

# Goal Constructs in Psychology: Structure, Process, and Content

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Goals and related constructs are ubiquitous in psychological research and span the history of psychology. Research on goals has accumulated sporadically through research programs in cognition, personality, and motivation. Goals are defined as internal representations of desired states. In this article, the authors review the theoretical development of the structure and properties of goals, goal establishment and striving processes, and goal-content taxonomies. They discuss affect as antecedent, consequence, and content of goals and argue for integrating across psychological content areas to study goal-directed cognition and action more efficiently. They emphasize the structural and dynamic aspects of pursuing multiple goals, parallel processing, and the parsimony provided by the goal construct. Finally, they advocate construct validation of a taxonomy of goals.

The pursuance of future ends and the choice of means for their attainment are the mark and criterion of the presence of mentality in a phenomenon. (James, 1890, p. 8)

William James's words, written over a century ago, foreshadowed a science of goal- and plan-directed behavior that is beginning to see fruition (Ajzen, 1991; Bargh & Gollwitzer, 1994; Locke & Latham, 1990a; Pervin, 1989a). In the interval since that statement, and despite the hegemony of behaviorism, the study of goal constructs has expanded to consider (a) the interplay between persons, behavior, and environments (e.g., Bandura, 1986); (b) situated versus symbolic accounts of cognition (e.g., Vera & Simon, 1993); (c) goal-behavior gaps (e.g., Lord & Levy, 1994); (d) self-regulation (e.g., Karoly, 1993); (e) volition (e.g., Corno & Kanfer, 1993); and (f) agentic behavior (e.g., R. M. Ryan, 1992). The breadth of psychological inquiry is apparent from the list of theories that incorporate goal constructs (see Table 1). Yet, the sheer magnitude of this body of research is associated with a certain danger. Heterogeneous perspectives can generate a large body of facts, an excess of vocabulary, and numerous microtheories (Cacioppo & Berntson, 1995). Organizing this knowledge of goals across domains is as vital as understanding each domain in isolation (Spaulding, 1994). In this review, we consider the structural, process, and

content aspects of goals across the cognitive, personality, and motivational domains.

We define *goals* as internal representations of desired states, where states are broadly construed as outcomes, events, or processes. Internally represented desired states range from biological set points for internal processes (e.g., body temperature) to complex cognitive depictions of desired outcomes (e.g., career success). Likewise, goals span from the moment to a life span and from the neurological to the interpersonal (H. Gardner, 1987; Izard, 1993). Using this broad definition, we attempt to show that part of the diversity of goal-based hypotheses and vocabulary can be understood more frugally using common concepts. Furthermore, we argue that single goals cannot be understood when isolated from other goals and from the cognitive, behavioral, and affective responses organized in pursuing goals. Finally, we take advantage of the breadth of research on goals to demonstrate the extent of psychological knowledge of the content of the goals humans pursue and to advocate the use of diverse methods that can be applied to increase one's knowledge of goal structure, process, and content.

The breadth of knowledge within each of the cognitive, personality, and motivation domains is extensive as well. For example, we consider cognitive research on mental representation (Landman & Manis, 1983; Posner & Shulman, 1979; Zajonc, 1980), production systems and problem solving (Anderson, 1993; Barsalou, 1991; Bogdan, 1994; Linville & Clark, 1989; Lord & Maher, 1991; G. A. Miller, Galanter, & Pribram, 1960; Newell, 1990; Posner, 1989; Wyer & Srull, 1989, 1994), and schemata (Bower, Black, & Turner, 1979; Galambos, Abelson, & Black, 1986; Martin & Tesser, 1989; Rumelhart, 1984). In the personality domain, we review research on patterns of functioning across time and situation (F. H. Allport, 1937; Baron & Boudreau, 1987; Buss & Cantor, 1989; Cantor, 1990; Emmons & Diener, 1986; Higgins, 1987, 1989; Matarazzo & Garner, 1985; Pervin, 1989b, 1990; Pervin & Furnham, 1987), traits and needs (G. W. Allport, 1937; Kluckhohn, Murray, & Schneider, 1953; Murray, 1938), and goals at varying levels of abstraction (Little, Lecci, & Watkinson, 1992; Wakefield, 1989). Of course, we include motivational research on drives and motives (Cofer, 1985; Weiner, 1991); the direction, effort, and persis-

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Table 1  
*Chronological Sequence of Theories Positing Goal-Like Constructs*

Theory	Studies
"Conscious attitudes"	Ach (1905), Humphrey (1951), Kuhl & Beckmann (1985b)
Intentions as quasi-needs	Lewin (1926/1951), T. A. Ryan (1970)
Quantitative set	Bills & Brown (1929), Gibson (1941)
Level of aspiration	Hoppe (1930), Lewin et al. (1944), Siegel (1957), Starbuck (1963)
Secondary incentives	Mace (1931, 1935)
Perceptual control theory	K. McClelland (1994), Powers (1973a), Wiener (1948)
Achievement need	Heckhausen et al. (1985), D. C. McClelland et al. (1953), Murray (1938)
Social learning theory—social cognitive theory	Bandura (1986), Dweck & Leggett (1988), Rotter (1954)
Plans and images	G. A. Miller et al. (1960)
Industrial goal setting	Locke (1968), Locke & Latham (1990a)
Theory of reasoned action	Fishbein (1967), Fishbein & Ajzen (1975)
Problem solving—AI—scripts	Anderson (1993), Newell & Simon (1972), Schank & Abelson (1977)
Current concerns	Klinger (1975, 1977, 1995)
Cognitive evaluation theory	Deci (1980), Deci & Ryan (1985)
Symbolic self-completion	Wicklund & Gollwitzer (1982)
Personal projects	Little (1983), Palys & Little (1983)
Goal energization	Brehm et al. (1983), Wright & Brehm (1989)
Reversal theory and telic—paratelic modes	Apter (1984, 1989)
Theory of planned behavior	Ajzen (1985, 1991)
Action control theory	Frese & Sabini (1985), Frese & Zapf (1994), Kuhl (1992)
Personal strivings	Emmons (1986, 1989), Emmons & King (1988)
Possible selves	Markus & Nurius (1986), Markus & Ruvalo (1989)
Action identification	Vallacher & Wegner (1987)
Self-constructing systems	M. E. Ford & Ford (1987), D. H. Ford (1987)
Self guides	Higgins (1987, 1989)
Life tasks	Cantor & Fleeson (1991), Cantor & Langston (1989)
Intentions	Bratman (1987), Gollwitzer (1993), T. A. Ryan (1970), Tubbs & Ekeberg (1991)
Image theory	Beach (1990), Beach & Mitchell (1990)
Set points	Trehub (1991)
Goal categories	Barsalou (1991)
Goal-based scenarios	Schank (1993–1994)

Note. AI = artificial intelligence.

tence of discrete behaviors (Atkinson, 1964; Cofer & Appley, 1964; Young, 1961); choice, initiation, and maintenance of intentions and behaviors (Gollwitzer, Heckhausen, & Ratajczak, 1989; T. D. Nelson, 1993); and resource allocation models (Atkinson & Birch, 1970; R. Kanfer & Ackerman, 1989; Naylor, Pritchard, & Ilgen, 1980).

We must place some boundaries on our review. For instance, many levels of analysis are required to understand complex psychological phenomena (H. Gardner, 1987). These levels of analysis range from the biological and neurological to the functional, sociological, and ecological. The functional level is the focus of this review. Biological and neurological conceptualizations refer to the structure and processes within and between cells and their action in the brain. That level is not addressed in this article, except to say that goals are most likely represented as patterns of varying potentials for excitation and inhibition within the brain (H. Gardner, 1987; E. R. John, 1980; Kuhl, 1994; Trehub, 1991). Biological goals (i.e., needs) are included but are treated at a functional level. The sociological and ecological levels, where sociocultural and genetic processes affect individual goals, are beyond the scope of this review.

Likewise, goals can be studied at several system levels above the individual (J. G. Miller, 1978). Other levels might include dyadic (e.g., Quick, 1979), group (e.g., Mackie & Goethals, 1987; Pritchard, Jones, Roth, Steubing, & Ekeberg, 1988; Wel-

don & Weingart, 1993; Zander, 1972), and organizational (e.g., Cyert & MacCrimmon, 1968; March & Simon, 1993; Paolillo, Jackson, & Lorenzi, 1986; Simon, 1964; Vancouver, Millsap, & Peters, 1994). However, the emphasis in this article is on the individual level of analysis to maintain a psychological focus and to make the review task manageable. Because complexity of aggregates increases with the number of levels (Cacioppo & Berntson, 1992; Roberts, Hulin, & Rousseau, 1978; Rousseau, 1985), consideration of multilevel processes is reserved for other work (K. McClelland, 1994; Vancouver, in press).

Within the functional-individual level, three points of view help to frame the various concepts and relationships. First, the *latent* perspective holds that goals define the pursuits of individuals, regardless of awareness or volition. Latent goals are not necessarily beyond awareness or will, but phenomenal experience or external perception are unnecessary. A second perspective is the *phenomenological* one. An individual's self-perception of goals may be simply a rationalization (Steele, 1988), an intermediate step in goal striving (Kruglanski, 1989), or the most useful representation of goals (Secord & Greenwood, 1995; Vallacher & Wegner, 1987). Finally, a third perspective is that of the *external observer*—goals are meaningful in relation to interpersonal structures and processes. Goals influence story comprehension (Bower, 1982; Graesser & Clark, 1985), interpersonal interaction (King & Sorrentino, 1983; C. F. Schmidt,

1976), and observer inferences about intentions (von Cranach, Kalbermatten, Indermuhle, & Gugler, 1982).

An example might help to clarify the distinction. Consider body temperature. An internal set point (i.e., goal) exists that, along with information about the body's state, determines certain actions by the body—humans shiver at relatively low temperatures and sweat at relatively high temperatures. The regulation of this goal need not enter awareness (Trehub, 1991). However, humans can also experience the need to warm or cool themselves. This experience would be a perception of the latent goal that may manifest as desiring to get warm and invoke subsequent behaviors aimed at goal attainment. Finally, the temperature an individual maintains, measured by an outside observer, is the third perspective.

In summary, goal constructs are pervasive, important, and timely. In this review, three domains (cognitive, personality, motivation) and three definitional perspectives (latent, phenomenological, external) are developed at the functional-individual level of analysis. To organize the review, we apply a structure, process, and content framework. *Structure* concerns the properties, organization, and dimensions of multiple goals within and between persons; *process* refers to temporal cycles of establishing, striving toward, and revising goals; and *content* pertains to classifications of outcomes or states that individuals approach or avoid. Structure is the first topic addressed.

### Goal Structure

In this section, we consider the properties, organization, and dimensions of goals. Goal properties refer to goals as a class. Goal dimensions are constructs on which goals vary. Goal structure need not imply rigidity. Goal content and the values of goal dimensions can change—an issue treated later. Goal structure is not necessarily the layout of goals in the brain. Rather, the structure of goals is conceived in terms of their interrelationships.

#### *Background and Goal Properties*

A modern view of the structure of goals can be traced to two publications during the year 1960. The first major work, by G. A. Miller et al. (1960), is often credited with a significant impact on cognitive psychology (H. Gardner, 1987; Silver, 1985), as well as the source of action control theory (Frese & Zapf, 1994) and other cognitive models of self-regulation. In their book, G. A. Miller et al. advanced the Test–Operate–Test–Exit (TOTE) cycle. The TOTE cycle was proposed as a conceptual replacement for the reflex arc and stimulus–response (S–R) bond, which were fundamental units of analysis for earlier psychologists. In their TOTE cycle, stimulus input is evaluated through a comparison with a standard (i.e., goal), operated on to bring the input in-line with the standard, and tested again for a match. Once a match is achieved, the loop is exited. This process describes a discrete cybernetic model.

The other work, by Powers, Clark, and McFarland (1960), concerns control systems theory and is articulated further by Powers (1973a) and in other collections of his works (Powers, 1989, 1992). Besides proposing a structural model of goal processes in humans, many of those works were devoted to sup-

planting the behaviorist model that dominated psychology at the time and to explaining misconceptions surrounding cybernetic processes, which are the bases of the model. In turn, Powers's model engendered various control system models of goal processes found in social psychology (Carver & Scheier, 1981), motivational psychology (Hyland, 1988; Klein, 1989; Lord & Hanges, 1987), and the areas of psychology and neuroscience (Gallistel, 1994; Marken, 1991). We use the term *goal* in the same sense that Powers used "reference signal."

Powers's (1973a, 1978) model is similar to that of G. A. Miller et al. (1960), except that testing is continuous (i.e., the loop is never exited) and therefore requires parallel processing. Also, the operation is based on an analog output from the test, not an all or none digital output often associated with the TOTE model. Serial processing and digital outputs fit the computer analogy popular at the time (Hovland, 1960), which may account for the popularity of the TOTE model over Powers's model. The literature stemming from both models is important for goals.

Both models have as their base the cybernetic unit (Wiener, 1948) that includes a representation of a desired state, criteria, or standard—what we call a goal. As such, goals have certain properties that are important in understanding this discussion of goal constructs in psychology. Specifically, the difference between a desired state and a current state drives the organism toward reducing that difference—a *test* in the TOTE cycle. To be of interest, goals must drive some processes in the organism, even if they do not necessarily achieve the goal—an *operation* of a TOTE cycle. Because the desired state is internally represented, the current state must be internally represented or translated into an internal representation to make the comparison. For this reason, the representation is often conceived of as a result, not as the behavioral subgoals needed to achieve the goal (Hacker, 1985a; Powers, 1973a). Blocking input (i.e., perception of the current state) disrupts the test and thus the operation on the goal. Furthermore, the behaviors the organism may use to achieve the desired states are not specified in the goals (such a representation is often called an intention; e.g., Gollwitzer, 1993; and Tubbs & Ekeberg, 1991).

