Chapter 1

IMPLICIT LEADERSHIP AND FOLLOWERSHIP THEORIES: DYNAMIC STRUCTURES FOR LEADERSHIP PERCEPTIONS, MEMORY, AND LEADER-FOLLOWER PROCESSES

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In this review, we address implicit leadership theories (ILTs) and implicit followership theories (IFTs). Both types of implicit theories are important because leadership and followership are dynamic, socially constructed processes (Meindl, 1995) in which a leader's perceptions of followers are as critical as followers' perceptions of leadership. Both types of perceptions elicit confirming responses from the person being perceived, helping to create a dynamic leadership process in which relatively stable social structures emerge over time as leader and follower roles become differentiated. ILTs (and IFTs), which are a fundamental part of this process, are also dynamic in that they can be tuned automatically to particular contexts (Lord, Brown, and Harvey, 2001). In this dynamic process, both parties use their implicit theories to make sense of and react to the other party's behavior, creating an evolving basis for further interaction. In this sense, leadership is an ongoing, dynamic, two-way exchange between leaders and followers that is structured by both parties' implicit theories. Shamir (2007) provided an example of how important this process can be. He noted that Adolf Hitler perceived himself to be merely a drummer gathering the masses for the arrival of the "great leader" (the *Führer*) until his 30s, when he began to view himself as Germany's rightful leader. This shift in his self-perception may have been largely influenced by the way his followers responded to him.

Within this chapter, we discuss three broad areas of research that emphasize perceptual processes that are central to this dynamic leadership process. First,

International Review of Industrial and Organizational Psychology, 2010, Volume 25.
Edited by G. P. Hodgkinson and J. K. Ford.

we consider research on the social construction of leadership and followership, specifically focusing on how dynamic leadership-oriented schemas influence both cognition and action. Next, we review research on behavioral measurement and sensemaking, highlighting how followers' cognitive and emotional processes color their interpretation and ratings of leadership behavior. Finally, we conclude by taking a closer look at perceptual and memory processes and the nature of knowledge while developing a more integrative perspective.

Thus, one major contribution of our review is to provide an integrated theoretical perspective in which both leadership and followership can be understood by incorporating the cognitive and affective structures that guide the perceptions and reactions of both leaders and followers. This approach facilitates our understanding of the follower's role in leadership processes because we can generalize many of the findings derived from the extensive research on follower's perceptions of leaders to our emerging understanding of how followers are perceived. Another major contribution is to extend our understanding of social cognitions to include recent arguments that cognitions are embodied and embedded in specific contexts (Neidenthal *et al.*, 2005). Also, we use this recent perspective to help understand how leadership measurement can be improved. Finally, we show how many well-replicated findings concerning ILTs are consistent with the integrated perspective we develop.

Before proceeding further, it is important to note that the processes of leadership and followership are dynamic in three very different but related ways. One is that, as mentioned earlier, these processes take place within an emerging social structure. The second is that the ILTs and IFTs that guide perceptions and reactions are by themselves dynamic in that they can be adjusted to fit changing contexts and changing input patterns. However, once ILTs have been used for sensemaking, one's understanding of that situation is relatively stable. Thus, there is both plasticity and stability in the application of implicit theories to social perceptions. The third dynamic aspect is the knowledge we access (or recreate) is sensitive to the embodied emotions experienced in a particular situation. For example, a leader's facial expressions may be mimicked by followers, creating an emotion in followers that is similar to that felt by the leader. These emotions, in turn, can affect followers' perceptions of the leader and their willingness to accept the goals or motivational orientations of a leader. These three processes combine to create a dynamic, embodied, evolving understanding for both leaders and followers that guides the actions and reactions of both parties.

THE SOCIAL CONSTRUCTION OF LEADERSHIP AND FOLLOWERSHIP

Leadership and followership are now accepted as being perceptual and behavioral social constructs, existing only when others perceive one's behaviors to

be role congruent. There is extensive research on the emergence of leadership and the processes used by followers to perceive (or infer) leadership, yet little attention has been given to the companion process by which followership emerges when a leader views others to be followers (Uhl-Bien and Pillai, 2007). However, these perceptual processes are both likely to be based on the cognitive categorization process described by Rosch (1977, 1978) more than 30 years ago. In the following sections, we begin by reviewing the development of categorization theory before discussing the dynamic nature of person schemas, such as those of a leader or follower.

Categorization Theory: From Rosch to the Present

The Structure of Cognitive Categories

In order to be economical perceivers of our world, we develop cognitive shortcuts that allow us to simplify information processing to focus on the broader picture. *Schemas*, which are knowledge structures that develop through experience (e.g., categories, scripts, plans, implicit theories, and heuristics), provide one such cognitive shortcut. Without schemas, we would be overwhelmed by the plethora of information we encounter every day. After encoding initial person-based information, Rosch (1977, 1978; Rosch and Mervis, 1975) maintained that we engage in a limited search through long-term memory for an adequately matching schema. Successful matches result in the person being labeled as a categorical member and subsequently treated and recalled as such. With unsuccessful matches, the search continues until a match is made. As a result, cognitive categories play a predominant role in information processing.

Rosch's (1978) research describes the nature of cognitive categories. Categories tend to develop around a prototype, which is the most abstract yet representative example of a category. Prototypical features are widely shared among category members, but they are much less common in contrasting categories. For this reason, they are very useful cues regarding category membership. Categories are organized horizontally with respect to contrasting interpretations of a stimuli (e.g., a leader vs a non-leader) and hierarchically around levels of abstraction within a particular category (e.g., leader). The *basic level* (e.g., business leader or political leader) is the most commonly used and the most useful for understanding one's world. *Superordinate level* categories are more abstract and inclusive (e.g., leaders), whereas *subordinate level* categories are more concrete and exclusive (e.g., top-level business leaders, lower-level business leaders) than basic level categories. Categories contain information about the physical form of the concept and the *affordances* offered by the concept (e.g., what purposes it serves for the perceiver; *cf.* Lance *et al.*, 2008).

Interestingly, Rosch (1977) recognized that schemas are constructed around information that is environmentally useful for the perceiver, maintaining that biological, social, and cultural needs heavily influence human's schema

construction. Thus, as we describe more fully near the end of this review, rather than being created in a vacuum, schematic knowledge is constrained by the perceiver's perceptual, motor, and introspective systems, and it is situated in a specific context (Barsalou, 1999; Neidenthal *et al.*, 2005; Wheeler, 2005).

Leader Categorization Theory

On the basis of Rosch's work (Rosch & Mervis, 1975, 1977, 1978), Lord and his colleagues (Lord, 1985; Lord, Foti, and de Vader, 1984; Lord, Foti, and Phillips, 1982; Lord and Maher, 1991) developed a recognition-based theory of leadership that describes how categorization influences one's perceptions, memory, and interactions with a potential leader. They proposed that when we encounter a person who exhibits characteristics or behaviors that are particularly salient or vivid, we engage in search for a matching category. If the search produces a match to a leader category, then the person is perceived as being a leader. The nature and automaticity of these searches can be influenced by factors such as the introduction of evaluative information about the target person (Cronshaw and Lord, 1987), the perceptual salience of information (Phillips and Lord, 1981), the ambiguity of information (Lord and Smith, 1983), and the perceiver's goals (Foti and Lord, 1987; Murphy and Jones, 1993), culture (Ensari and Murphy, 2003; Hanges, Lord and Dickson, 2000), and affect (Medvedeff and Lord, 2007).

