilling prophecy: Further evidence for Pygmalion effects and their mediating mechanisms.* New York: MSS Modular Publications.

Rosenthal, R. (1984). *Meta-analytic procedures for the social research.* Beverly Hills, CA: Sage.

Rosenthal, R. (1985). From unconscious experimenter bias to teacher expectancy effects. In J. Dusek (Ed.), *Teacher expectancies* (pp. 37–66). Hillsdale, NJ: Erlbaum.

Rosenthal, R. (1989, April). *Research: How are we doing?* Paper presented at the Annual Meeting of the Eastern Psychological Association, Boston.

Rosenthal, R., & Jacobson, L. (1968). *Pygmalion in the classroom: Teacher expectations and student intellectual development.* New York: Holt, Rinehart & Winston.

Rosenthal, R., & Rubin, D. B. (1978). Interpersonal expectancy effects: The first 345 studies. *The Behavioral and Brain Sciences, 3,* 377–386.

Ross, L., Greene, D., & House, P. (1977). The "false consensus effect": An egocentric bias in social perception and attribution processes. *Journal of Experimental Social Psychology, 13,* 231–259.

Russell, B. (1974). A skeptical view of mysticism. In W. P. Alston & R. B. Brandt (Eds.), *The problems of philosophy* (2nd ed., pp. 62–66). Boston: Allyn & Bacon. (Original work published 1935)

Ruvolo, A. (1989). *Personal prophecies: Self-fulfilling prophecies in which the perceiver and the target are the same person.* Unpublished manuscript.

Sagar, H. A., & Schofield, J. W. (1980). Racial and behavioral cues in Black and White children's perceptions of ambiguously aggressive acts. *Journal of Personality and Social Psychology, 39,* 590–598.

Schneider, D. J., Hastorf, A. H., & Ellsworth, P. C. (1979). *Person perception* (2nd ed.). Reading, MA: Addison-Wesley.

Schuman, H. (1966). Social change and the validity of regional stereotypes in East Pakistan. *Sociometry, 29,* 428–440.

Sherman, S. J., Judd, C. M., & Park, B. (1989). Social cognition. *Annual Review of Psychology, 40,* 281–326.

Skov, R. B., & Sherman, S. J. (1986). Information-gathering processes: Diagnosticity, hypothesis-confirmatory strategies, and perceived hypothesis confirmation. *Journal of Experimental Social Psychology, 22,* 93–121.

Smith, M. L. (1980). Teacher expectations. *Evaluation in Education, 4,* 53–55.

Snyder, M. (1984). When belief creates reality. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 18, pp. 247–305). New York: Academic Press.

Snyder, M., Tanke, E. D., & Berscheid, E. (1977). Social perception and interpersonal behavior: On the self-fulfilling nature of social stereotypes. *Journal of Personality and Social Psychology, 35,* 656–666.

Sparacino, J., & Hansell, S. (1979). Physical attractiveness and academic performance: Beauty is not always talent. *Journal of Personality, 47,* 449–469.

Sutherland, A., & Goldschmid, M. L. (1974). Negative teacher expectation and IQ change in children with superior intellectual potential. *Child Development, 45,* 852–856.

Swann, W. B. (1984). Quest for accuracy in person perception: A matter of pragmatics. *Psychological Review, 91,* 457–477.

Swann, W. B. (1987). Identity negotiation: Where two roads meet. *Journal of Personality and Social Psychology, 53,* 1038–1051.

Swann, W. B., & Ely, R. J. (1984). A battle of wills: Self-verification versus behavioral confirmation. *Journal of Personality and Social Psychology, 46,* 1287–1302.

Swim, J., Borgida, E., Maruyama, G., & Myers, D. G. (1989). Joan McKay versus John McKay: Do gender stereotypes bias evaluations? *Psychological Bulletin, 105,* 409–429.

Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science, 185,* 1124–1131.

West, C., & Anderson, T. (1976). The question of preponderant causation in teacher expectancy research. *Review of Educational Research, 46,* 613–630.

Williams, T. (1976). Teacher prophecies and the inheritance of inequality. *Sociology of Education, 49,* 223–236.

Wineburg, S. S. (1987). The self-fulfillment of the self-fulfilling prophecy. *Educational Researcher, 16,* 28–37.

Received June 30, 1989
Revision received November 30, 1989
Accepted May 15, 1990 ■