Consequently, goals display the property of equifinality, meaning that they may be achieved through multiple means and regardless of initial state. The property of equifinality is used to (a) explain personality (the goal is stable even if the means are not) and (b) support the existence of a goal. The first usage can be found in the work of Emmons (1989), Markus and Wurf (1987), and other personality researchers (Pervin, 1989a). The second use is seen in Steele's (1988) idea of self-affirmation as evidence of self-integrity. Threats to self-integrity (i.e., a discrepancy between desired self-integrity and perceptions regarding self-integrity) can be countered with several reaffirming activities. Thus, when a contradiction in one's behavior is made salient, one is motivated to reaffirm one's integrity in general, without necessarily addressing the specific contradiction. This is compelling but not necessarily complete evidence for a self-integrity goal. We discuss the methods for testing goal content further in a subsequent section.

Although goal processes can exhibit the property of equifinality, not all systems that display equifinality or homeostasis have goals (von Bertalanffy, 1968). For example, jostled water

in a glass will return to a level state, regardless of its level of jostling, but it has no goal for that state. Dynamics based on internally represented goals are merely a subset of dynamics that can bring a system to or maintain it at a state (Richardson, 1991). That subset, referred to as a control-cybernetic system by Powers (1978) and Richardson, is of interest. As multiple control processes interact within a system, homeostatic processes can arise that are not themselves goal based. Later, we give an example of "virtual" goal processes.

### *Organization of Goals*

*Hierarchy of goals.* When multiple goals are considered, their interrelations are critical. The dominant conceptualization of the structure of goals, across psychological domains, is hierarchical (Cropanzano, James, & Citera, 1992; G. A. Miller et al., 1960; Ortony, Clore, & Collins, 1988; Powers, 1973a; Wicker, Lambert, Richardson, & Kahler, 1984). Alternative structures—few of which appear to receive attention—include networks (Hebb, 1955), branching paths or trees (Gjesme, 1981; Sattath & Tversky, 1977), graphs (Barr & Feigenbaum, 1981), lattices (Ortony et al., 1988), or vectors with direction and magnitude in a life space (Lewin, 1926/1951, 1943). A common hierarchical framework places a small set of goals without higher order goals at one end of the hierarchy. Royce and Powell's (1983) individuality theory, for example, represents one such system. In this system, the highest level goal is to "optimize personal meaning," and the next layer includes life satisfaction, maintenance of self-image, and evolution of worldview goals. Presumably, such a goal set functions to provide general organization and orientation for life, similar to Rokeach's (1973) terminal values (cf. Schwartz, 1992) or to self concept (Hattie, 1991; Markus & Wurf, 1987; Sirgy, 1986; Steele, 1988).

Beneath the set of higher order goals are subgoals, which in turn have subgoals cascading to the level of muscle tensions (Powers, 1973a, 1989). Goals at many of these levels can be outcome events or endpoints, such as receiving a doctorate degree (Cantor & Langston, 1989); broad modes of conduct, such as being scholarly-professional or being good (Schwartz, 1992); or emotional states, such as being happy (Hyland, 1988). Although the hierarchical arrangement seems well accepted, the placement of particular classes of goals is not. Rokeach's (1973) highest level of instrumental values, for example, corresponds to a subgoal level in the personality literature (e.g., Emmons, 1989).

Communication between the inputs and outputs needed for goal processing is a critical element of the structure of goals. Using a bottom-up formulation, inputs for higher order loops have been conceptualized as one set of outputs of lower level TOTE cycles or control systems (Krau, 1982; Lord & Hanges, 1987; Powers, 1978). That is, the perception of the current state for a goal is a function of the perceptions of the current states for the subgoals related to the focal goal. Using a top-down formulation, outputs from the higher order goals activate or determine the desired level of lower order goal systems. This system interchange parallels a trend in psychology to "unitize" (Logan, 1989) or "modularize" (Fodor, 1983) cognitive functions. The trend is illustrated by Shallice, McLeod, and Lewis's (1985)

study of "cognitive functional units" of speech production and perception. Whether coordination requires some sort of executive control system remains an issue (cf. Logan, 1985; Schumacher, 1987).

As an example of a goal hierarchy, consider the student with a proximal goal of doing well on the next test in an undergraduate psychology class. This goal supports a broader goal of getting a good grade in that course. The course-grade goal in turn supports an even broader goal of doing well in the academic domain. Doing well in the academic domain is itself a prerequisite for getting a good job or for entering into advanced schooling, a desire of some students. These broader goals are parts of a value structure that emphasizes hard work or associates self-worth with high income, occupational prestige, and intellectual achievement. Moving downward from the goal of doing well on the test, one must develop or use strategies (e.g., lower order goals) that might include reading texts, taking and reviewing notes, or forming and using study groups. To read the text, sequential goals of reading each page at a time are accomplished with parallel (nonsequential) subgoals of holding the book and looking at the words. These goals are accomplished by setting and activating tension goals for the muscles in the hands, fingers, neck, and eyes (Gallistel, 1985; Powers, 1973a).

Many researchers have named the various levels (Beach, 1990; Carver & Scheier, 1981; Frese & Zapf, 1994; Hacker, 1985a; Lord & Levy, 1994; Powers, 1973a; Scheier & Carver, 1988), and the entire hierarchy has been labeled the action hierarchy by Carver and Scheier and the perceptual hierarchy by Powers. These labels reflect a focus on the actions needed to achieve goals versus the information needed to assess goal progress, respectively. Both processes are key to goal striving as noted above and discussed in the process section. Action hierarchy is used in the remainder of this article to distinguish it from the intrinsic hierarchy discussed below. Broadbent (1985) offered the term *heterarchy* because a goal at one level may be attached to multiple higher order goals, providing behavioral flexibility. Indeed, a reticulated, or network, structure appears promising as a representation of the goal hierarchy because of its significance for cognitive representations (Rumelhart & McClelland, 1986).

Very few researchers, however, incorporate more than one or two levels into a single theoretical framework. Prominent exceptions are Heckhausen (1984, 1991), G. A. Miller et al. (1960), and Powers (1973a). Instead, different researchers have focused on different levels or occasionally across levels. In general, cognitive researchers have focused on lower level goals through the script concept (e.g., Schank & Abelson, 1977); motivational researchers have focused on middle-level task goals (e.g., Locke & Latham, 1990a); and personality researchers tend to focus on middle- and higher level goals (e.g., Carver & Scheier, 1981; Emmons, 1989; Markus & Wurf, 1987). Depending on one's interest, any of these levels may be appropriate for a single research question. However, understanding the complete context for a given behavior or behavior sequence requires multilevel models and methods to test them (Nesselroade & Ford, 1987).

Some researchers who have spanned two or more levels in their studies are Bower (1982) in the cognitive domain, Valacher and Wegner (1987) in the personality domain, and to

some extent Klein (1989) and Tubbs and Ekeberg (1991) in the motivation domain. In the cognitive domain, evidence for hierarchical structures can be found in script concepts. Schank and Abelson (1977) explicitly used goals and plans as higher order concepts in their script framework of understanding (Abelson, 1981; Galambos et al., 1986; Ortony et al., 1988). From a related perspective, Gioia and Poole (1984) and Lord and Kernan (1987) argued that script concepts can account for the hierarchical, sequential nature of goal-directed action in the work setting. In these accounts, task scripts contain "tracks" at different levels with links to goals, commitment levels, and expected achievement. Lord and Kernan suggested that Eckblad's (1981) "scheme" theory could account for individual goal achievement through its focus on the enactment of scripts. In the motivational domain, multiple-level conceptualizations involve usually only two levels (Campion & Lord, 1982). These levels are commonly distinguished as outcomes versus processes, ends versus means, or goals versus subgoals—the latter being the most parsimonious. Also, the translation of personality constructs into the motivational arena broadens the number of levels considered (Cropanzano et al., 1992; Farr, Hofmann, & Ringenbach, 1993) and forces a focus on time as a facet of theory and data (Larsen, 1989; Lord & Levy, 1994).

Working from a cognitive perspective, Foss and Bower (1986) proposed *goal reduction trees* as hierarchical operators relating goals at different levels to one another and to behavior. Specifically, goals can be translated from abstract representations into actions by sequential change from the abstract to the concrete (behavior) through subgoals. Direction of movement in the hierarchy, top down or bottom up, is determined by an interaction between stage of goal striving and environmental input. Brewer and associates (Brewer & Dupree, 1983; Lichtenstein & Brewer, 1980) also analyzed goal hierarchies using simple conditional relationships between goals at different hierarchical levels and between goals and acts. Srull and Wyer (1986) used conditional relationships to represent goals in plan structures that mediate between higher order goals and lower order behaviors. Specifically, subgoals stand in an "order to" relationship to one or more superordinate goals (cf. Raynor's, 1969, contingent paths; Brewer & Dupree's, 1983, conditional links; and Franklin & Bower's, 1988, "in order to" retrieval operator). These symbolic connections are the essence of goal structure and are the raw material or units for goal cognition.

*Another hierarchy of goals.* Other researchers hypothesize a second hierarchy of goals that regulate the operation, configuration, and properties of the action hierarchy (e.g., Kuhl, 1994; Powers, 1973a, 1989, 1992). At one end of this hierarchy are desired internal states essential for the survival of the organism (Ashby, 1960). At the other are emotional and other goals that influence the allocation of attention and other resources used to achieve the goals in the action hierarchy. That is, these goals are used to regulate the cognitive processes related to goal striving (Higgins, 1989; Kruglanski, 1989). For example, Carver and Scheier (1990) tested the hypothesis that a goal for the rate of progress toward goal achievement in the action hierarchy determines emotional responses. Because the processes these goals affect are internally based (i.e., they monitor, refer to, and operate on internal states, and their internal representations are more likely biological than memory based), some researchers

emphasize their differences from action goals (e.g., Kuhl, 1994), whereas others include them in a subset of goal or intention taxonomies (e.g., Lewis, 1990). Internal reference signals, set points, and needs have all been used to describe these goals as well as the characteristic and dynamic levels at which individuals hold them. Yet, all meet the criteria of internally represented desired states; therefore, they are included in this review. A further discussion of this hierarchy is contained in the process (Goal Processes) and content (Goal Content) sections.

### *Goal Dimensions*

Researchers have used a variety of empirical and theoretical approaches to identify dimensions or categories on which goals or goal processes vary. They have mostly analyzed questionnaire responses to scales of goal items (e.g., Arvey & Dewhirst, 1976; Duda & Nicholls, 1992; Ivancevich & McMahon, 1977; Lee, Bobko, Earley, & Locke, 1991; Steers, 1976; Winell, 1987). Stimuli in these questionnaires range from general life goals (Buhler, Brind, & Horner, 1968; Buhler & Massarik, 1968; Dunkel, 1944; Gulliksen & Gulliksen, 1972; Wheeler, Munz, & Jain, 1990), career-occupational aspirations (Astin & Nichols, 1964; Callanan & Greenhaus, 1992; I. W. Miller & Haller, 1964), and broad dispositional orientations (Duda & Nicholls, 1992) to task goals (Lee et al., 1991), current concerns (Klinger, 1977; Roberson, 1989; Roberson, Houston, & Diddams, 1989), and personal projects (Little, 1989). The modal technique is exploratory factor analysis. Four to six factors are usually extracted, rotated, and interpreted. A typical study in this line of research was reported by Wadsworth (Winell) and Ford (1983), who described an idiographic (i.e., mixed idiographic-nomothetic) counseling instrument, the Adult Intentional Motivational Systems (AIMS). The instrument elicits and scales goal dimensions idiographically. Winell (1987) reported a series of factor analyses of the Goal Descriptive Scales (GDS), a nomothetic supplement to the AIMS chart. The GDS consists of several items an individual might use to describe the goals identified in one's AIMS chart. Across five separate factor analyses, the items consistently yielded a four-factor structure: Expectancy, Value, Ease, and Clarity. This methodology highlights goal dimensions from the perspective of the individual's perception of one's goals (i.e., phenomenological).

Another way to identify goal dimensions is to focus on a limited set of potential dimensions at a time. The goal-setting technique of Locke and colleagues, for example, began with two broad dimensions, content and intensity, derived from a particular epistemology. The goal-content dimensions most studied are specificity and difficulty-level, but research has expanded to incorporate goal conflict over an extensive period of grounded theory construction (Locke & Latham, 1990a). The list of goal intensity factors has also expanded over time to include goal commitment, origin, and self-efficacy. This approach has emphasized an external perspective.

Other, more theoretical approaches to identifying goal dimensions exist (e.g., Frese & Zapf, 1994; Hyland, 1987, 1988; Pervin, 1989a). For example, Frese and Zapf crossed four levels of goals with five stages of an action cycle. This conceptualization includes hierarchical and dynamic facets. The hierarchy includes sensorimotor, flexible action pattern, intellectual, and

heuristic levels; the cycle includes goal development, orientation, plan generation, decision, execution, monitoring, and back to goal development. This two-facet structure was used to create a taxonomy of errors, including habit errors (e.g., action slips; Heckhausen & Beckmann, 1990) and intellect errors (e.g., poor decisions). The deductive approach tends to focus on latent dimensions of goals.