Exemplar Models of Leadership Perception

Rosch's (1977; 1978) theory and related leadership research emphasizes category prototypes as the central construct defining a category, but there is also a long history of research using exemplar models to define categories in terms of specific individuals (Hintzman and Ludlam, 1980; Medin and Schaffer, 1978). When we think about leaders, we activate not only our abstract representations of typical leaders but also our firsthand experiences with specific leaders. Moreover, these experiences may transfer from one leader to another (Ritter and Lord, 2007).

The work of Smith and Zárate maintained that exemplars influence social judgments even beyond the effect of prototypes that are acquired through social learning. For instance, Smith and Zárate (1990) found that our social judgments rely on exemplar and prototype comparisons differently depending on whether exemplars or prototypes are learned first. When perceivers were not familiar with the prototypical attributes of a social group before making judgments, their social categorizations of target individuals were more likely to be based on experience with exemplars. Consistent with this argument, Matthews, Lord, and Walker (unpublished manuscript) examined leadership categorization in students of different ages, finding that young children

defined leadership in terms of specific exemplars (e.g., their teacher, mother, or father), but by high school, most students defined leadership in terms of a more abstract prototype. In their later model, Smith and Zárate (1992) argued that exemplars are retrieved from memory and used for judgments when salient characteristics of a target individual match those of the exemplar. For instance, when perceivers are preoccupied with the gender of a target individual (e.g., a female superior), stored exemplars matching the target's gender are retrieved and compared, while other attributes of the target individual (e.g., the female superior's agentic personality) may be ignored.

Smith and Zárate (1992) contended that exemplar-based models of categorization are complementary to, rather than a replacement for, prototype models. Earlier research often favored prototype models for explaining categorization processes (e.g., Hampton, 1993; Lakoff, 1987; Rosch and Mervis, 1975), but in some circumstances exemplar models can outperform prototype models in explaining perception and judgment (Voorspoels, Vanpaemel, and Storms, 2008). It may be more reasonable to conceptualize person schema like leadership as existing on a continuum of exemplar to prototype models (Vanpaemel, Storms, and Ons, 2005; Verbeemen *et al.*, 2007).

Taken together, the inconsistencies in research comparing the categorization prototype and exemplar models suggest that there may be important moderators determining the nature of the schema that is used for categorization. Likely moderators include the availability of exemplars, the perceiver's affect and motivation, perceiver's experience in the domain of a social category, or one's knowledge about the target category. Despite potential moderator effects, this research suggests that judgments about leadership may be colored by readily accessible information about prior supervisors that is coupled with our long-standing beliefs about leadership. Indeed, Verbeemen *et al.* (2007) suggest that our judgments may be especially influenced by a representation of leaders that involves a set of highly salient exemplar characteristics that are embedded within more abstract beliefs that are acquired through social learning.

Consequences of Cognitive Categorization

Leader categorization has important cognitive consequences. Once an adequate match to a leader category is made, the person is labeled as a leader, and the label is stored in long-term memory. Subsequently, judgments about the individual are made by assessing the leader category and inferring the individual's traits on the basis of what is typical of a leader, not just on what was actually observed. This process significantly reduces encoding and memory demands. When the leader category becomes activated by contextual cues, perceivers begin to selectively attend to, encode, and retrieve information that is consistent with their impressions, and they fill in gaps in their knowledge

with schema-consistent information (Phillips and Lord, 1982; Phillips, 1984). Interestingly, social impressions tend to automatically develop very quickly and then stabilize (Ambady and Rosenthal, 1992), suggesting that once a person has been labeled as a leader or non-leader, this perception will persevere even if conflicting information is encountered. Research examining the dynamics of changing leadership perceptions in groups shows precisely this pattern, with changes in perceptions occurring substantially later than changes in behavioral patterns (Brown *et al.*, 1998).

Additionally, leadership judgments influence social interactions through behavioral *script* activations, which connect cognition with action (Gioia and Manz, 1985). Scripts, like schemas, simplify and guide information processing and are structurally organized around common features. Script activation (through goals or contextual cues) prompts script-concordant behavior (Lord and Kernan, 1987), and it influences memory, causing raters to remember more script-relevant behavior (Foti and Lord 1987). Additionally, scripts and ILTs are used to interpret the behavior of others (Wofford and Goodwin, 1994; Wofford, Joplin, and Cornforth, 1996) and to generate one's own behaviors (Lord and Maher, 1991; Wofford, Goodwin, Whittington, 1998). For instance, Engle and Lord (1997) showed that when supervisors and subordinates share schemas, they have better quality exchanges and typically like each other more. Additionally, Neuberg (1996) maintains that our expectations about people cause us to treat them in a way that leads them to engage in expectancy-confirming behaviors. Thus, the combination of person categorization and script activation influences both cognition and action.

Moving From a Static to a Dynamic View of ILTs

Context-based Changes in Leadership Prototypes

The classical perspective of categorization maintained that ILTs were relatively fixed, context-specific categories that shared a family resemblance type of structure across contexts (e.g., lower, middle, and higher level leaders or military vs business vs religious leaders), but more recent research suggests that ILTs are dynamic. The classic perspective, which held that each new context evoked a different but stable prototype that had been learned over time (Lord *et al.*, 1984), has been replaced by a view of emergent ILTs that are created dynamically on the basis of contextual input.

Cross-cultural research within the classical perspective indicated substantial consistency in ILT content across cultures (at least at the superordinate level), but notable differences as well (Gerstner and Day, 1994). The GLOBE (Global Leadership and Organizational Behavior Effectiveness) project led by Bob House, which investigated the content of ILTs across numerous cultures, found that in general the contents and structure of ILTs appear to hold across cultures (Den Hartog *et al.*, 1999; House *et al.*, 1999). However, the GLOBE project

gathered ratings of ideal leaders without specifying context, suggesting that ILTs were being measured at the superordinate rather than at the basic level. Thus, they did not investigate whether culture moderated the sensitivity of leadership prototypes to situational cues (e.g., level in an organization or type of leadership context). Similarly, Epitropaki and Martin (2004) did not find differences in the factor structure of ILTs for different groups of workers, but again they did not investigate context-specific changes in ILTs.

Other research has investigated the sensitivity of ILTs to situational cues. Although the superordinate level of an ILT (i.e., a typical leader) appears to be relatively resistant to cultural differences, basic-level categorical instances of a leader (e.g., religious leaders or female leaders) tend to differ depending on the situation. For instance, Solano (2006) found that in civilian contexts, the ideal leader is someone who is participative, democratic, and has a high regard for followers' welfare, yet in a military context, the ideal leader is someone who makes self-focused autocratic decisions. Ritter and Yoder (2004) showed that a woman's, but not a man's, ability to emerge as a leader depends on the nature of the task being performed (see also Hall, Workman and Marchioro, 1999). These effects of task context are often described in terms of Eagly and Karau's (2002) role congruity theory, in which the stereotypic role of a leader (being agentic) clashes with the stereotypic role of a female (being communal) but is congruent with the stereotypic role of a male (being assertive, controlling, and confident). This male-consistent aspect of leadership prototypes puts females at a noticeable disadvantage for competitive leadership roles. Additionally, Dickson, Resick, and Hanges (2006) found that prototypes of effective leadership that are shared within an organization vary to some extent on the degree to which the organization reflects mechanistic or organic forms. Thus, interpretations of the stability of ILTs need to be qualified by the level of analysis used (i.e., basic, superordinate, or subordinate).