We identified six common factors across empirical and theoretical approaches to goal dimensionality: (a) importance-commitment, (b) difficulty-level, (c) specificity-representation, (d) temporal range, (e) level of consciousness, and (f) connectedness-complexity. These dimensions derive meaning from the different contexts they take for a goal. Understanding such variance is necessary for understanding the goal construct in psychology. In general, the dimensions vary in one of three contexts: person, time, and goals. The first context, between *persons*, refers to the differences in the level of a dimension (or dimensions) for the same goal or goal set across individuals. This definition is the mainstay for applied motivational researchers, who mainly conduct between-subject experimental studies of single goals. For the contexts of *time* and *goals*, the level of analysis is usually within the individual. An example is the study of how the levels of a goal's dimensions may change over time. Finally, the *goal* context focuses on how goals interact with each other within a person. That is, goal context focuses on what goal dimensions determine which goals receive what resources necessary for achievement or planning or what influences the levels of dimensions in the array of an individual's goals. The processes that affect goals dimensions (and goal striving) are the focus of the process section (Goal Processes). In this section, we outline the dimensions available for change.

**Importance-commitment.** Like the other dimensions under discussion, goal importance is multidimensional. Related concepts include goal attractiveness (Brehm & Self, 1989; R. A. Wright & Brehm, 1989), intensity (Hyland, 1988; Locke, 1968; Locke & Latham, 1990a), valence (Roberson, 1989; Vroom, 1964), and relevance (M. E. Ford, 1992). Each of these terms depends on the researcher and context. For example, valence can refer to sign (i.e., positive-approach or negative-avoid; Roberson, 1989; Roberson et al., 1989; Siegel, 1957) or magnitude of anticipated satisfaction or value (Naylor et al., 1980; Vroom, 1964). The importance-as-valence interpretation stems from a phenomenological perspective and a within-person, between-goal expectancy theory context, despite its prominent and inappropriate use in between-person analysis (Mitchell, 1974). From an external perspective, goal importance is the rating by some external source, say a supervisor, on the importance of a goal for some external entity, such as a work unit (e.g., Naylor & Ilgen, 1984) or an organization (Vancouver & Schmitt, 1991). External importance can be measured using ratings of time spent and criticality if the goal is not met.

Error sensitivity and gain—two other synonyms for goal importance (Hyland, 1988; Powers, 1973a)—refer to the degree of energization associated with a specific goal (cf. Brehm, Wright, Solomon, Silka, & Greenberg, 1983; R. A. Wright & Brehm, 1989). The greater the error sensitivity, the greater the response to threats or deviations from the goal. A combination of error sensitivity and the discrepancy between the currently perceived or anticipated state from the desired state defines the intensity

of the goal (Hyland, 1988). As with valence, the central context is provided by other goals. Specifically, relative intensity across goals determines the allocation of resources (e.g., attention).

In an integration of several motivational traditions, Hyland (1988) hypothesized four antecedents of error sensitivity: (a) personality, (b) situation, (c) higher order goals, and (d) past behavior. Hyland conceived *personality* as the relatively permanent amount of importance for specific goals. Situation subsumes the goal-relevant aspects of a context and is called goal relevance by M. E. Ford (1992). Instructions and other forms of attentional focusing, the presence of a desired goal, and opportunities provided by the situation are contextual variables likely to affect importance. The associations between goals and contexts can also be learned, as asserted by Murray (1938). For example, "Work provides me an opportunity to evaluate (or extend) my intelligence" or "The presence of Bob affords me an opportunity to restate his role in this company." Higher order goals are the most likely antecedents of importance. Both the centrality of a goal to an individual's self concept (Boden, 1973, 1981; Schlenker & Weigold, 1989) and the number of higher order goals served by a subgoal (M. E. Ford, 1992; Winnell, 1987) increase the importance of that goal. Finally, according to Hyland, past behavior dampens the importance of those behaviors, much as in Atkinson and Birch's (1970) consummatory force construct and Landy's (1978) application of opponent process mechanisms to job satisfaction.

An issue related to goal importance is goal *commitment*—defined as how long an individual is willing to strive for a specific goal—which is directly relevant to the study of persistence in goal striving (Hollenbeck & Klein, 1987; Hollenbeck, Klein, O'Leary, & Wright, 1989; Locke, Latham, & Erez, 1988). Klinger (1987a) defined commitment with respect to current concerns as a discrete event. Yet, goal commitment may wax and wane over time (Vancouver, 1996). Various conceptions of perceived personal control may be relevant to understanding goal commitment (e.g., Averill, 1973; Greenberger & Strasser, 1986; Perlmutter & Monty, 1979; Rodin, Timko, & Harris, 1985; Thompson, 1981; Tubbs, 1993). Gollwitzer (1993) asserted that goal importance determines subsequent goal commitment, in other words, persons develop and maintain commitment to goals that are important to them. A meta-analytic test of a model of goals and goal commitment by Wofford, Goodwin, and Premack (1992) derived six hypotheses from their model. They located 78 studies that measured postulated antecedents of personal goal level and goal commitment. Their aggregated results showed significant relationships for self-efficacy, expectancy of goal attainment, and task difficulty. Several directions were proposed for research, including elaboration of a proposed distinction between motivational antecedents of goal commitment and informational antecedents.

Finally, evaluating one goal as more important than another goal results in prioritizing, provided overanalysis does not ensue and lead to rumination (Martin & Tesser, 1989). Prioritization and importance evaluations also occur as a function of such other goal dimensions as perceived attainability of the goal (Bandura, 1986; Naylor & Ilgen, 1984) or temporal expansion and forethought (Haith, 1994; Lord & Hanges, 1987; Zaleski, 1994). In summary, goal importance is (a) unstable-dynamic;

(b) a function of the person, situation, and behavior; and (c) related to other goal dimensions.

**Difficulty-level.** Even more than goal importance, estimates by self and others of probabilities of goal attainment have received attention, particularly within the motivational domain, as they pertain to the construct of self-efficacy (Bandura, 1977, 1982; Gist, 1987; Gist & Mitchell, 1992). Goal difficulty is the level of a goal on a performance scale (P. Wright, 1990) and is often defined externally to an individual (Locke & Latham, 1990a). Relevant theoretical constructs from a phenomenological perspective include expectancy (Heckhausen, 1977; Klein, 1991b; Vroom, 1964), self-efficacy (Bandura, 1982), perceived controllability (Ajzen, 1985, 1991; Bandura & Wood, 1989), and ease (Winell, 1987).

One way to summarize this menagerie is with M. E. Ford's (1992) concept of personal agency beliefs (PABs). PABs, like expectancies, are beliefs regarding probability of goal attainment. Two factors influence PABs: context beliefs and capability beliefs. *Context* beliefs are beliefs about the responsiveness of the environment surrounding the goal, thus including perceived controllability as defined in the theory of planned behavior (Ajzen, 1991) and outcome expectancies as defined in Bandura's (1986) social cognitive theory. *Capability* beliefs are equivalent to self-efficacy beliefs (Bandura, 1986) regarding personal resources (e.g., time, effort) that individuals believe they have for accomplishing the goal. Goals that require few resources to accomplish are high on ease (Winell, 1987). To the extent that goal difficulty depends on between-person differences, such as ability, there should be little agreement between the measures of goal difficulty and capability beliefs (Locke, Motowidlo, & Bobko, 1986). As such, goal difficulty is frequently predictive of performance (Mento, Steel, & Karren, 1987; Tubbs, 1986), whereas capability beliefs are more predictive of acceptance of an assigned goal (Bandura, 1986), and context beliefs are more predictive of behavior (Ajzen, 1991; Madden, Ellen, & Ajzen, 1992). However, changes to the level of a goal should create changes in the beliefs surrounding the goal. For example, changing the number of widgets to produce from 20 to 15 (i.e., changing the goal level) would likely result in higher PABs. Finally, context beliefs may or may not be associated with actual control over goal achievement.

**Specificity-representation.** Goal specificity is an aspect of the representation of a goal (M. E. Ford, 1992). The most common distinction is between more specific, quantitative goals versus less specific, qualitative goals. Specific goals have consistently improved task performance criteria (Mento et al., 1987), especially when tasks are simple (Wood, Mento, & Locke, 1987). However, specificity often covaries with goal difficulty (Klein, Whitener, & Ilgen, 1990; P. Wright & Kacmar, 1994). Naylor and Ilgen (1984) proposed that goal specificity could be decreased independently from difficulty by increasing intervals around specific performance goal levels. Their analysis suggests that performance variability, not level, is affected by specificity manipulations. These are the results reported in a study that manipulated goal difficulty and specificity orthogonally (Locke, Chah, Harrison, & Lustgarten, 1989).

A distinction between specific outcome and process goals is also often made in other domains (e.g., Frese & Zapf, 1994; Klinger, 1977; Winell, 1987). Outcome goals are consumable;

once achieved, they no longer need to be tested unless they are evoked again (G. A. Miller et al., 1960). Events, like receiving a doctorate degree or buying groceries, fall into this category. Process goals are always subject to discrepancies, like "never stop learning" or "keep the refrigerator stocked." In this latter category are goals about general modes of being (Klinger, 1977). However, these may be specific (e.g., "never tell a lie") or vague (e.g., "attempt to be honest"). Others have made a distinction between ideal points and vector preferences (de Latil, 1957). An ideal point specifies a particular level of value (e.g., "I will feel successful when I am earning \$100,000"), yet it need not be specific (e.g., "making a middle-class income defines success for me"). A vector preference is infinite (e.g., "the more money I make, the better"). Ideal points can have an infinite quality as well (i.e., unattainable) if they are beyond the capability of the holder (e.g., holding one's hand still as measured by a sensitive seismic instrument). One clear empirical finding is that vector preferences, like "do your best" goals, tend to be more easily satisfied than ideal points (Locke & Latham, 1990a). Mathematically, specificity can be operationalized as the number of significant figures used to represent the goal. Likewise, it seems possible to represent goals with different logical operators, including equal to, greater than, and less than, as well as not equal to (e.g., when one fears achieving a state and thus seeks to avoid it).

An aspect of the various representations of goals is the tendencies of individuals to represent their goals one way or another and how those representations interact with the environment. Kuhl (1992) speculated that different individuals have varying but stable tendencies to represent goals with completion flags (signaling deactivation). A particularly intriguing aspect of specificity is Gollwitzer's (1990) concept of *implementation intentions* (cf. Bargh & Gollwitzer, 1994). One element of an implementation intention is the specification of the environmental cues or conditions whose presence triggers actions toward the goal. More generally, Gibson's concept of affordances (i.e., opportunities in the environment to meet goals), as outlined by Baron and Boudreau (1987), can provide guidance for studies of multiple goals in natural contexts. These concepts require some form of parallel processing to allow recognition of the opportunity or cue. Meanwhile, analysis in attentional terms by Simon (1994) suggests that priming or activating a goal makes certain features of the environment more salient or accessible and conversely that deactivating a goal causes those features to recede into the background. Given that many of these issues overlap with issues discussed for the importance dimension, the opportunities for greater parsimony regarding these constructs seems high.

**Temporal range: Extension and future time perspective.** Different goals, by virtue of their attainment time, extend to different points in the future life space, thus qualifying as proximal and distal determinants of responding (R. Kanfer, 1992; T. A. Ryan, 1970). Some goals are life long (Cantor & Fleeson, 1991, 1994; Cantor & Langston, 1989), whereas others apply to fractions of seconds (Lord & Levy, 1994; Marteniuk, 1992; Powers, 1989). Consider an athlete's goals for a career, the current season, the next game, the next play, or where to plant his or her foot on the current play. Specifying time frames for goals is an important component of goal cognition (Frese & Zapf,



1994), with ramifications for planning processes and goal conflict. For instance, when Maslow (1943, 1954) talked of the physiological need for food, was he referring to the hunger pangs that come and go throughout a day (usually just before a meal) or to the need to maintain some mechanism for obtaining food? Clearly, Maslow meant the latter, otherwise a dieter could never self-actualize or care about relationships (which may be reasons to diet in the first place).

If one considers temporal extension for a single goal, it may simply be a subdimension of goal difficulty (i.e., the time available to accomplish the task). Generally, the shorter the time, the more difficult the goal. Many laboratory investigations of goals limit the time available for task performance, which interacts to increase goal difficulty (Locke & Latham, 1990a).

Temporal extension of a goal is more interesting when conceived in relation to other goals. Work by several researchers attests to its importance for considering goals. Perhaps the most explicit work has been by Zaleski (1987, 1988a, 1988b, 1994), who developed the Goal Questionnaire (GQ) to assess conflict, importance, and expectancy dimensions of goals and associated scores with three behavioral outcomes (effort, satisfaction, persistence). The GQ has been applied to idiosyncratic goals reported by individuals, but it could also be applied to a standard set of goals provided to individuals (cf. Pervin, 1983). Relationships between goal and criterion dimensions across various time ranges (from 1 week to a life span) were reported using correlations, with reported satisfaction the most dependable effect measure. Zaleski (1988a) found that as the time range of a goal increased, the internality of attributions for goal attainment increased. Extensions of Zaleski's research include identification of individual differences in future time perspective, replication with standardized goal sets across content domains, elaboration of relationships of goal attainment–nonattainment with explanatory style (Peterson, 1991; Peterson et al., 1982) and recognition of the importance of predictor–criterion matching on temporal and generality–specificity facets. Also, Gjesme (1981) elaborated psychological distance from a goal using time until goal attainment, future time orientation considered as a trait, and expectancy of reaching the goal (attainment probability). All these aspects deserve attention from researchers in the form of longitudinal studies with multiple criterion variables.

Nuttin (1964) argued that motivation inevitably implies a temporal perspective because of the future orientation of humans, their capability to delay immediate gratification, and their orientation toward goals (similar to G. Allport's, 1937, description of William Stern's personalistic psychology, as noted by Kreppner, 1992). Nuttin (1985) and Lens (1986) compared several methods for assessing the future time perspective of individuals with respect to motivation. Several empirical studies confirm that future time perspective is related to motivational variables as predicted by Nuttin and Lens (De Volder & Lens, 1982; Van Calster, Lens, & Nuttin, 1987).

One interesting structural requirement is an interaction between temporal extension and goal level of abstraction (Newell, 1990; Powers, 1973a; Zaleski, 1987). Goals at lower levels of abstraction (i.e., the movement–cognition level in Hacker's [Hacker et al., 1982] model; the sensorimotor level for Frese & Zapf, 1994) are invariably short term, whereas goals at higher

levels must be longer term (i.e., educational aspirations, career objectives, or life span goals). Powers (1973a) explained the requirement that a lower order goal system must operate more rapidly than the higher order system that called it. Otherwise, behavior will be unstable and tend toward chaos—a remarkably rare occurrence given the complexity of the environment. Consequently, the temporal dimension can be an important clue about where a goal fits in relation to other goals in the hierarchy. This dimension suggests the use of reaction time analysis to detect the timing of a goal system (Foss & Bower, 1986; Lord & Maher, 1991), perhaps combined with social psychophysiological assessment (Cacioppo, Petty, & Tassinari, 1989). Powers (1973a) warned that, without considering the temporal cycle of a control system, mistakes in identifying the goal will likely be made. This warning is related to the previous argument concerning Maslow's (1943, 1954) hierarchy.

*Level of consciousness.* In our definition, goals are not limited to a conscious level, but the level of consciousness is left open as a dimension of goals. Bargh (1994) delineated levels of automaticity and conscious cognitive processing depending on awareness, effortfulness, intentionality, autonomy, and voluntariness. These dimensions relate to the accessibility of goals through awareness and intentionality. Inaccessible cognitive processes are merely beyond the attention–intention level of working memory. For some types of goals, the level of consciousness may be static; for others, it may be dynamic. Weinberger and McClelland (1990), for example, proposed a dual-level motivation process in which goals, like need for achievement (nAch), need for power (nPow), and need for affiliation (nAff), are always below consciousness, whereas goals, like achievement value or “produce 20 widgets,” are accessible. This two-layer structure parallels the distinction mentioned earlier between the action hierarchy and internal goal systems. Powers (1973a) provided Jerome Bruner's drive for competence as an example of an intrinsic goal (related to R. W. White's, 1959, competence motivation). According to these theorists, such goals are beyond consciousness and are therefore not measurable through self-report scales. D. C. McClelland, Koestner, and Weinberger (1989) advocated the use of projective tests to assess such goals.

The more common understanding of goals is as dynamically conscious—shuttling in and out of working memory as required (Wyer & Srull, 1989). For the cognitive and social cognition researcher, goals in scripts begin as conscious elements and then submerge as the scripts become automatized and unitized (Anderson, 1982; Shiffrin & Dumais, 1981), arising again only if discrepancies from the goal become unusually large (Vallacher & Wegner, 1987). For some researchers (e.g., Bargh, 1989, 1990; Epstein, 1994; Higgins, 1989; Klinger, 1975), the key issues are salience, availability, or accessibility in memory (Kihlstrom, 1987). For these researchers, many goals may be present, but only a few are activated or cued in working memory. Goals that are more salient, available, or accessible may be activated in working memory more easily than other goals. This advantage could be the result of (a) the goal's presence in numerous schema, (b) relevance to numerous contexts, (c) low tolerance for out-of-range discrepancies, or (d) easily threatened goal attainment. Alternatively, salience may be the degree to which a goal is used in assessing possible courses of action



(i.e., selection of subgoals) in either a conscious, preconscious (Gollwitzer, 1990), or intuitive (Beach, 1990) decision-making process. These conceptualizations highlight an overlap between level of importance and level of consciousness. Also, asking about a dynamically conscious goal can evoke it through a reactivity process. The measurement process affects the object of measurement—a version of Werner Heisenberg's uncertainty principle for psychology (Morwitz, Johnson, & Schmittlein, 1993).

Few would disagree that conscious goals are motivating. Controversy surrounds the assertion that goals may be motivating, while not conscious (e.g., Bargh & Barndollar, 1996), and the possibility of competition or conflict between the conscious and nonconscious goals (Jacoby, Lindsay, & Toth, 1992). Jacoby et al. experimentally manipulated conflict between conscious and nonconscious goals to study the relative effect of each. Cognitive and some social cognition researchers are starting to view nonconscious or automatic goal seeking as the norm not the exception (Bargh & Barndollar, 1996; Jacoby et al., 1992). The general conceptualization is that, during the pursuit of conscious goals, many subgoals (i.e., cognitive representations)—most of which do not require conscious processing—are nonetheless needed to achieve the conscious goal. Furthermore, these nonconscious goals can operate in parallel, unconstrained by the working memory bottleneck (Simon, 1994). Related to this is the idea that parallel processing occurs in a connectionist, nonconscious manner (Read & Miller, 1993). Thus, at any point in time, more nonconscious goals are operating than conscious ones.

Like many of the previous dimensions, level of consciousness relates to position in the hierarchy and accessibility. Lower level goals become subsumed into scripts and are relegated to the efficient, subconscious, and automatic processing realm (Schank & Abelson, 1977). The highest level goals, because they operate on slower time scales, are not subject to consideration as often and are therefore less likely to receive attentional processes (Newell, 1990; Powers, 1973a) or accessibility (Bargh, 1994). However, higher order goals can be illuminated through various means. It should be possible, for example, to influence salience of various goal levels through laddering questions (asking "why" to move up and "how" to move down), as described by Little (1989), or such situational manipulations as goal blockage or opportunity.

Middle-level goals are the most common type of conscious goal and therefore receive the most attention from motivational, personality, and social cognition researchers (Carver & Scheier, 1982; Emmons, 1989; Klein, 1989; Klinger, 1977; Lord & Kernan, 1987; Lord & Levy, 1994), as well as the individual. This perspective finds indirect support in Rosch's (Rosch & Lloyd, 1978; Smith & Medin, 1981) three-level system of categories: superordinate, basic, and subordinate. Specifically, reaction time is fastest for responding to probe questions about basic categories; relative to the superordinate and subordinate levels. This finding implies that midlevel goals are the ones commonly accessed in working memory. Interesting questions can be asked about individual differences in the level one tends to focus attention on or the flexibility with which one can move attention vertically through one's hierarchy (Hyland, 1987; Vallacher & Wegner, 1987).

*Connectedness-complexity.* Goal complexity indexes the cognitive and behavioral linkages of a goal (Frese & Zapf, 1994; Locke & Latham, 1990a). More complex goals have more linkages to other goals, subgoals, and behaviors. Thus, more complex goals have greater potential for conflict. Whether complexity interacts with the position of a goal in a hierarchy remains an open question. Clearly, theories and models of multiple goals are better able to capture human social behavior and adequately address dynamic, as opposed to episodic, conceptions of behavior family switching (Atkinson & Birch, 1970; Kuhl & Atkinson, 1984; Naylor et al., 1980). Multiple, hierarchical arrangements of goals create problems not always recognized in research on goals (Carver & Scheier, 1981; Emmons, 1989; Locke, Shaw, Saari, & Latham, 1981; Ortony et al., 1988; Pervin, 1983; T. A. Ryan, 1970). A hierarchical treelike arrangement is common, but lateral links between hierarchies may permit resolution of conflicts through prioritization (i.e., changes in relative importance). Consider two mutually exclusive goals that would invoke incompatible behavior families (recreation and schoolwork for the student, leisure and work for the employed). How does conflict between these goals arise and how is it reduced? For Powers (1973a), reducing goal misalignment (M. E. Ford, 1992) is the ultimate virtual goal for a system. That is, no internally represented desired state for "no conflict among goals" need exist for the system to continually strive to reduce conflict. It is a dynamic equilibrium.

Measuring complexity or connectedness requires a method for developing domain "goal maps" or directed graphs with nodes (i.e., goals) and edges (i.e., paths), such as described by Cox and Wermuth (1993). Possible analogs include the elicitation of "cause maps" (Markoczy & Goldberg, 1995; R. E. Nelson & Mathews, 1991) or "concept maps" (Trochim, 1989). Such person-generated representations can be analyzed as networks to yield measures of connectedness or tests of alternative structures (Wasserman & Faust, 1991). Multidimensional scaling and clustering (Arabie, Carroll, & DeSarbo, 1987; MacCallum, 1988) is a data-reduction technique that may be useful. As an example, members of an organization may have different goal maps for work and nonwork domains; supervisors and subordinates might have different goal maps for the same task cluster; college students, for academic and nonacademic domains; and so on. Some shared consensus among these different goal maps is required to integrate goal commitments and obligations from competing constituencies (Paolillo et al., 1986; Vancouver & Schmitt, 1991), whether at work or between work and nonwork (Kabanoff, 1980; Zedeck & Mosier, 1990).

### Summary

Goal structure refers to the hierarchical organization of goals and the properties of goals and dimensions on which goals vary. In this section, we reviewed sources and paths of information flow among goal representations and the environment as well as the dimensions that are likely to be affected by, affect, or are the substance of that information flow. We attempted to be comprehensive but do not claim to have created an exhaustive list of goal dimensions. Other, more cyclic dimensions, like goal origin, efficiency-divergence, and conflict, are discussed in the process (Goal Processes) section. Furthermore, we do not sug-

gest that the dimensions of goals are orthogonal. Often they covary and are hard to separate, for example, difficulty and specificity or difficulty and temporal extension. Parametric studies are almost nonexistent. We have attempted—by considering person, time, and multiple goal contexts as well as the latent, phenomenological, and external perspectives—to clarify the relationships among the dimensions of goals examined by the various researchers working on goals. By far, most of the focus, and vocabulary proliferation, has been within the phenomenological perspective. Researchers commonly measure these phenomenological dimensions using an external, between-persons approach, yet they interpret the results as if the constructs are latent. If an area needs work, it is the latent perspective. With an understanding of latent variables in structure models, phenomenological and external constructs can be better understood. Another gap appears to be the dimensions surrounding goal striving. Although we found dimensions related to beliefs about one's capability to accomplish goals, what seems striking is the lack of dimensions regarding the monitoring of goal progress. Examples might include beliefs about the need for feedback when the environment does not readily provide it, biases related to translating feedback into perceptions, or the lag between action and knowledge of results. The relevance of the dimensions and certain antecedent, consequent, and moderator constructs are discussed in the next section, where we review dynamic processes associated with selecting goals and striving toward them. Where structure is a static snapshot of a goal system, process pertains to the dynamics of the system over time or goal system functioning as described by Pervin (1989a).

### Goal Processes: Establishing, Planning, Striving, and Revising

Goal processes are the behaviors and cognitions related to striving toward multiple goals. If goals are arranged in hierarchies, goal processes relate to the dynamics of goal system functioning (Pervin, 1989a, 1992), in which the system is a set of interdependent elements. Furthermore, the system is open; therefore, goal processes bridge gaps between the environment and cognition, physiology and cognition, and cognition and action. For example, Bargh and Gollwitzer (1994) provided a model of implementation intentions that relates environmental cues to goal striving. Lord and Levy's (1994) process control model and Kuhl's (1994) review of motivation and volition both used goals and physiological principles, as does Powers's (1973a) model of human control systems. For the gap between cognition and action, conceptualizations by action control theorists (Frese & Zapf, 1994; Gollwitzer, 1993; Kuhl, 1992, 1994) have chipped away at a long debate between behaviorist and cognitive paradigms (recall Guthrie's, 1935, charge that Tolman "left the rat buried in thought"; p. 172). Yet, such bridges have been under construction for years. Note, for example, T. A. Ryan's (1970) experimental research program on intentions and other partial bridges in classic theories (e.g., G. W. Allport, 1937; Lewin, 1926/1951, 1936; Lewin, Dembo, Festinger, & Sears, 1944; Murray, 1938; Rotter, 1954). Some similarities among action control and those theories were noted by Kuhl and Beckmann (1985b), Neumann and Prinz (1990), and Heckhausen (1991, pp. 17–48). Goal processes or striving are

thus at the nexus of longstanding issues in psychology, several of which are addressed below.

We link two approaches for organizing theory on goal process. The first is based on a linear model of constructs grouped into antecedents of goals (traits and individual factors, situational factors, trait–situation interactions), the dimensions of goals at multiple levels across multiple content domains and contemporaneous correlates of goals (expectancies, mental simulation, on-line affect), and various consequences of goals (e.g., contingent links to other goals, levels of task performance, affective consequences). For example, Gollwitzer (1993) advanced a four-phase goal sequence: wishing, planning, acting, and evaluating. Moderating and mediating influences on the antecedent–goal, goal–correlate, and goal–consequence linkages can be incorporated within a statistical modeling framework (Baron & Kenny, 1986). Pluralism in designing studies of goals is advocated. Laboratory and field settings (Locke & Latham, 1990b), experimental and correlational designs (Bargh & Gollwitzer, 1994), computer simulations (Marken, 1991), and life history and personology methods (McAdams, 1988) can all play a part in elaborating the nature and effects of goals.

A second method of treating goal process is the analysis of cycles occurring between goal establishment and goal attainment or revision (Bandura, 1986; Frese & Zapf, 1994; Powers, 1973a) loop to goal development. This perspective recognizes the changes in goals and goal properties throughout their tenure. If one entertains the possibility that the gaps among the environment, physiology, action, and goals may be continuously bridged, then the antecedents and consequences are potentially continuously operating. Linear models have trouble accounting for this type of dynamic (Levine & Fitzgerald, 1992; Morrison, 1991). Thus, a linear sequence may be breached when unexpected environmental events warrant it, those same events do not produce results that match expected consequences, or actions toward one goal affect other important goals being monitored (e.g., fatigue saps resources needed for goal striving).