Dynamics of Flexible Prototype Activation

Because prototypes exhibit sensitivity to context, Lord and colleagues revised leader categorization theory (Hanges *et al.*, 2000; Lord *et al.*, 2001; Lord, Brown, Harvey, & Hall, 2001) to explain how leadership prototypes could change in response to many contextual differences. Using a connectionist rather than a symbolic model of knowledge representation (see "Conclusions" of this chapter for a fuller discussion of this distinction), they maintained that prototypes were attractor regions (i.e., regions of stability) in neural networks. Further, they proposed that these stable regions were sensitive to (1) contextual constraints, (2) input patterns of traits or behaviors exhibited by social targets, and (3) individual differences in perceivers' network structures. These three factors dynamically interact to create the attractor region used to interpret social stimuli. Thus, they theorized that the meaning of leadership as

well as the perceptions of particular leaders could change over time or across contexts.

The gender and race of potential leaders and one's cultural background, momentary affect, and identification with one's current group were critical factors thought to affect these dynamic aspects of ILTs. Thus, this dynamic perspective on ILTs was able to integrate research showing that the gender (Heilman *et al.*, 1989) and race (Rosette, Leonardelli, and Phillips, 2008) of potential leaders affect the ILTs used to assess their leadership. For example, Scott and Brown (2006) showed that varying the gender of a potential leader affected the ease with which perceivers could encode agentic leadership behaviors, supporting the notion that agentic behaviors would be less prototypical for female than for male leaders.

An additional constraint on the prototypes which define ILTs is the active identity of perceivers. Considerable research shows that as one's group membership becomes increasingly salient, group members typically adopt a collective identity and begin to base leader categorization on group prototypicality rather than on leader typicality (e.g., Fielding and Hogg, 1997; Hains, Hogg, and Duck, 1997; Hogg *et al.*, 2006; Hogg, Hains, and Mason, 1998). Interestingly, fitting a group prototype can allot a perceived leader a lot of forgiveness, essentially giving them a "license to fail" as long as the failure can be interpreted in multiple ways (van Knippenberg, van Knippenberg, and Giessner, 2007).

Another consequence of a collective identity is that followers typically prefer a depersonalized leadership style that treats all group members similarly over a personalized leader–member exchange in which leader behavior varies depending on the specific group member (Hogg *et al.*, 2005). This contrasts with prescriptions from the leader–member exchange theory that maintains that differentiated roles develop among followers (Graen and Scandura, 1987), but this may be more appropriate when individual identities predominate.

Stability Versus Plasticity in ILTs and Social Perceptions

An important issue associated with the connectionist-based theory of ILTs concerns what exactly changes. In connectionist systems, the weights connecting units within a pattern change very slowly, creating stability in what has been learned. However, the pattern that is *activated* using those weights can change as different inputs and constraints are encountered. It is this active pattern that reflects the dynamic aspects of ILTs and the contextualized meaning attached to a particular leader. Yet, once an interpretation is constructed in a particular situation, it also functions as an attractor, creating a degree of stability in perceptions and social processes as long as the situation remains constant. For this reason, social perceptions like leadership exhibit stability, and they change less rapidly than one might expect. In other words, there is considerable "cognitive

inertia" associated with categorizing an individual. Consequently, change in social perceptions over time, but within context, is likely to be discontinuous. Moreover, the degree of discontinuity over time may vary with the strength of the attractors created by neural networks (Hanges *et al.*, 2002).

In support of this reasoning, several studies have found that shifts in leadership perceptions typically occur in a sudden, discontinuous manner. For instance, Brown *et al.* (1998) had participants observe a series of nine videotapes of a business meeting in which either a man or a woman was clearly engaging in leaderlike behaviors initially. However, through the course of the video series, the demonstration of leadership shifted slowly in a way that, by the end of the videotape, another person was clearly the new leader (in this case, leadership shifted either from a man to a woman or from a woman to a man). Interestingly, when both a man and a woman were equally exhibiting moderate displays of leadership during the fifth vignette, participants' perceptions of leadership still favored the initial leader.

Using a similar research paradigm that focused on followers' perceptions of emerging male and female leaders, Foti, Knee, and Backert (2008) found that emerging male leaders are more likely to be perceived in terms of gradual shifts in leadership perceptions, whereas emerging female leaders are more likely to be perceived in terms of discontinuous shifts in perceptions. Foti and her colleagues reasoned that this occurred because the activation of a male stereotype increases the accessibility of a leader schema, whereas the activation of a female stereotype inhibits the accessibility of ILTs. Other research has found that individual differences predict catastrophic shifts in perceptions of leadership, including one's beliefs in sexism and one's need for closure (Brown *et al.*, 1998; Hanges *et al*., 1997).

In sum, much has been learned regarding the nature of leadership categories and their role in leadership perception. As described in "The Social Construction of Follwership", contemporary research is beginning to focus on the explicit and implicit processes that define followership.

The Social Construction of Followership

The social construction of followership involves the emergence of a leadership relationship that occurs when (1) a potential leader perceives or infers a group of individuals to be his or her followers or (2) when individuals in a group begin to view themselves as members of a larger group led by a leader. Rather than being confined to the role of a passive participant under the control of a leader, followers are able to actively construct and shape the leader's perceptions and their self-perceptions through interactions with the leader and each other. Indeed, "followers" may view themselves as leaders momentarily joining forces with others who share their goals (Mccaw, 1999). This perspective in line with Rost's (2008) argument in which followers are reconceived as being active,

intelligent, responsible, and involved in interests shared with the leader (see also Chaleff, 1998; Hollander, 1992), although some followers choose to assume a more passive or negative role within a group (Kelley, 2008). To provide an elementary framework for investigating the social construction of followership, we extend the research discussed earlier to the topic of followership.

Follower Categorization Theory

As we have argued, follower categorization is equally as important as leader categorization (Uhl-Bien and Pillai, 2007). In this section, we apply categorization theory to show how follower categorization influences perceptions, memory, and interactions, and we discuss the nature of IFTs, which involve the implied beliefs that perceivers have about the prototypical characteristics of followers. Although we confine our discussion to a recognition-based process of followership, it is expected that followership can also be inferred based on performance information. For instance, followership may be inferred if group performance improves following the implementation of someone's suggestions.

Salient group behaviors or characteristics cue perceivers (whether a bystander or a group member) to search through memory for a matching social category to make sense of the situation. Behavior could be understood in terms of situationally guided scripts (Gioia and Sims, 1985; Foti and Lord, 1987), conformity to group prototypes (Hogg, 2001; van Knippenberg and Hogg, 2003), or personal attributions like perceptions of followership. For group members, this process can activate a follower identity, although it can also be activated through the perception that someone else is the leader (Uhl-Bien and Pillai, 2007) or through a leader's activities (Lord and Brown, 2001; 2004; Shamir, House, and Arthur, 1993). In short, there is a dynamic interplay between perceptions of leadership and perceptions of followership.