A linear model is more congruent with a serial conceptualization of goal processes or at least the bottleneck of attentional resources (Simon, 1994). Furthermore, evidence is cumulating that supports a tendency for human systems to minimize distractions related to other goals through inhibitory mechanisms (Gollwitzer, Heckhausen, & Steller, 1990, cited in Corno & Kanfer, 1993; Hepburn et al., 1994). At the same time, the emerging recognition of parallel processes (Simon, 1994) emphasizes the importance of considering nonlinear process when one examines goals in psychology.

### Goal Establishment

During goal establishment, the task of an individual is to select goal content and develop its dimensions. The importance of goal establishment as a phenomenon of interest varies as a function of the domain of study. Cognitive psychologists (especially in the field of artificial intelligence [AI]) and earlier work in motivation took the goal as a given (Simon, 1994). Goals were suggested or "sold" (Locke & Latham, 1990a) to participants with little resistance. Yet, interest in motivation has increased in cognitive circles and findings from applied set-

tings have highlighted the importance of goal acceptance and commitment (Hollenbeck & Klein, 1987; Locke et al., 1988). Furthermore, debates among researchers from personality, developmental, and social domains in psychology have accentuated questions about the origin and processes of goal establishment, so now it is one of the most fundamental of goal processes.

Alternative views are to consider goal establishment as a change in level (difficulty) from zero, a change in importance from zero, an increase in activation strength in a network, or the conversion of needs into goals. Although these conceptualizations provide the advantage of quantitative and nomothetic analysis, several of them imply that all goals are inherent and simply lying dormant, waiting for activation. A very large number of dormant goals would be required to account for the diversity of goals people strive toward; such a conceptualization does not recognize the flexibility of humans to adapt to their dynamic environments (Bandura, 1986; Powers, 1992), largely through learning and problem solving (Anderson, 1993). However, accounting for the similarity among goals across individuals as a function of the similarities of the environment may belie fundamental and inherited goals or needs. Furthermore, models of goal establishment must consider the goal level and other goal dimensions defined above, both cross-sectionally and over time. By focusing on the dimensions, nomothetic analysis is again reasonable (Emmons, 1989).

As a framework for goal establishment and its effects on goal striving, note that goal content and goal dimensions (e.g., difficulty level, specificity, priority) may originate externally, internally, or jointly (Austin, 1989; Erez & Kanfer, 1983; Hollenbeck & Brief, 1987). However, by this definition, all goals are internally represented, regardless of origin. Thus, the process of the creation of the representation and the levels of the dimensions related to the representation (e.g., goal importance) is the issue. When, how, and why are pertinent theoretical questions. Nonetheless, the process can be initiated from external, internal, or joint sources. We consider each in turn below.

*External.* Goals of external origin have primarily been studied by motivational researchers (e.g., Locke & Latham, 1990a). These assigned goals are found in formal, hierarchical organizations (e.g., military, school, and industrial organizations) but could be extended to families or other social units. Critical processes are redefinition and acceptance. *Redefinition*, which is rarely variant enough to have an effect in the laboratory, is the interpretation by the focal individual of an assigned goal (Bavelas & Lee, 1978; Cantor & Fleeson, 1991; Hacker, 1982, 1985b; Hackman, 1969). The representation of the goal is partially unique for each individual as the external representation is translated to an internally meaningful representation tied to other goals in the individual's hierarchy. Thus, the overlap is critical for implementation because the external sources monitor their representation, not the representation of the focal individual (Katz & Kahn, 1978). Second, the issue of acceptance of the assigned goal is paramount (Erez & Kanfer, 1983). Borrowing from Kelman's (1961) social psychological analysis, goal acceptance ranges from compliance to identification to internalization. In cases of compliance, the representation of the goal is for impression regulation (Schlenker & Weigold, 1992); whereas in cases of identification, the represen-

tation is self-identity; in cases of internalization, the representation is invested with self significance. In all cases, a personal goal is represented as the result of a redefinition process. The processes are interrelated, in that rarely does the goal assigner intend for the goal to be represented as a compliance goal, but it may become that in the redefinition process by the goal receiver.

Once accepted, the level of commitment of a goal becomes the issue (Campion & Lord, 1982; Hollenbeck & Klein, 1987; Locke et al., 1988). Staw (1977) proposed and developed explicitness, revocability, volition, and publicness as determinants in his discussion of general commitment, defined as binding behavior to belief. These views also reflect the importance of generalized commitment to various abstract objects (Kiesler, 1971). Commitment to goals can thus be conceptualized as similar to other forms of commitment (e.g., romantic partners, organizations). When goals of aggregates (e.g., groups, organizations, political units) are considered, then the amount of agreement between individuals and higher social aggregates on goal dimensions is a researchable question (Vancouver et al., 1994).

If a goal is external in source (i.e., given or assigned to a person by a group or another individual), a goal evaluation process is invoked, with implications for redefinition and acceptance-commitment. In the motivation literature, Naylor and Ilgen (1984) termed this process a "feasibility evaluation." They suggest that this operation takes the form of a comparison between the proposed goal level and expected task performance, thus goal attainment. During these controlled estimations, goals are conscious; the more relevant goal dimensions are phenomenological ones because they are what the individual uses for making assessments. Also, there may be stable individual differences in tolerances for the discrepancy between current state and desired state (Hyland, 1987), differences that may not manifest in single-goal environments.

Whether internally established or externally given, the question of goal level (i.e., difficulty) is also relevant, particularly the more specific the task domain and the clearer the performance scale. An early Lewinian account of shifts in level of aspiration was developed by Festinger (1942). His "resultant valence" explanation was based on the work of Escalona (1940). Festinger's explanation involved assuming that levels of behavior (effort, persistence) required to reach different levels of aspiration were associated with expectancy and valence beliefs. Valences are positive, neutral, or negative; expectancies are subjective probabilities or links. The constructs in Festinger's model are the valences and the expectancies of success and failure at each level of behavior, respectively. In addition, the strengths of the valences of success and failure are directly related to perceived task difficulty. Stated differently, it is better (in terms of self-generated affect and the ascriptions and evaluations of others) to succeed at a more difficult level of performance, whereas the reverse holds for failure at lower levels of difficulty. However, a level of aspiration analysis assumes that competence goals or impression regulation goals are salient. Sometimes they are; sometimes they are not. Hyland (1988), for example, distinguished a mountain climber who chooses a more difficult ascent of a peak because meeting a challenge is a prominent goal from a tourist who chooses the easiest route because the view is the goal. This is not to say the tourist does

not seek challenge but simply that mountain climbing is not a context where challenge is a salient goal (or simply being at a high altitude represents a challenge for the tourist).

Research into these processes often takes a combined perspective. Earley, Shalley, and Northcraft (1992), using reaction time measures, showed that individual goal acceptance–rejection decisions are a curvilinear function of goal difficulty and exert an influence on task strategy development. The former finding means that decisions are slowest for intermediate goals and considerably faster for extremely low- or extremely high-goal levels. The latter finding supports the idea that both automatic and nonautomatic processes may be required to evaluate goal alternatives. Future investigations of goal evaluation processes might profit from the extensive chronometric paradigm described by Posner (1978). This approach is used in cognitive research on goal retrieval from hierarchies (Foss & Bower, 1986); but as with the Earley et al. (1992) study, additional questions at different levels could be addressed with reaction-time measures.

*Internal.* The processes for establishing internally generated goals are open to debate (Bandura, 1991a; Powers, 1991). In Powers's (1973a) model, changes to the perceptual goal hierarchy (e.g., establishing a new goal) are generally random in a process called reorganization. Reorganization occurs when intrinsic goals are not met. In Bandura's (1986, 1989) social cognitive theory, goals are selected on the basis of the same mechanisms described above for evaluating goals of external origin. However, if the process that creates a goal for evaluation uses the fuzzy associative properties of the mind as a generator (e.g., changes in the weights between nodes in a neural net), these two accounts are not incompatible. Neural networks are a proposed structure for human brains that use both associative and random processes in learning about and operating on representations (cf. Campbell, 1960).

The hierarchical structure of the goals provides a context for this establishment process (Hyland, 1988). A top-down approach might run something like this: An intrinsic goal system that monitors the operation of the action hierarchy detects a chronically unmet higher order goal in the action hierarchy. Given a self-regulatory standard of no chronically unmet action hierarchy goal, the intrinsic system activates the establishment process for a new middle-level (e.g., program level) goal in the action hierarchy (Powers, 1973a). To develop such a middle-level goal, the individual enters a deliberative mind-set (Gollwitzer, 1990; Gollwitzer & Kinney, 1989). In this mind-set, sequential and parallel activation of lower order goals are tried. That is, memories of results of parameter changes to the lower order goals are combined to develop higher order results that are assessed for the degree to which the higher order goal is likely to be met. Additional information from the environment might be necessary to fill gaps in memories and the perceptions that can be formed. Finally, if Simon (1955) is correct, the first reasonable strategy (set and sequence of lower order goals whose combined results pass a profitability test; Beach, 1990) is adopted. The state of the parameters for the lower order goals are associated with the middle-level goal, and the goal representation is the combination of the results from the memories of the lower order goal systems. The goal is selected; the decision is made.

One account of this process suggests that the phenomenological experience of an activated intrinsic goal is emotional (Powers, 1992). The emotions marshal the resources needed for the goal establishment process. An alternative, bottom-up approach begins with the affective experience associated with novel inputs (Stein & Levine, 1991). Specifically, the assessment of the environment cannot be combined in any way to match an established perception to monitor goal progress. A cognitive appraisal gives meaning to the emotion and focus goal establishment locally in the hierarchy. In other words, the novel inputs are associated with some higher order goal as either a threat or opportunity. At this point, presumably the deliberative mind-set is engaged. Note that the process described simultaneously establishes a goal representation and a perceptual function needed for assessing a current state that can potentially match the goal. After goal establishment, the inputs to the perceptual function can be directly from the environment, instead of the memory stores used to create it.

Add to this account Beach's (1990) compelling conjecture that the more deliberative or resource intensive processes only occur if very rapid, subconscious compatibility tests cannot find a reasonable candidate from those immediately available (perhaps at the next lowest level in the hierarchy). Beach borrowed the cognitive concepts of automatic and controlled processes to differentiate these processes into intuitive or nonintuitive categories. Intuitive (automatic) processes are based on comparisons to schematic images of higher level and strategic goals. If the differences are perceived as too large, where too large is based on an intrinsic goal, then individuals initiate nonintuitive (controlled) evaluations, which may lead to goal rejection, goal revision (i.e., generating a new goal or altering goal properties), or, eventually, alterations to higher order goal structures. The last alternative is what Lord and Hanges (1987) called cognitive change, which illustrates a bottom-up, data-based approach to goal cognition.

Empirical examples of this process can be found in Chaiken's (1987) research program. She argued that, when the individual has a sufficient level of confidence (e.g., meets his or her intrinsic confidence goal), the individual will use heuristic processes instead of the more deliberative systematic or nonintuitive processes for combining new information about a target. All told, much research has established that the individual can apply differing levels of resources to these processes; the exact nature of the processes are much more speculative at this point.

An example might pull together our conjectures about goal process. Consider a mother in need of a new car initiated by the emotionally laden images or actual experience of her current car breaking down in an unfamiliar or dangerous setting. Automatic or intuitive processes have established that the new car should be a minivan. That is, the mother pictures herself driving the kids around in a minivan; an image she has accepted without much thought. She thus has a goal of getting a minivan. However, the exact model requires more thought. She reads up on minivans in a consumer source and finds the set of choices and options that differentiate them. Many of these options she can picture in her mind in useful ways; others she cannot. Of the options she pictures as useful, some require working through phenomenologically (e.g., she thinks, "would I need that cargo space afforded by removing the back seats? Sure, it would be

handy when refurbishing the basement.”). For the images that she cannot imagine a use, she may seek more information from friends to give her images of useful options or they may tie attributes to important goals she had not considered or connected (e.g., a friend says, “the problem with the bench seats is that they are heavy and difficult to remove if you need the storage space.”). Still other options require no thought; she knows she wants them. Again, an intuitive process was used. As she narrows the choices between two alternatives, she finds she must trade-off desired attributes (e.g., cost for a desired feature). Intense, compensatory decision making is likely to occur (Beach, 1990). Eventually, a more specific representation of the desired minivan is established. The mother knows the make, model, and desired options. She has developed a new goal. In the process, she has combined the results of deliberative and automatic processes as various localities in her goal hierarchy were activated.

As a final point, internally established and private goals produce measurement problems. Does the assessment of internally established goals, for instance, cue attributes of specificity, difficulty, or salience? Furthermore, the deliberative processes evoke phenomenological goal dimensions (e.g., PABs, importance), but the automatic processes may not. The measurement issue remains a significant deterrent to progress in goal research. Efforts to solve the assessment problem are increasing, however. They include Roberson's (1989) adaptation of Klinger's (1987b) idiothetic strategies in developing the Work Concerns Inventory, Powers's (1973a) proposals for identifying referent signals (cf. Runkel, 1990a, 1990b), Little's (1989) use of “how” and “why” probes to move down and up (respectively) in individual goal hierarchies, and Pervin's (1983) goal elaboration techniques (Winell, 1987). Comparisons among these different assessment methods are lacking, making it difficult to recommend one technique over another. A pluralistic attitude, however, suggests the use of multiple perspectives to triangulate, as well as implement comparative studies.

*Joint.* This method of goal establishment is relevant to the extensive research on participation in goal setting (Erez & Kanfer, 1983), which is itself a subtheme in the literature on participation in decision making (Wilpert, 1994) and employee involvement (Cotton, 1993). Participative goal setting is viewed by some researchers primarily as a vehicle for creating goal acceptance and commitment (Locke et al., 1988). When a goal can be sold to others through persuasion, instead of imposed or dictated unilaterally, goal acceptance and subsequent goal commitment are more likely (Latham, Erez, & Locke, 1988). Given that a supervisor tries to persuade subordinate(s) to accept and commit to goals, this topic might be elaborated using extensive theory and research on persuasion, especially the central-peripheral distinction of Petty and Cacioppo (1986; Petty, 1994). Furthermore, when members of a culture expect some control over their goals, participation will more likely lead to acceptance (Erez & Earley, 1987; Greenberger & Strasser, 1986; Latham et al., 1988). The effects of the individualism-collectivism construct (Triandis, 1994) on individual versus group goal focus require study as a potential theoretical moderator.

### Planning

Planning refers to the development of specific alternative behavioral paths by which a goal can be attained (i.e., a strategy).

Planning links goals to various behavioral scripts, tactics, and alternatives; it also facilitates prioritization decisions among different goals, and supports the revision or conversion of unachieved goals in accordance with higher level goals, or incoming information (i.e., feedback). These functions are required by the complexity, long-term nature, and temporal organization of multiple goal sets, although they are usually studied with respect to single goals. A parsimonious view defines planning as the tying of higher level goals to subgoals, while stopping short of actually engaging with the environment (Anderson, 1993; Holyoak, 1990; Powers, 1973a).

Planning processes and individual differences are aspects of research on goals emphasized within the motivational tradition (Cropanzano, Citera, & Howe, 1993; Cropanzano et al., 1992; Earley, Wojnarowski, & Prest, 1987). The topic is more fully developed in the domains of action control (Frese & Zapf, 1994), control systems (Hyland, 1988; Lord & Levy, 1994), and cognitive science (Barr & Feigenbaum, 1981; Georgeff, 1987; Posner, 1989; Scholnick & Friedman, 1987). For example, in Gollwitzer's (1993) account, planning is the step that prepares goal intentions for action (cf. Nuttin, 1984). Barsalou (1991) viewed goals as aiding in classifying behavioral categories relevant for solving comprehension, transformation, and arrangement problems. A conceptualization of intention by Tubbs and Ekeberg (1991) recognizes the importance of planning in connecting goals to action. Finally, these psychological positions converge with Bratman's (1987) philosophical linkage of intentionality and planning.

Many goal-based models (Carver & Scheier, 1981; D. H. Ford, 1987; Klinger, 1977; Powers, 1989; Scheier & Carver, 1988) articulate planning as a specific cognitive process (along with imagining, fantasy, simulation, and other memory-based activities). In such models, planning processes are identical to monitoring processes, except that switches access memory instead of environmental input and prevent behavioral activation. Thus, planners can assess the likely consequences of potential behaviors based on simulations that use as input past experiences and beliefs (or models) regarding the relationships among actions, person variables, and environments (i.e., the subjective contingency distributions of Naylor et al., 1980; the propositional professors of Kuhl, 1994). The interchange between levels may proceed from the top down, in which case upper level goals drive evaluation of lower level goals, plans, and behaviors, or the process may be bottom up. In the latter case, environmental data may alter and modify conceptual structures, conceptually similar to Piaget's (1970) process of accommodation.

Plans, intentions, and behavior sequences are elements of the TOTE metaphor. In this model, plans are cognitive sequences that have links to action; intentions are plans already underway (i.e., they have been selected and are protected from competing intentions); behaviors are environmental operators. Plans and intentions are further assumed to be interactive and integrated (Woodworth & Sheehan, 1964, p. 207). Just as with elementary information processes (Chase, 1978; Simon, 1973), TOTE units can combine and form building blocks for hierarchical systems.

Although few would disagree that humans plan, speculation on the purpose of planning seems appropriate. One could ask, why plan, just do. Planning likely serves two functions. First, it

provides a means of testing alternative actions without actually evoking the physical resources or other costs (e.g., social) necessary to engage in the action. Of course, the trade-off is the assessment of the potential consequences on one's action based on memories and models, not based on actual consequences. The second reason for planning is related to the temporal dimensions of goals. To achieve many goals, it is necessary to engage in a sequence of activities or start processes before a deviation from the desired state is detected. Again, anticipated deviations must be drawn from memory or models because humans cannot see the future but can only predict it (Bandura, 1986; Haith, 1994; Zaleski, 1994).

*Cognitive psychology and scripts.* Given the role of memory, it is not unusual that major advances in understanding planning derive from the cognitive research tradition. Hoc's (1989) review of the cognitive psychology of planning provides one model for integration with goal concepts. For instance, *scripts* have been articulated as cognitively represented sequences of behavior or cognitive structures that organize procedural knowledge (i.e., how to do something; Abelson, 1981; Galambos et al., 1986; Schank & Abelson, 1977). Scripts, goals, and plans are the key constructs in the AI framework for understanding, advanced by Schank, Abelson, and associates. Goals have also been linked to scripts through "tagging," which adds a variable component to presumably invariant cognitive behavioral units (Bower et al., 1979; Graesser, Gordon, & Sawyer, 1979). We take the tagging concept one step further, defining scripts as sequences of subgoals that can be set without reflection. They order and initiate the behaviors needed to achieve the goals. Also, the subgoal parameters are set to support effort expenditures designed to achieve each goal (e.g., M. E. Ford, 1992). Thus, in contrast to a view of scripts as relatively invariant procedural sequences represented in memory, a conceptualization of scripts as sequenced sets of goals for lower order goal systems is adopted. Our script-based formulation provides for operations on goals as activated concepts with links to multiple, well-learned subgoal sequences, which enter into planning for goal attainment. This formulation seems a more reasonable approach to understanding the flexibility of even automatic behavior, and to providing a parsimonious account of that behavior, than viewing scripts as specified behaviors.

For example, when an experienced researcher takes on a new project, she or he invokes a preestablished plan to review iteratively the literature, define the research question and hypotheses, operationalize variables, pilot test measures and manipulations, and so forth. Furthermore, within a literature search task, existing subgoal-plan representations about database searches may be evoked for the task at hand. If the script includes the goal of database searching, changes in the methods available to reach the databases do not derail the research script but merely require modification in some subgoals (e.g., tagging the database searching script) to use the new methods.

Indeed, strategy learning might be defined as the combination of existing scripts into integrated systems (Anderson, 1982; Barsalou, 1991; Thorpe & Turner, 1993) or into the construction of novel productions to attain superordinate goals (Earley & Shalley, 1991). Strategies used by students with higher level goals in LaPorte and Nath's (1976) study of text comprehension provide one example of the use of existing scripts (e.g.,

notetaking, elaboration) to achieve a task goal. Development and testing of performance strategies in heuristic tasks, like business games or graduate education, typify the use of novel operations to achieve goals (Huber, 1985). Huber termed these two categories "algorithmic" and "heuristic" tasks, whereas Simon's (1973) taxonomy of well and ill-structured problems conveys the same concept.

Subsequent developments by Schank (1982) elaborated two units: memory organization packets (MOPs) and thematic organization points (TOPs). MOPs are similar to scripts but provide additional flexibility (cf. Eckblad, 1981). TOPs are defined at a higher level of abstraction, the theme, which captures patterns of goals and plans. Dyer's (1983) related proposal defines the thematic abstraction unit (TAU). Building block functions and the capability to plan by cascading from higher level goal units to lower level scripts to behavioral execution imply that further research should be conducted to determine the role that scripts and related constructs play in goal setting and striving. Logical starting points include the flexibility of script-based representation with respect to goals, bidirectional processing between scripts and goals, tagging scripts with goals, and the role of goals in the transition from declarative to procedural knowledge analyzed by Anderson (1982, 1987).

Repertoires of stored and accessible scripts (Lord & Kernan, 1987) provide goal strivers with flexibility and alternatives. Conversely, an individual with few scripts may exhibit the most consistent behavior across contexts. For example, the person whose dominant response to goal frustration is violence has fewer alternatives to consider when goal blockage is encountered. Socialization can be seen as providing members of a culture with scripts and normative constraints on action. The issue then becomes one of whether flexible or consistent behavior is desirable.

*Motivational psychology and task strategies.* Similar conceptions exist in the motivation literature where planning operates on goal and action representations, invoking and integrating task strategies for goal attainment (Beach, 1985). Plans are grouped by Earley and Shalley (1991) into stored universal plans (SUPs), stored task specific plans (STSPs), and new (or novel) task specific plans (NTSPs). In a review linking goals and plans to performance on complex tasks, Wood and Locke (1990) argued that motivational elements dominate cognitive elements of SUPs. The reverse holds for the task-specific plans (TSPs, NTSP)—cognitive-procedural elements overshadow motivational elements. Again, the goal construct can be used to build a more parsimonious account of planning by using the level of abstraction dimension. Specifically, SUPs are composed of higher order goals that help to account for the motivational findings. However, TSPs are composed of lower order goals, which drive muscle tensions and other "procedural" elements. This asymmetry implies that field settings and long durations may be required to study goal striving (Cantor & Fleson, 1994). For example, adjustment to new environments occasioned by life transitions is an ideal paradigm for studying goal striving. Specifically, moving to college or work from high school comprises a set of age-graded tasks within the American culture. Kuhl's (1992) model addresses this question using multiple strategies that involve either control of metacognitive

components, noncognitive components, or the environment (Corno & Kanfer, 1993; Weinert & Kluwe, 1988).

The area of strategy development, use, and revision remains ripe for investigation. A promising direction involves the use of longitudinal computer simulations to permit measurement of changes in relevant goals, correlates, and consequences (e.g., Bandura & Jourden, 1991; Cervone, Jiwani, & Wood, 1991; R. Kanfer & Ackerman, 1989; Locke, Smith, Erez, Chah, & Schaffer, 1994; Mane & Donchin, 1989; Wood, Bandura, & Bailey, 1990). With Wood's (1986) framework for task complexity, such simulations make it possible to vary the coordinative, reciprocal, and dynamic requirements of the task. Revelle's (1987, 1989) cognitive analysis of task demands into processes of sustained information transfer, working memory access, and long-term memory access provides an enhanced conceptual space for analyzing the immediate task environment and creating tasks that vary systematically on one or more of the dimensions.

*Personality psychology and dispositional perspectives.* At a different level of analysis, personality researchers have isolated a traitlike factor of planfulness. Frese, Stewart, and Hannover (1987) defined planfulness and goal orientation as two components of action styles. Action styles were defined as context-dependent, midlevel units of analysis linked to behavior sequences. They are midlevel because they relate to the operation of the midlevel goals in the action hierarchy. *Goal orientation* was defined as focusing on the goal to attain, whereas *planfulness* was defined as focusing on the steps required to reach the goal. Multiple U.S. and German samples completed a questionnaire measure, yielding results with high internal consistency, moderate retest reliabilities, and several indicators of construct validity (i.e., convergence of self and peer rating, verbal protocols, correlations with impulsivity).

A second molar tendency related to goals is action-state orientation (Kuhl, 1982, 1992; Kuhl & Beckmann, 1994). Kuhl has demonstrated that individuals may be oriented toward the environment (action, behavior) or internal states (e.g., rumination, introspection). Measured components of action-state orientation include preoccupation, hesitation, and volatility. Internal or state orientation is often task irrelevant (Farr et al., 1993; Frese & Zapf, 1994), which detracts from plan execution (Kuhl, 1992), increases the likelihood of helplessness effects (Kuhl, 1981), and illustrates catastatic control. Catastatic control mode implies that intentions are not altered without some environmental cue. However, state-oriented individuals often persist longer at unattractive tasks and may make better decisions in complex and risky situations (Kuhl, 1992). Thus, it can be argued that some balance between the two states is required for self-regulation (for a counterargument, see Levy & Lord, 1992), just as some balance is required between introversion and extraversion in the social interactions of daily life. Kuhl suggested that tolerance for discrepancies from goals ("difference engine"; Minsky, 1986) is one determinant of orientation; another is the existence of degenerated intentions (Kuhl & Helle, 1986). Links to similar dispositional constructs, including goal orientation, nAch, ego-task involvement, or desire for control, should be explored.

Achievement need (D. C. McClelland, 1965) is a learned motive associated with life course themes of goal striving

(Heckhausen, Schmalt, & Schneider, 1985) and can be defined by the use of standards at a broad scope or across life tasks (Elliott & Dweck, 1988; Nicholls, 1984; Spence, 1983). For instance, researchers have reported that high nAch individuals are concerned about obtaining accurate, diagnostic feedback (Halisch & Heckhausen, 1977; Trope, 1975), have been found to be better self managers (Hollenbeck, 1989; Matsui, Okada, & Kakuyama, 1982), and place higher emphasis on asking for feedback from experts (Vancouver & Morrison, 1995). Note that such a treatment does not necessarily invoke trait concepts but rather a generalized action tendency.

In a perspective intermediate between trait and state views, Apter's (1989) reversal theory incorporates metamotivational constructs within a framework of bistability. Bistability refers to shifts between two states: telic (goal directed) and paratelic (activity oriented). One component of telic states is orientation toward planning. Apter's idea is that higher order focusing can lead to a reconsideration of plans and possibly to reversals from telic to paratelic states; Hollenbeck and Williams (1987) addressed a related topic for task goals. One testable link is between telic-paratelic switching (Apter's bistability) and the AI distinction between reasoning forward (from current state to goal state) and reasoning backward (from goal state to current state), as discussed by Barr and Feigenbaum (1981), Holyoak (1990), and Newell and Simon (1972). Anderson (1993) included difference reduction and subgoal operators under the canonical problem-solving paradigm.

Recall the mother with the broken down car. Reasoning forward, she might explore various options before settling on the goal of owning a new minivan to avoid breakdowns in the future. Backward reasoning might follow from the point of deciding to buy a particular minivan. Means of saving money and making car payments must be devised to achieve the desired goal of minivan ownership.