Rosch's theory of cognitive categorization implies that IFTs are hierarchically organized around a basic level category, which may include a general context-specific concept of someone who shows deference to a leader (Uhl-Bien and Pillai, 2007). As with other categories, IFTs can be expected to develop around prototypes or exemplars. Exemplar matching may occur if a perceiver has limited previous experiences with followers or if relevant episodic memories are particularly salient. Exemplar follower categories may be based on observations of other followers, or one's own experience with similar leaders (Ritter and Lord, 2007). With additional exposure to followers, IFTs become refined and tied to more well-defined contexts. Also, IFTs may become defined in terms of prototypes linking a category across contexts.

Rosch's theory also implies that the follower category includes information about a follower's physical form and the affordances that accompany followership, such as social capital or goal attainment. IFTs may include information regarding followers' location in space compared with leaders' (Giessner and

Shubert, 2007) appearance, voice (e.g., Bolinger, 1964, found that one's vocal pitch is associated with perceived submissiveness), race, gender, emotional expressions (Tiedens, 2001), or behavior such as when cooperating, listening, participating in decision-making, providing constructive feedback, or showing interest in the leader's goals.

The process of follower categorization is expected to have several important cognitive consequences. Because people are reluctant to change categories, a follower label may outlive its usefulness, preventing followers from exhibiting leadership qualities when needed. IFTs may also guide the sensemaking of both leaders and followers, producing inferences and role definitions that are unwarranted (e.g., Kipnis, 1976). Follower construction also interacts with the construction of leadership. Perceiving a leader within one's group may activate follower-centered scripts within that individual, which may then cause the "leader" to apply a follower category to the group after observing follower-like behaviors. Conversely, perceiving followership can activate leadership scripts in a potential leader, which may then increase the likelihood that others apply a leadership category to that individual. However, empirical support of this process is still needed. In addition, it remains unknown whether IFTs exhibit cross-cultural stability or whether stability exists at various levels of a schema's hierarchy. Future research needs to address these issues and identify the behavioral and perceptual components of IFTs.

Ironically, necessary research on followership and leadership is complicated by the effects of ILTs on the measurement of social processes. In the following section, we discuss research on the measurement of leadership as a joint construction of leaders and followers, highlighting how followers' cognitive and emotional processes influence ratings. We expect the same processes to operate when leaders are asked to describe followers' behaviors, as some research on performance appraisal has suggested (Feldman, 1981).

ILTS, SENSEMAKING, AND BEHAVIORAL MEASUREMENT

As in many leadership processes, leadership measurement involves a joint construction of leaders and followers. Although researchers may be primarily concerned with qualities or behaviors of leaders when they ask for follower ratings, ratings are colored and in some cases created by the follower's cognitive and emotional processes that are used to make sense of leadership processes. This has been known for many years (Eden and Leviatan, 1975; Staw, 1975), yet its consequences are still not widely appreciated. This issue is important because, as Hunter, Bedell-Avers, and Mumford (2007) noted, most leadership studies begin with a predeveloped, behaviorally based questionnaire given to subordinates to measure their leader's qualities. Correlations between such

questionnaire ratings and other dependent variables are then thought to reflect the effects of leader behaviors rather than followers' potential contributions. For example, the correlation between transformational leadership behavioral ratings and reports of satisfaction by subordinates has been interpreted as reflecting the effects of transformational leadership behavior. However, these correlations are much higher when subordinates provide both the satisfaction and leadership measures than when independent sources provide behavioral ratings (Lowe, Kroeck, and Sivasubramaniam, 1996). Such results suggest that subordinates' affect and cognition could have influenced descriptions of leader behaviors.

The potential of follower affect to influence such ratings is clearly illustrated by a recent study of the Multifactor Leadership Questionnaire (MLQ) by Brown and Keeping (2005). These authors used structural equation modeling techniques to examine the effects of rater mood on the item loadings in the MLQ. Although general affect had very little effect on loadings for specific dimensions, affect directed towards the leader in the form of liking ratings had a substantial effect, which was roughly equal to the size of the dimension loadings on their indicators. This result shows that affective and cognitive processes are often integrated in ways that are hard to separate as Damasio (1994) has stressed, and that affective reactions to leaders must be taken into account when we attempt to assess leadership processes. In the following section, we take a closer look at such follower or rater effects, which often reflect processes that occur implicitly as followers make sense of, react to, remember, and rate leadership processes. We begin by summarizing some of the earlier literature documenting the effects of raters on "behavioral ratings," then we turn to more recent research that extends our understanding of such processes.

Early Research on ILTs

Reconstructed Rather Than Remembered Ratings

Research conducted in the 1970s and 1980s on ILTs had three important implications for leadership behavior measurement. First, the research clearly showed that perceivers do not operate like objective data-recording devices, storing independent slices of a leader's behavior so that it can be accurately recalled later for leader evaluation. Rather, perceivers subjectively organize behavioral information when it is encountered, assimilating it with existing knowledge structures as part of an ongoing sensemaking process. This process often assimilates rated behaviors with affective reactions such as liking the leader. Once this sensemaking occurs, it generally is not possible to *directly* retrieve the original behavioral information. Instead, raters rely on their implicit theories to retrieve behaviors that were likely to have occurred given their currently held leader evaluations. In other words, behavioral ratings reflected

the nature of raters' currently held interpretive schema and only indirectly the effects of prior behavior.

This general process of immediately encoding information into global evaluations has been termed *on-line encoding* by Hastie and Park (1986), who distinguished this process from memory-based encoding in which behaviors are stored independent of an overall evaluation of another person. They emphasized that normally, perceivers recall prior on-line judgments when making a subsequent judgment rather than retrieve specific behaviors. Thus, on-line encoding in terms of leadership or followership and the subsequent use of ILTs or IFTs is likely to have important influences on behavioral ratings. Because person-based encoding is the normal default in social perceptions, at least in Western cultures, we tend to use person schema such as leadership to make sense of social behavior. And, as we have discussed in the previous section, this means that we typically categorize leaders in terms of their match to available prototypes and exemplars, which then influence the behavioral information we can later access. This process helps to explain the other two important implications for behavioral measurement.

Common Sense Science and Questionnaire Measures of Behavior

The second implication pertains to methodological processes that are normally used to construct behavioral questionnaires and evaluate their accuracy. Typically, behavioral scientists develop measuring instruments by having domain experts (e.g., managers) generate items and then giving these items to a large group of raters (e.g., subordinates) before using psychometric techniques such as factor analysis to refine these measures by dropping out items that do not load on appropriate scales. If ratings reflect the actual behaviors of leaders, these techniques might help produce purer measures of behavioral tendencies on the part of leaders. However, if ratings also reflect the sensemaking processes of perceivers, then these techniques might instead primarily reflect the structure in constructs held by perceivers on how leaders should behave.

Early research supported this latter interpretation (Eden and Leviatan, 1975; Rush, Thomas, and Lord, 1977; Weiss and Adler, 1981). These studies showed that the factor structures of popular leadership measures could be obtained from raters who were only rating hypothetical leaders, or from individuals who had limited exposure to a leader's behavior. Such results undercut the interpretation that leadership questionnaires were primarily measures of actual leadership behaviors and instead suggested that the structure of leadership questionnaires could reflect the relation of behavioral items to raters' ILTs. However, as Weiss and Adler (1981) noted, this does not mean that ILTs are inaccurate descriptions of general patterns of leader behavior, but it does mean that questionnaire descriptions may not accurately describe the behavior of a specific leader.

Along with undermining measurement processes, such research echoed a general criticism of applied social science research raised by Calder (1977). He argued that there was an over-reliance on common sense (e.g., implicit theories) as the basis for generating research theories and an under-reliance on more scientifically based constructs. The danger Calder saw was that if common sense ideas were used to generate theory, then tests of theory could also be supported by the common sense ideas of raters. One common sense theory fitting this scenario is that leaders who exhibit normative leadership styles (i.e., they behave in prototypical ways) will produce good performance in their organizations or work groups. As Meindl (1995) noted, the actual determinants of performance are too complex for most observers in real organizations to objectively evaluate. Instead, people rely on common sense–romanticized beliefs about causality in which leaders are the cause of very good (or very bad) organizational performance.

Performance as a Cue for Behavioral Ratings

Using this common sense theory, Staw (1975) recognized that it could create a reverse causality artifact in ratings in which knowledge of performance affects descriptions of prior behaviors. Focusing on group rather than on leadership processes, he showed that knowledge of group performance had significant effects on ratings of many types of group processes. Staw's research manipulated performance knowledge to determine its causal effect on ratings of group processes. However, in cross-sectional, correlational research, causality is unclear; thus, correlations between performance and group processes could reflect performance-influencing group process ratings, with rated processes actually having caused group performance, or a combination of both of these effects.

Extensive researchers showed that Staw's concern applied to the leadership field as well. For example, Rush *et al.* (1977) instructed participants to rate hypothetical leaders after being told that the leader's group performed well or poorly. As predicted, performance information had broad and substantial effects on all 10 behavioral scales of the Leader Behavior Description Questionnaire, which they labeled a performance cue effect (PCE). Mitchell, Larsen, and Green (1977) also reported consistent PCEs in studies using audio, video, and group interactions as stimulus materials to be rated. They also gave performance cues before groups interacted (which could affect both encoding and retrieval processes) or only after groups interacted (which could affect only retrieval processes). Because this timing manipulation did not alter PCEs substantially, they theorized that PCEs were produced mainly by retrieval processes. Subsequent research (Rush, Phillips, and Lord, 1981), which showed participants videotapes of group behavior and then gave them bogus performance feedback before behavioral ratings, also found a PCE. Specifically,

their feedback manipulation was significantly correlated with global leadership ratings made immediately after viewing the videotape ($r = 0.31$) or after a 48-hour delay ($r = 0.40$), even though subjects shown good and bad performance information saw exactly the same behavior. Research by Binning and Lord (1980) also showed that PCEs occurred when leadership ratings were provided by members of groups who actually interacted on multiple occasions. Many other researchers also replicated the PCE under various conditions (Butterfield and Powell, 1981; Gioia and Sims, 1985; Larson, 1982; Larson, Lingle, and Scerbo, 1984; Lord *et al.*, 1978; Mitchell *et al.*, 1977; Rush and Beauvais, 1981), demonstrating a very robust effect. Thus, as Staw (1975) had suggested, the rater's implicit theories provided an alternative interpretation for the relation of behavioral ratings to performance. In other words, the rater's sensemaking processes could create correlations between performance and rated behavior that were interpreted by typical leadership researchers as the effects of leaders on performance, not rater-induced artifacts.

Recent Research on ILTs

The distinction between early and recent ILT research is somewhat arbitrary, but we use this classification to separate research demonstrating that PCEs occurred under various conditions from research aimed at explaining why PCEs occurred or how they could be eliminated. The two major theories explaining why PCEs occurred were provided by attribution theory and categorization theory. More recent research on how memory functions indicates several ways to eliminate PCEs.

Attribution Theory

Sensemaking processes are closely related to one's understanding of causal events in a situation, and leaders are often assumed to have a causal impact on outcomes (Meindl, 1995). Recognizing the importance of causal attributions, several studies have manipulated factors that increase attributions to leaders for performance outcomes. In general, PCEs are enhanced when leaders are seen as being more causal. For example, when situational factors augment causal ascriptions to leaders or when the perceptual salience of leaders is enhanced, both causal attributions to the leader and PCEs are increased (Phillips and Lord, 1981). Although one might think of attributional processes as involving explicit reasoning processes, conscious processes do not have to be involved for such effects to occur as was shown by Phillips and Lord's (1981) manipulation of visual salience.

Other research examining leadership perceptions has contrasted attributional explanations with those based on categorization theory, with results generally favoring categorization theory (Cronshaw and Lord, 1987). What

does seem to be critical for the use of ILTs, whether in recognition-based or inferential processing, is that events and behaviors are interpreted using a person schema and that a trait-based interpretation is developed. This idea was clearly demonstrated in a study by Murphy and Jones (1993), which induced raters to use either event-focused (e.g., script-based) or person-focused encoding. Significant PCEs were found under person-focused conditions; however, under event-focused conditions, PCEs were reduced to nonsignificant levels for most dependent measures. In a later study, Ensari and Murphy (2003) extended these findings showing that PCEs (and prototypicality manipulations) affected charismatic leadership perceptions only when raters made dispositional attributions. Their study was also unique in employing a cross-cultural perspective. In short, these studies show that use of a person-based schema and interpretation of outcomes in terms of personal qualities are needed for PCEs, to affect leadership ratings. These findings are consistent with the general importance of person-based trait ascriptions in explaining leadership emergence in groups (Lord, De Vader, and Aliger, 1986).

Categorization Theory

As discussed earlier, leader categorization theory (Lord *et al.*, 1982, 1984) posits that after one is classified as a leader, generic category information is used to guide subsequent ratings of behavior. Theory and research show that when a person is classified as a leader, prototypical leader behaviors are more likely to be recognized as having been seen, and antiprototypical leader behaviors are less likely to be recognized, with exactly the opposite pattern occurring when individuals are seen as being ineffective leaders. When accuracy is defined as the ability to differentiate seen from unseen behavior, then it is generally low for both prototypical and antiprototypical leadership behaviors (Binning, Zaba, and Whattam, 1986; Foti and Lord, 1987; Phillips and Lord, 1982; Phillips, 1984). Further, performance information, which affects leadership categorization, also indirectly affects memory through its influence on categorization processes (Binning *et al.*, 1986; Phillips and Lord, 1982; Downey, Chacko, and McElroy, 1979). Using a correlational methodology in a sample of real work supervisors, Rush and Russell (1988) found that affective evaluations of leaders seemed to cue appropriate prototypes and that agreement in supervisor ratings can be produced by similar implicit theories.

Interestingly, several of these studies show that items that are neutral with respect to leadership categories are responded to most accurately (Phillips and Lord, 1982; Phillips, 1984; Foti and Lord, 1987). However, there is also evidence that when behavioral items are very specific and clear behavior is observed, the effects of performance information on ratings are reduced (Downey *et al.*, 1979; Binning *et al.*, 1986; Gioia and Sims, 1985), but this does not also imply that responses are more accurate, a point addressed more

thoroughly in section "An Integrative Perspective on Social Perceptions and Measurement."