### *Goal Striving and Monitoring*

Some plans eventually lead to actions, whereas other actions occur without plans. Numerous psychologists argue that most, if not all, action is purposeful and goal directed (Brody, 1983; Marken, 1988, 1991; Pervin, 1989a; Powers, 1973a). A parsimonious model of how this action is controlled using goals is the hierarchical arrangement where subgoals are activated down to the level of desired muscle tensions, which when compared with the current state of muscle tensions, produce actions (Powers, 1973a). Derryberry and Tucker (1991) observed that the vertical organization of the central nervous system supports a hierarchical view; Gallistel (1981, 1985, 1994) discussed similar neurological aspects of goal-directed action, as did John (1980) and Kuhl (1994). The action may be carried out according to plans, either automated or conscious, as discussed above or based simply on immediate feedback from the environment (D. H. Ford, 1987; Lord & Maher, 1991; Marken, 1988). Let us elaborate.

Recall that conceptual models from control systems (Hyland, 1988) and action control (Frese & Zapf, 1994) arrange goals in two ways, hierarchically and sequentially, to receive subgoals from higher order goal systems. The new desired states for the subgoals likely lead to discrepancies with the perceptions of cur-



rent states, which generate goals for still lower level subgoal systems. This is a top-down approach to action generation. Top-down approaches must be supplemented with a bottom-up approach when data pertaining to the pursuit of goals create current states that indicate discrepancies. In addition, changes to an environment that occur during the pursuit of one goal may provide opportunities and perceptions that lead to the creation and activation of other goals. Passing a grocery store on the way to the post office might activate an opportunity for a person to pick up some milk, while mailing letters. Furthermore, discrepancies in intrinsic and emotional subsystems often lead to changes in the goals one pursues (Powers, 1973a, 1992). The multidirectional nature of goal hierarchies has led some researchers to refer to them as "heterarchies" (Hyland, 1988), whereas others call them weak hierarchies (Frese & Zapf, 1994).

A distinction between planning-memory mode (internal, simulating) and action mode (behaving) is based on the position of the switches in control systems (Powers, 1973a). In action mode, switches connect the higher order goals through subgoals all the way down to the muscle tension goals that evoke the action. Recall that, in planning mode, the switches detoured activation to memory stores before reaching the muscle tension goals. Also in action mode, energy and other resources to carry out the actions are distributed based on the plans (Earley & Shalley, 1991), goal importance (Gollwitzer, 1993; R. Kanfer & Ackerman, 1989), or precision needed for action (Powers, 1973a). This is consistent with resource allocation theorists' arguments that the core of goal-based motivation is self-regulated decision making about direction, effort, and persistence of personal resources (Naylor & Ilgen, 1984). In planning mode, mental simulation of variations in goals, plans, and scripts accomplishes the same function but by expending cognitive rather than behavioral resources.

Several integrative models of motivation and cognition focus on the competition among goal systems for resources (e.g., Lord & Levy, 1994). For example, Gollwitzer's (1990, 1993) distinction between implemental and deliberative mind-sets notes that individuals in an implemental mind-set are more efficient at acting toward the focal goal. Gollwitzer and colleagues have been able to prime both types of mind-sets and observe reaction time and interference effects (e.g., Bargh & Gollwitzer, 1994; Beckmann & Gollwitzer, 1987).

After goal selection or plan development, evaluation of progress is required to support decisions about goal revision, strategy change, or goal attainment (Ammons, 1956; Ilgen, Fisher, & Taylor, 1979; T. D. Nelson, 1993; Powers, 1973b; Powers et al., 1960; Taylor, Fisher, & Ilgen, 1984). Feedback may be explicit or implicit in the environment. At times, feedback-seeking processes enhance the information obtained about current performance or status for comparison with the goal (Ashford & Cummings, 1983; Ashford & Tsui, 1991). Ashford and Cummings argued that individual differences in the extent that individuals seek out feedback could, in principle, be linked back to self conceptions (i.e., self-esteem or self-efficacy perceptions). Ashford and Cummings's ideas of feedback seeking connect to the work of Trope (1975) on task diagnosticity, which may be viewed in terms of the active goal set. Furthermore, feedback

seeking can help elaborate the feedback part of the action-style framework, which was not measured by Frese et al. (1987).

Evidence for the muscle tension model is provided by experiments and simulations designed to test Powers's model (Gallistel, 1985, 1994; Hershberger, 1989; Marken, 1988). A special issue of the *American Behavioral Scientist*, edited by Marken, contains several such attempts. This research program shows a correlation between the behavior of their models and observed individuals in the high .90s, similar to Dulany's (1968) results with his theory of propositional control. Unfortunately, researchers have yet to develop models including more than a few levels in a goal hierarchy. Not spanning levels has been due to the complexity of the functions modeled and the rigor demanded. Yet, the general approach of constructing linear or nonlinear computer simulations may be profitable (Simon, 1992).

Another important issue for action control theory is the nature of errors and error recovery during goal striving (Frese & Zapf, 1994). These are errors in action that create inefficiency. Errors are invariably goal related for Frese and Zapf, who classify them by two facets: action sequence stage and level of regulation. For example, goal-setting, mapping, prognosis, thought, memory, and judgment errors comprise one row associated with the facet level of intellectual regulation. This matrix should be systematically studied for its implications. Frese and Zapf also discussed the appearance of different errors and steps that individuals take to recover from them. Habit errors are more common to experts who have developed numerous automated scripts, whereas thought errors are more common among novices. A habit error might include producing the correct action in the wrong situation (e.g., using function keys prescribed by one software program, while the user is in another program). Thought errors include inadequate plans or incorrect decisions, with the former typified by not decomposing superordinate goals into sufficiently detailed subgoals—plans for further analysis or implementation and the latter exemplified by biased judgments concerning goal or subgoal attainment. Modeling explanations of these errors and their antecedents and methods for minimizing them (through selection, training, or job-system design) is an important topic (Frese & Zapf, 1994; Heckhausen & Beckmann, 1990; D. A. Norman, 1981; Senders & Moray, 1991).

#### *Attainment, Revision, and Persistence Decisions*

In goal striving, some desired states are met or avoided easily, others less easily if at all. For this latter set, the individual must quit, revise, table, or persist in goal striving. Thus, mechanisms for determining which course of action the individual will take must be described. The foundation for these mechanisms has been described in previous sections, but further elaboration is required. For instance, goal revision is goal establishment revisited. In that section, we described the mechanism of an intrinsic goal related to chronic nonattainment of an action goal that activates goal-establishment procedures. Potential revisions range from abandoning the goal altogether (i.e., quitting) to establishing new plans or increasing resources toward the old plans (e.g., redoubling one's effort). In all these cases, decision-making processes are evoked (e.g., Lord & Hanges, 1987).

Some models recognize the role of the action hierarchy (e.g., Beach, 1990). That is, revisions are first considered at the lowest possible level (i.e., at the source of the discrepancy between the goal and current state perceptions) and work up the hierarchy to higher level goal systems as the severity of the goal blockage increases. For example, getting a D on one's chemistry test causes one to revise one's goal for the class, which calls to question one's desire for medical school, which forces one to question one's basic values used to determine career choices. These processes unfold over time as more evidence develops regarding the attainment of subgoals and the estimation of goal attainment (Campion & Lord, 1982).

When a goal is attained, the TOTE model and the control theory model diverge. In the TOTE model, goal attainment leads to exiting that goal or TOTE unit (G. A. Miller et al., 1960). Given G. A. Miller et al.'s focus on sequential plans and serial processing, this model makes sense. Yet, the goals and subgoals must be consummatory—once achieved, they are not relevant. Many goals are continuous; the organism needs to maintain them or strive for them constantly because internal or environmental factors tend to disturb current states away from the desired states. Thus, in the control theory model, testing never ends, lest a deviation from the goal in the future not be detected (Powers, 1973a). Clearly, the control theory model requires parallel processing, given the huge number of goals one is pursuing (remember that Powers estimated between 600 and 800 muscle tension goals alone). However, when sequences of behavior are required or the serial limitations of working memory are relevant, the control theory model benefits from the TOTE conceptualization.

Finally, another option is tabling, perhaps the most interesting because of its relevance to the parallel versus serial processing debate. *Tabling* involves temporarily disengaging from the goal pursuit (M. E. Ford, 1992). Presumably, perceptions of opportunities in the environment, or affordances, suggest it is more appropriate to pursue other goals. The inevitable question that arises concerns how successful one is at putting aside a goal. Martin and Tesser (1989; Martin, Tesser, & MacIntosh, 1993) introduced a model of ruminative (repetitive) thought. Their model includes a sequence of responses that follow blockage or nonattainment of goals. In their view, rumination creates psychological distress, similar to Higgins's (1987, 1989) model of self guides. Under these assumptions, Martin and Tesser's five-step model includes repetition, problem solving, end-state thinking, negotiation for abandonment, and, finally, learned helplessness. Investigation is needed to evaluate invariance, timing, and other issues pertaining to the hypothesized sequence (e.g., role and extent of individual differences in the phases; affective links with goal striving and attainment). Furthermore, Martin and Tesser's model is not the only one. Klinger (1987a) discussed an "incentive disengagement cycle," based on goal nonattainment, within his framework of current concerns. By assuming a persistent failure to attain a goal, his model posits a standard sequence that runs from heightened effort through anger-aggression, depression and reduced activity levels, hopelessness-helplessness, and a gradual recovery. This cycle is linked to a pattern of change in goal importance, which has been empirically demonstrated (Klinger, 1975).

Several researches should be acknowledged because of their

studies that epitomize these points. Beckmann's (1994) study is one such example. He investigated how rumination blocked the deactivation of an intention. Given the persistence of intentions in memory (Lewin, 1926/1951), an intention that is not deactivated competes with currently activated intentions. Klinger's (1995) summary of his research program indicated that disengagement from striving is one consequence of nonattainment of goals (cf. Scheier & Carver, 1988). The work of Stein and Levine (1991) on emotional responses following different types of goal nonattainment could be similarly informative. They posited that anger follows goal blockage, whereas sadness and depression are caused by goal abandonment. Winnell (1987) argued that attainment of goals leads to positive affect, whereas nonattainment leads to negative affect. Thus, affect quality or type might serve as a sensitive yet indirect indicator of goal-related decision making, whereas affect intensity could be used as an index of goal valence-importance. We next turn to affect.

### *Affect*

The role of affect in goal system functioning is substantiated by multiple lines of conceptualization and research. Researchers have conceptualized emotions as arising from (a) the degree of goal attainment (Bandura, 1991c; Srull & Wyer, 1986), (b) estimates of the rate of progress toward goal attainment (Carver & Scheier, 1990), (c) anticipated goal attainment (Bandura, 1989), (d) "flow" experienced during goal striving (Csikszentmihalyi, 1990), and (e) activated current concerns (Klinger, 1987a).

Research support for the relationship between goals and emotions can be found in many sources (e.g., Emmons & Diener, 1986; Pervin, 1983, 1991). For example, Emmons (1986, 1989) in his personal strivings research program found relationships between facets of personal strivings, defined as characteristic type of goals, and positive and negative affect. Bandura and Cervone (1983, 1986) found self-evaluative affective reactions to goal-directed performance (see also Ruble, Parsons, & Ross, 1976; and J. Wright & Mischel, 1982). Carver and Scheier (1990) reviewed evidence for determination of affect based on rate of progress toward goal attainment. Srull and Wyer (1986) proposed that several factors determine the negative affect experienced with goal frustration and positive affect associated with goal attainment. They formalized these factors into a model. Austin (1989) showed that goal attainment scores predicted performance satisfaction but not task satisfaction. According to Landy's (1978) opponent process interpretation of job satisfaction, goal establishment may be fundamentally different from goal attainment. Landy's model differentiates between early goal striving (paralleling task acquisition) and later goal striving (subsequent to task acquisition). One possible cause of the difference is the increased competition for cognitive processing resources during task acquisition.

Overall, these theoretical analyses and empirical results suggest that goal striving and attainment might be processed with different implications for affective responding. Progressing toward a goal might be associated with a unique type of affect, a type that is not related to outcome valence but to the pro-

cess of goal striving and similar to the concept of *flow* (Csikszentmihalyi, 1990). Subsequent attainment and nonattainment may be processed with an affective overtone that could "feed back" into goal hierarchies and motivate goal or behavior change. An important question for future research involves the effect of affective experiences (type, sign, magnitude) on goals (dimensions, processes, content).

Higgins (1987) posited that the emotions experienced depend on the standard used for evaluation. His theory of self-discrepancy considers comparisons between actual, ideal, and ought goals emanating from either the self or others (cf. the orientation factor of Frese et al., 1987, or goal origin of Austin, 1989). Focusing primarily on perceived or expected discrepancies of available (i.e., accessible) goals, Higgins marshaled evidence that comparisons between actual-own versus ideal-own generate frustration-related emotions; actual-own versus ideal-other generate dejection-related emotions; and actual-own versus ought-other and actual-own versus ought-own generate agitated emotions. Higgins (1989) extensively reviewed and integrated research to test the structure and implications of self guides. Their broad nature makes them comparable to self-concepts (Markus & Wurf, 1987) and social identities (Tajfel & Turner, 1986). An interesting program of research might concern the degree to which type of emotional response to goal blockage or attainment indicate origin and internalization of the goal.