A common theme among all of these studies is the importance of the rater's leadership categories in guiding leader behavior descriptions. Research shows that ILTs are multidimensional, trait-based knowledge structures that guide sensemaking and behavioral encoding (Epitropaki and Martin, 2004; Offerman, Kennedy, and Wirtz, 1994). Interestingly, Foti and Lord (1987) found results paralleling those for ILTs when examining behavioral items related to scripts – the more prototypical an item, the more likely it was to be falsely recognized as having been previously observed – which replicates previous findings for script-related items (Graesser *et al.*, 1980). Such findings indicate that integration with a schema, whether event- or person-based, *diminishes* the rater's ability to distinguish observed from unobserved behaviors. Similar results occur in the performance appraisal area where frame-of-reference training has been shown to *decrease* behavioral-level accuracy (Sulsky and Day, 1992), while at the same time increasing the ability to correctly classify ratees as good or bad performers. In sum, cognitive categories aid in sensemaking, helping assimilate observed behavior with accumulated knowledge in a given domain. However, categories can also distort memory, inducing raters to falsely recognize category-consistent behaviors that did not occur as having occurred previously.

Semantic Versus Episodic Memory

The effect of ILTs on ratings can also be better understood by applying constructs and techniques developed by research in human memory. Memory researchers typically distinguish between *semantic memory,* which stores general information that accumulates with experience (e.g., dark clouds and thunder usually mean that rain is likely), and *episodic memory,* which stores context-specific memories of a particular events, such as an event with high emotional impact or vivid perceptual qualities (e.g., the black clouds and hard rain during my camping trip to Yellowstone Park last summer). ILTs reflect the effects of semantic memory, which uses categorical structures such as leadership to make sense of events. Episodic memory, which may involve a specific exemplar in a specific context, may provide more accurate but less general descriptions of leadership. Because semantic leadership knowledge seems so plausible and is so easily accessible, given the performance information or information about prototypical qualities of a leader, it is confused by raters with episodic information, and it is thought to have occurred.

One way to assess whether memory reflects a direct recollection of prior experience (episodic memory) or more general sensemaking processes associated with semantic memory is to use signal detection theory (Lord, 1985). This approach uses two parameters to separate accurate signals from background

noise created by the rater's implicit theories. The first parameter, *memory sensitivity*, reflects the raters' ability to distinguish behavioral items that correspond to previously observed behaviors from similar items that correspond to unobserved behaviors. Because this distinction reflects the grounding of ratings in a specific context, it is a good indicator of episodic memory. The second parameter, *bias*, reflects a change in the threshold used in making judgments, such as an increased tendency to respond that a behavior previously occurred. Bias can be caused by a type of behavior being consistent with one's implicit understanding of a situation, such as prototypically effective leadership behavior being consistent with good performance. In a series of innovative studies Martell (Martell and Guzzo, 1991; Martell and Willis, 1993) used signal detection theory to show that PCEs were associated with the bias but not the memory sensitivity parameter. Martell and Willis (1993) also showed that bias completely mediated the relationship between PCEs and ratings. Martell and DeSmet (2001) have also shown that gender-related effects on leadership ratings operate through the bias rather than the memory sensitivity component.

We have already seen that PCEs do not occur when leaders are not seen as being the cause of performance, but Martell's research suggests that techniques that would eliminate memory bias could eliminate PCE-related distortions in leadership ratings. Martell and Evans (2005) reasoned that this bias could be eliminated by training raters to use episodic memory as a basis for ratings. In their study, participants observed a videotaped group exercise and then received bogus good or bad performance cues. Before eliciting ratings, Martell and Evans (2005) trained raters in a reality-monitoring technique aimed at eliminating memory bias. Specifically, they trained raters to distinguish between judgments that reflect a vivid memory of a specific action (*remember judgments*) from those that reflect a general feeling of knowing or familiarity (*know judgments*). Subjects may be highly confident in both remember and know judgments, but remember judgments are thought to better reflect episodic memory (Gardiner and Richardson-Klavehn, 2000). In Martell and Evans' (2005) study, participants were instructed to only respond with a "yes" to remember judgments. This source-monitoring technique completely eliminated the memory bias component associated with PCEs, but it had no effect on memory sensitivity, suggesting that appropriate rater training can eliminate bias, but it still does not enhance accuracy as indexed by memory sensitivity.

Baltes and Parker (2000) also examined rater-training approaches to eliminate PCEs. They investigated two training techniques. One trained raters to eliminate halo error (i.e., seeing universally good or bad qualities in ratees). The other involved structured-recall memory training that defines rating dimensions before viewing stimulus videotapes and also asks raters to recall behaviors relevant to each dimension before making ratings. Compared with a no-training control group in which 45% of the variance in behavioral ratings

was associated with performance cues, much less variance was explained by the PCE in both the halo-effect training (3%) and the structured-recall training (4%) groups. Consistent with Martell's research, both these training techniques also reduced memory bias to nonsignificant levels, but they had no effect on memory sensitivity.

As is evident, rater training can help reduce the reliance on semantic memory in making leadership ratings, but it does not increase the reliance on episodic memory. Are there factors that can increase the use of episodic memory? Surprisingly, memory research indicates that more emotionally arousing events (Allen, Kaut, and Lord, 2009) and individuals who react more emotionally (Lord, Hall, Schlauch, Chang, & Allen, unpublished manuscript) tend to produce more accurate episodic memories. This is because emotional reactions increase attention to events and their context, producing an encoding that is more episodic. However, emotions can also bias retrieval processes in semantic memory and can be associated with halo error. Thus, more emotional memories will not be more accurate unless these emotions are used to access episodic rather than semantic memory.

One technique, visualization of prior experiences, shows some promise in facilitating the use of episodic memory. In two separate studies, Naidoo, Kohari, Lord, and Dubois (in press) compared ratings when raters visualized their leader with when they did not. This visualization procedure was designed to provide more vivid cues for retrieving behaviors that are based on perceptual aspects of the leader and context and *the rater's own feelings* more vivid cues for retrieving behaviors. The first study involved perceptions of employee's actual work supervisor, and the second had participants watch an engaging and dramatic videotape before making leadership ratings immediately and also one to three weeks later. Results from both studies showed that, as predicted, visualization made affect a more central component in ratings. Interestingly, the second study also showed that under visualization conditions, delayed ratings of leaders were more consistent with ratings made immediately after viewing the videotape and, perhaps more importantly, episodic memory recall was better in the leader visualization condition.

To summarize briefly, research shows that typical behavioral measurement is dependent on the ILTs that people use to construct on-line interpretations of social processes such as leadership. ILTs reflect general knowledge stored in semantic memory, and categorization processes seem to tap into this general knowledge when ratings are made. More episodic memory can be relied on for ratings under special circumstances, such as when raters are trained in reality monitoring (Martell and Evans, 2005), and this process can reduce memory biases associated with semantic knowledge, but it does not necessarily make ratings more accurate. To increase behavioral accuracy, both encoding and memory retrieval processes need to use episodic memory. This may occur when behavior is especially vivid or when intense emotions are aroused.

AN INTEGRATIVE PERSPECTIVE ON SOCIAL PERCEPTIONS AND MEASUREMENT

As evident, leadership perceptions and leader behavior measurement are complex, dynamic processes that involve both aspects of leaders and processes specific to followers. Perceivers (leaders or followers) use schema derived from experience but tuned to a particular context to make sense of behavior in an ongoing manner and to form social perceptions. Many of the effects illustrated in the earlier review can be understood by taking a closer look at theory, addressing what knowledge actually is and how perceptual/memory processes operate. In this final section, we address these two issues, simultaneously showing how a more precise specification of these cognitive processes helps us understand many of the effects research has shown to be associated with ILTs. These effects and associated explanations are shown in Table 1.1.

Sensemaking and the Nature of Knowledge

Classical, Symbolic View of Knowledge

In what has been labeled the classical view, knowledge is thought to be represented in the form of symbols (e.g., letters and words) that are distinct from the perceptual structures on which they are based. Thus, perceivers were thought to translate observed behavior into more abstract symbolic representations that had a generalized meaning, such as cognitive categories and ILTs. Using this translation process, perceivers seem to shift from a more episodic to a semantic memory representation to undergird their understanding of leadership. This symbolic representation was thought to be guided by leadership prototypes that were relatively stable (Epitropaki and Martin, 2004).

Connectionist View of Knowledge

Two important changes in this view of ILTs have occurred that question the classical view of knowledge. Following cognitive research (i.e., connectionism) that emphasizes more microlevel processes produced by associative networks, Lord *et al.* (2001) maintained that neural networks integrate many features in an ongoing manner in forming leadership perceptions. Thus, Lord *et al.* (2001) saw leadership categories as being defined by neural networks rather than prototypes which are symbolic and permanently stored in long-term memory. Research by Foti *et al.* (2008) supports this perspective showing that personal relevance moderated the extent to which the connectionist networks guiding person perception changed during a task.

This more dynamic view of leadership perceptions helps us to understand how performance cues could retrospectively bias what is retrieved from memory (Finding 1 in Table 1.1). It is likely that performance information

Table 1.1 Explanation of implicit leadership theory (ILT) effects based on different views of knowledge and adaptive resonance theory (ART)

Finding from Prior Leadership Research	Explanation Based on Knowledge View or ART
1. PCE affects descriptions of schema – consistent behaviors	Performance inferences or behavioral recognition both activate categories; descriptions are then based on category content
2. Affect and vividness of stimuli can affect memory sensitivity	Both affect and vividness can capture attention, and they are part of an embodied, context-specific episodic representation
3. Followers' perceptual schemas and affective states affect leadership perceptions	Perceptions reflect embodied as well as symbolic knowledge in perceivers
4. ILTs (IFTs) and associated leadership processes have an embodied component that is not symbolically represented	Sensemaking, reactions to leaders (followers), and contextual stimuli are embodied; we understand through perceiving, reacting, and acting
5. Perceptions of leadership are more strongly tied to patterns than individual features	Patterns of inputs provide multiple routes to access leadership schema and they resonate more strongly with these schema
6. Memory sensitivity (ability to distinguish seen from unseen behaviors) is low for schema-consistent behaviors	On-line encoding is based on resonating interpretations between a pattern of inputs and previously learned schema; individual inputs are not noticed or encoded; an interpretation's pattern is stored in semantic memory
7. Once formed, leadership perceptions are slow to change and change in a discontinuous manner	Resonating interpretations of stimuli receive both top–down and bottom–up activation; new inputs must overcome top–down schematic activation
8. Discontinuities in changing perceptions can vary in strength	Vigilance parameters alter the degree of fit needed for resonance to occur; liberal parameters allow many partially competing patterns to resonate, making misfits harder to detect
9. Context determines basic level categories	Context and prototypical patterns are assimilated in convergence zones and are learned together
10. Categorization can be based on a continuum from exemplar to prototype models	Stringent vigilance parameters may require precise fit on many or very specific features, requiring exemplar-based categorization; liberal vigilance parameters may allow fewer or more abstract features to fit, allowing for a prototype-based process

not only makes leadership categories more accessible, increasing the ease with which prototypical behaviors can be retrieved, but also activates an entire prototype, making unseen but plausible behaviors as active as behaviors that were actually observed on a previous occasion. In other words, the connection of leadership behaviors and performance expectations is a two-way street. Activation can flow in either direction: We can recognize leadership when a

pattern of traits and behaviors activates a network of prototypical qualities (Smith and Foti, 1998; Foti and Hauenstein, 2007), with the resulting leadership perceptions fostering high performance expectations; or alternatively, we can infer leadership and activate the network of underlying prototypical qualities given the high performance information. In either case, perceptions, performance, and behavior are activated together, and raters have limited ability to separate seen from unseen, but prototype-consistent, behaviors.

Embodied, Embedded View of Knowledge

A more contemporary view of knowledge emphasizes that not only are the perceiver's abstract mental structures involved in the perceptual processes but knowledge is also literally embodied in that it is dependent on the perceptual structures, the anticipated motor responses to these structures, and affective reactions in the perceiver (Neidenthal *et al.*, 2005); that is, the mind and body are both involved in sensemaking processes. This embodied view of knowledge implies that perceptions arise in a fundamental sense from the physical experience of a perceiver in a particular context. Consistent with this view, qualities like gender (Scott and Brown, 2006) or race (Rosette *et al.*, 2008) can have subtle effects on how perceivers see and interpret leadership behaviors because they create salient perceptual structures that underlie information stored in episodic memory, and they also have important implications for how to act and what reactions to expect.

This embodied perspective also emphasizes that abstract (i.e., amodal) knowledge, such as that tapped by most questionnaires purporting to measure behavior, is fundamentally different from the embodied knowledge that drives sensemaking procedures. In a literal sense, sensemaking is embodied because a physical, living, and feeling person is embedded in the sensemaking context. As such, meaning construction takes into account potential harm or benefit to that person. Potential harm or benefit produces affective reactions and activates motor programs related to appropriate responses. Consequently, accurate, context-specific knowledge is grounded in perceptual, affective, and motor structures; when these components are vivid, they can be bound together to create a specific episodic memory (Allen *et al.*, 2009). Rating procedures, such as visualization, can help raters tap into previous episodic memory; however, asking for the frequency of leadership behaviors is much more likely to access more general semantic knowledge (Finding 2 in Table 1.1) and ratings may merely reflect the accessibility of that semantic knowledge (Lord *et al.*, 1984; Lore and Foti, 1987).

This embodied perspective helps us understand why visualization procedures can be helpful in retrieving prior experience (Naidoo *et al.*, in press) and also helps explain why affective reactions to a leader are an important part of rating processes (Brown and Keeping, 2005). But, it also has additional

complications; for example, it suggests that factors such as perceptual salience will be an important component of our understanding of leadership as in Phillips and Lord's (1981) study, which showed that visual salience can affect both causal attributions and leadership ratings. Factors that merely prime perceptual structures, like orientation along a vertical dimension, can also affect leadership perceptions (Giessner and Schubert, 2007). Similarly, processes that elicit affective reactions in perceivers (Bono and Ilies, 2006; Naidoo and Lord, 2008) can influence perceptions of leadership. In short, followers' embodied responses are part of the process of leadership perception (Finding 3 in Table 1.1). Embodied responses also go beyond perceptual processes, providing an important basis for decision making based on somatic markers (Bechara and Damasio, 2005).

An additional advantage of an embodied, embedded perspective on knowledge is that it focuses on sensemaking processes that involve real people with powerful emotions in real contexts (O'Malley *et al.*, 2008). Perceptions, affective reactions, motor behaviors, and understanding all emerge in a dynamic, ongoing process (Weick, 1995). This suggests that the embodied knowledge of these individuals is a fundamental part of the leadership process. Leadership theories that emphasize such components rather than just abstract, behavioral knowledge have the potential to be more valid (See Naidoo *et al.*, in press, for an illustration of such an effect) (Finding 4, in Table 1.1).

The Importance of Schemas during Perceptual Processes

It is widely recognized that schemas are necessary to help simplify information processing, but their precise role in guiding perceptions is usually glossed over. Schemas not only provide ready-made constructs for encoding observed behavior, but also provide a filtering system that helps individuals notice and interpret some aspects of their context while ignoring others. They do this by accentuating the activation of information relevant to schema, making them more likely to be consciously noticed. Grossberg's (1999) adaptive resonance theory (ART) provides a detailed explanation of this selection process.

ART and Top–Down Influence on Perception

ART contends that mental representations, such as ILTs, are an important top–down influence that interacts with bottom–up processes, such as patterns of traits or behaviors, during perception and information processing. If this interaction creates a resonance state with sufficiently high activation, the created pattern (i.e., an interpretation of the stimulus) gains access to working memory. This is an important point, because what is noticed is a pattern or interpretation, not the isolated inputs that help create this pattern. Thus, only this interpretive pattern can be encoded consciously and stored in memory.

In more concrete terms, information from external stimuli, such as observed leader behaviors, is automatically compared with cognitive categories held in long-term memory, such as a leader prototype, via bidirectional feedback loops. Only successful top–down and bottom–up matches are brought into working memory, creating an emergent interpretive structure that identifies a person as a leader or a follower. Unsuccessful matches result in either the comparison of observed behavior with a different representation in long-term memory or, if sufficiently interesting, the learning of a new cognitive category. Consistent with this reasoning, research has found that patterns have greater effects than their independent constituent elements (Smith and Foti, 1999; Foti and Hauenstein, 2007) in predicting leadership perceptions, which makes sense because the pattern of characteristics creates resonance, not individual elements (Finding 5 in Table 1.1).

Further, because the pattern of inputs resonates with a perceiver's ILT (or IFT), it is hard to distinguish characteristics consistent with the perceiver's implicit theories that were not part of the input pattern from actual inputs (Finding 6 in Table 1.1). This is because as schemas resonate (i.e., using connectionist terms, settle in to an interpretation), gap-filling occurs and aspects of schemas not present in input patterns become activated. This gap-filling should be less extreme for aspects that are closely tied to perceptual features of a stimulus, but it may be substantial for more abstract features. Thus, we would not encode a female leader as being a male because leadership prototypes contain many masculine features, but we may perceive her as being intelligent or decisive regardless of whether we actually observe behavior related to these characteristics.

Search for Appropriate Categories

According to Grossberg, a *vigilance parameter* monitors the process by which stimulus input is matched to a prototype. When the vigilance parameter is more stringent, a stricter match between stimulus input and a relevant schema is required for resonance to occur. With a more liberal vigilance parameter, a looser match may be sufficient to create resonance. For instance, Barack Obama's ability to gain the popular presidential vote may have depended in part on how well he fitted Americans' expectations of an ideal presidential leader – yet the strictness of the match that is required can vary across and within individuals. With very strict vigilance parameters, Obama may have a hard time overcoming racial biases that are incorporated into ILTs, as a near-exact match may be required. If he is unable to match our expectations of a leader, we may attempt to match him to a non-leader category, perhaps revolving around his race or youthfulness. As noted by Medvedeff and Lord (2007), affect may influence the strictness of the vigilance parameter, with positive affect inducing less stringent vigilance than negative affect.

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However, once a match is found and resonance occurs – that is, an interpretation of a person as being a leader is created – input patterns can change without the resonant pattern being altered very much. Thus, as we have already noted, cognitive categories create inertia in social perceptions, causing changes in leadership perceptions to be discontinuous (Finding 7 in Table 1.1). As well as modulating the nature of perceptions, vigilance parameters could modulate the nature of change by altering the degree of fit required to create a new interpretation of a stimulus. With a liberal vigilance parameter, which allows many competing patterns to be interpreted similarly, interpretations would have more inertia because many aspects of the stimulus would have to change before the interpretive category would change (Finding 8 in Table 1.1).

According to ART, if all of the accessible categories are exhausted without leading to a successful match with a stimulus, a new prototype may be created. Importantly, prototype learning occurs as a whole. After stimuli reach our senses and are interpreted by feature detectors, conjunction neurons store contextual information from multiple modalities in parallel (Neidenthal *et al.*, 2005). With repeated exposure to a stimulus over time, populations of conjunction neurons converge within association areas of the brain called *convergence zones* to represent the stimulus (Damasio, 1989). These convergence zones can later be reactivated without any of the original stimulus input and are contextually dependent. In this sense, we recreate perceptual images when we remember something (Payne *et al.*, 1999) and retrieval of information occurs as a whole. With repeated activation over time, the pattern gets strengthened, creating a prototype that can guide perceptions.

Learned prototypes can later be refined through experience to slowly change to accommodate repeatedly encountered new information. However, the stimulus' context, which is bound to the prototype in convergence zones that are reactivated to create memories, guides our expectations and interpretations when bottom–up information is ambiguous or when a similar context occurs in the future. Thus, the theory suggests, as Rosch's categorization theory has found, that it is the combination of context and stimulus features that creates a basic or fundamental level of categorization (Finding 9 in Table 1.1).

With a strict vigilance parameter, a near-exact match between the stimulus' context and a matching category's context may be required for categorization to occur. That match may include enough perceptual and contextual features to require an exemplar-based match. However, more liberal vigilance parameters may overlook contextual inconsistencies during category searches, thus allowing for a wider range of potential target categories to be considered. In other words, the continuum from exemplar to prototype models proposed by some researchers (Vanpaemel *et al.*, 2005; Verbeemen *et al.*, 2007) may also reflect the effects of stringent versus liberal vigilance parameters (Finding 10 in Table 1.1). In this way, prototype matching or accessibility is strongly tied

to contextual information, but what is critical about context will be defined by an embodied perceiver, who has a particular history and physical perspective, relevant affect, and ongoing somatic or motor reactions during sensemaking. Extending the reasoning of Medvedeff and Lord (2007) to this issue, the effect of perceivers' affective states on vigilance parameters may help determine whether exemplar or prototype models are used.

Because ART is capable of accommodating new information without eradicating existing knowledge structures, this theory is capable of reconciling the stability and plasticity of ILTs. Stability involves matching existing structure, but plasticity occurs when we create new schema because matches to extant schemas cannot be found. Through its introduction of vigilance parameters that control the stringency of schema matches and its emphasis on prototype learning as a whole, ART should prove noteworthy within the study of leadership and followership. Indeed, it has received recent attention though its application to gender biases (Hogue and Lord, 2007), leadership categorization and affect (Medvedeff and Lord, 2007), and goal striving (Johnson, Chang, and Lord, 2006).

CONCLUSIONS

As shown in Table 1.1, we can deepen our understanding of the effects associated with ILTs or IFTs by considering the nature of knowledge and the dynamics of ART processes. In conjunction, these two theories imply that knowledge, perceptions, and memory are actually by-products of an embodied agent who is situated in a particular context and is attempting to adapt to that context while meaning is being created. Perception, action, and understanding are dynamically interrelated over time. Leadership processes reflect this dynamic, embodied, evolving understanding of both leaders and followers.

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