A common precursor to emotional experiences is goal conflict. Conflict is present when the pursuit of one goal detracts from the pursuit of another (Emmons, King, & Sheldon, 1993; Kernan & Lord, 1990). In a structural sense, conflict occurs between horizontally linked goals (same level) within a hierarchical structure (Emmons, 1989), but this need not be the only case (Emmons, 1986). The old question of the "means justifying the ends" is simply an issue of subgoals conflicting with higher order goals that were not used in generating the subgoals. Questions of how goal conflict is determined, is resolved, and effects other responses are of interest. Several preliminary suggestions can be derived from the work of Emmons and associates (Emmons & King, 1988, 1989; Emmons et al., 1993), in the personality domain of Bazerman and Neale (1983) and Cosier and Rose (1977) in the organizational setting, as well as others (Austin & Bobko, 1985; Locke et al., 1994; Powers, 1973a, 1992; Simon, 1967; Srull & Wyer, 1986).

At a basic level, Powers (1973a) regarded goal conflict as a debilitating dynamic for a system. He used an example of two otherwise equal goals in conflict. Resources applied to satisfy either goal lead to a greater discrepancy for the other goal, which prompts the system to apply more resources to the other goal. The result may appear as if individuals are maintaining a compromise goal when, in fact, they are achieving neither, while depleting their resources. However, conflict can lead to the evaluation and selection of more appropriate or efficient subgoals in a group setting (Jehn, 1993). What influences the positive or negative outcomes of goal conflict is an open question, but measures of affective and health status are fruitful outcomes to study, especially when the goal conflict continues over time.

### Summary

Establishing, planning, striving, and deciding comprise a set of dynamic processes that are difficult to differentiate over time.

We differentiate the goal processes for expository purposes but emphasize the interrelated nature of the components. Inherent in the models presented above is the self-regulating nature of behavior. Individuals strive to achieve their goals, which may be established from external sources, through the production of subgoals and actions. Self-perceptions, future time orientation, and environmental beliefs play an important role in the establishment of goals with specific properties and levels of commitment. These processes also lead to and help regulate emotions and internal conflict among goals. The importance of goals in these cognitive, affective, and behavioral processes in the domain of multiple areas of psychology prompted us to strive toward integrating this research. Nonetheless, we have omitted a more comprehensive explanation of the development of the larger system in which these goals operate. D. H. Ford (1987) and J. G. Miller (1978) provide details of self-construction of living systems that provide a more complete picture of processes in goal-directed systems. R. Kanfer (1990) and R. Kanfer and Kanfer (1991) elaborate processes from a slightly different self-regulatory perspective. In the meantime, we discuss the content of goals in humans.

### Goal Content

Few researchers explicitly devote attention to assessing goal content (M. E. Ford & Nichols, 1987). Efforts, particularly from personality and motivational researchers, have led to the development of domain-specific, self-report measures of goals (Cantor & Fleeson, 1991; Chulef, 1993; Emmons, 1986; M. E. Ford & Nichols, 1992; Klinger, 1987b; Lee et al., 1991; Little, 1989; Markus & Ruvolo, 1989; Roberson, 1989; Winell, 1987). Most of this work has involved the researchers deriving empirical taxonomies through a mixture of idiographic and nomothetic self-report methods (Ford & Nichols, 1987; Wicker et al., 1984). This is despite the well-known problems of self-report methods (Kuncel & Kuncel, 1995). Klinger, Barta, and Maxeiner (1981) reported one of the few multimethod assessments of goals using thought sampling, retrospective self-report, and experimental manipulations. Other investigations of goal content in personality and motivation domains have focused on a delimited set of goals (Deci & Ryan, 1985; R. M. Ryan, 1992). An example is a study by Duda and Nicholls (1992), who considered goal orientation reported by high school students in two school domains: academics and sports. The relatively narrow approach to understanding goal content seems reasonable, given the number of goals humans might pursue. However, we advocate a more concerted effort toward understanding goal content. In this section, we review early need-based taxonomies of goal content, more recent taxonomies, an outline for a more comprehensive taxonomy, and methods for identifying content.

### Classic Taxonomies

Conceptualizations of purposeful or goal-directed behavior have been around for a long time, as noted in the opening quotation from William James. McDougall (1923) proposed 12 instincts that he felt directed human behavior. However, the instinct approach was constrained by a requirement of heritabil-

ity. As a result, lists of instincts grew to account for the diversity of behavior observed in humans (Hothersall, 1995). Later, Murray (1938) and colleagues changed the focus to learned needs activated by the environment. Again, the list grew large. Then Maslow (1954) developed a list of needs argued to be hierarchically arranged and to exhibit prepotency. In addition to the five classes of goals in his hierarchy (i.e., physiological, safety, social, esteem, self-actualization), Maslow (1943) included other needs (i.e., aesthetics, competence). Empirically inclined researchers factor analyzed ratings of goal lists (e.g., Alderfer, 1969), narrowing the categories to existence, relatedness, and growth goals. Others focused attention on one or two of Murray's needs—*nAch*, *nPow*, *nAff* (D. C. McClelland, 1965), competence (White, 1959), and self-determination (de Charms, 1968; Deci & Ryan, 1980, 1985, 1991), among others. Despite research on these specific needs, taxonomies or theories of goals did not receive much research attention until more recently.

### *More Recent Taxonomies*

Typical of attempts to categorize goals is Wicker et al.'s (1984) analyses of goal ratings. Factor analysis of valence, conflict, and attainment ratings of goal statements suggested six factors (interpersonal concern, competitive advantage, exploration–play, balanced success, economic status, intellectual orientation). Supplementary cluster analyses suggested groupings named security, personal growth, transpersonal orientation, and tranquility seeking. According to the researchers, their analyses identified two broad classes of goals: individual striving and harmony seeking. Note that these classes describe two sides of an optimization problem: seeking to meet all the criteria and seeking to balance the criteria. Kuhl (1994) distinguished these processes as self-control, in which one goal dominates, and self-regulation, in which goals seek “consensus.”

Another approach to goal dimensionality concentrates on categorizing life domains. Winell (1987) categorized behavioral episodes into domains of career, family, leisure, social–community, personal growth, and materials. She also hypothesized domains beyond awareness (cf. Bargh, 1990; Kihlstrom, 1987). Jackson (1981) identified four important identity domains for undergraduates: family, peers, romantic, and religious. Beach and Mitchell (1990) distinguished work, family, friends, recreation, and ethical–spiritual domains for their image theory of decision making. Schank and Abelson (1977) identified achievement, satisfaction, entertainment, preservation, and crisis goal categories, with an additional instrumental category to classify subordinate goals. Ortony et al. (1988) substituted a threefold categorization of active pursuit, interest, and replenishment goals for the Schank–Abelson proposal.

A third approach uses alternative analyses. Billings and Cornelius (1980), for example, used multidimensional scaling procedures to investigate work outcomes, finding dimensions that they labeled as value attached by society, value attached by basic need fulfillment, and value inherent in the work. Ronen (1994) reviewed the cross-cultural structure of needs and values, conceptualized as outcomes in the work domain. He concluded that a two-facet structure best accounted for the results of multiple cross-cultural studies, which used Guttman's (1968) smallest

space analysis (MacCallum, 1988). Ronen labeled these facets individualism–collectivism and materialism–humanism and combined them into a system of categories within which cultural work goal patterns could be understood. Complementary work by Borg, Elizur, and Shye is summarized by Borg and Shye (1995).

A major effort to categorize goals is based on the self-constructing systems work of developmental psychologists (D. H. Ford, 1987; M. E. Ford, 1992; M. E. Ford & Nichols, 1987). Table 2 depicts Ford and Nichols's (M. E. Ford, 1992) comprehensive list of goals that individuals may pursue. They organize goals in a heuristic two-part hierarchy. Within-person goals include affective, cognitive, and subjective organization categories; person–environment goals comprise self-assertive relationship, integrative relationships, and task goals. Many of the specific goal types have been the focus of long and productive programs of research in the motivation domain (e.g., self-determination, Deci & Ryan, 1985; equity and procedural justice, Adams, 1963; and Cropanzano, 1993; competence-mastery, Koestner & McClelland, 1990; and D. C. McClelland, 1965). A key contribution of M. E. Ford and Nichols (1991) is their integration of goal content into a single two-part structure that can subsume the life domains of interest to psychologists.

### *A Future Taxonomy*

By building on the work of these researchers, together with concepts of *structure* and *process*, we find it possible and desirable to develop a taxonomy of goals useful for research and practice. Potential contributions of facet theory to the taxonomic study of goals should not be overlooked (Borg & Shye, 1995). The studies reviewed above used factor analytic, idiographic, and focusing methods to develop the basis for a theoretical taxonomy of goals. Below, we extend this work by outlining the objectives of such a taxonomy and its major components.

*Objectives of a taxonomy of goals.* The sciences need taxonomies to support theoretical development (Bailey, 1994; Bobko & Russell, 1991). Like theory, a taxonomy should be comprehensive, parsimonious, and internally consistent. Comprehensiveness is achieved by integrating the middle-range theories of personality and motivational researchers (M. E. Ford, 1992). M. E. Ford and Nichols's (1987) taxonomy is an obvious benefactor of this approach. In addition, they extensively used idiographic techniques to construct and refine their list. Yet, less accessible goals that might be found in a more comprehensive taxonomy were not included. Specifically, intrinsic goals like internal body temperature, glucose levels, and other physical states are considered only from a phenomenological perspective. Furthermore, other biologically determined goals related to procreation and gene propagation are not included. Many of the goals in Table 2 are likely created for these more intrinsic goals. In the other direction, many of the subgoals needed to achieve the goals in Table 2 are not represented. With the hierarchical structure of control and action theories, these subgoals include the muscle tensions goals that link cognition with action (Frese & Zapf, 1994; Powers, 1973a). Most researchers categorize these lower level goals as the automatized components of scripts, found in levels that generally do not require conscious consideration except for the very young, when acquiring new skills, or in unique situations.

Table 2  
*A Taxonomy of Human Goals*

Goal	Desired consequences	
	Positive-approach	Negative-avoid
Within person		
Affective		
Arousal	Experiencing excitement or heightened arousal	Avoiding boredom or stressful inactivity
Tranquility	Feeling relaxed and at ease	Avoiding stressful overarousal
Happiness	Experiencing feelings of joy, satisfaction, or well-being	Avoiding feelings of emotional distress or dissatisfaction
Bodily sensations	Experiencing pleasure associated with physical sensations, physical movements, or bodily contact	Avoiding unpleasant or uncomfortable bodily sensations
Physical well-being	Feeling healthy, energetic or physically robust	Avoiding feelings of lethargy, weakness, or ill health
Cognitive		
Exploration	Satisfying one's curiosity about personally meaningful events	Avoiding a sense of being uninformed or not knowing what is going on
Understanding	Gaining knowledge or making sense out of something	Avoiding misconceptions, erroneous beliefs, or feelings of confusion
Intellectual creativity	Engaging in activities involving original thinking or novel or interesting ideas	Avoiding mindless or familiar ways of thinking
Positive self-evaluations	Maintaining a sense of self-confidence, pride, or self-worth; inventing new ideas; expanding one's limits	Avoiding feelings of failure, guilt, or incompetence
Subjective organization		
Unity	Experiencing a profound or spiritual sense of connectedness, harmony, or oneness with people, nature, or a greater power	Avoiding feelings of psychological disunity or disorganization
Transcendence	Experiencing optimal or extraordinary states of functioning	Avoiding feeling trapped within the boundaries of ordinary experience
Person-environment		
Self-assertive social relationship		
Individuality	Feeling unique, special, or different	Avoiding similarity or conformity with others
Self-determination	Experiencing a sense of freedom to act or make choices	Avoiding the feeling of being pressured, constrained, or coerced
Superiority	Comparing favorably with others in terms of winning, status, or success	Avoiding unfavorable comparisons with others
Resource acquisition	Obtaining approval, support, assistance, advice, or validation from others	Avoiding social disapproval or rejection
Integrative social relationship		
Belongingness	Building or maintaining attachments, friendships, intimacy, or a sense of community	Avoiding feelings of social isolation or separateness
Social responsibility	Keeping interpersonal commitments, meeting social role obligations, and conforming to social and moral rules	Avoiding social transgressions and unethical or illegal conduct
Equity	Promoting fairness, justice, reciprocity, or equality	Avoiding unfair or unjust actions
Resource provision	Giving approval, support, assistance, advice, or validation to others	Avoiding selfish or uncaring behavior
Task		
Mastery	Meeting a challenging standard achievement, or improvement	Avoiding incompetence, mediocrity, or decrements in performance
Creativity	Engaging in activities involving artistic expression or creativity	Avoiding tasks that do not provide opportunities for creative action
Management	Maintaining order, organization, or productivity in daily life tasks	Avoiding sloppiness, inefficiency, or disorganization
Material gain	Increasing the amount of money or tangible goods one has	Avoiding the loss of money or material possessions
Safety	Being unharmed, physically secure, and free from risk	Avoiding threatening, depriving, or harmful circumstances

The addition of intrinsic, basic needs and motor and other lower level goals vastly expands the list of goals. Simple additive combinations alone lead to long, unwieldy lists that proved the downfall of early taxonomists. Yet, a properly constructed taxonomy can be viewed at varying levels of resolution. When a high degree of resolution is not required, factor analytic and synonym searching techniques can be used to simplify the list (e.g., Diddams, 1994). Factor analysis in particular is useful for providing clues regarding single underlying goals, useful simplifications, or both. Using classes of goals (e.g., muscle tension goals; Powers, 1988) can facilitate presenting the taxonomy in a comprehensible manner. Another tactic is to consider the two sides of point goals as one optimization goal. For example, consider the first two goals of the M. E. Ford and Nichols (1987) taxonomy: tranquility and entertainment. Both definitions include an arousal component, which suggests that entertainment goals are evoked when a stimulation set point has not been reached. Meanwhile, tranquility goals are invoked when the stimulation set point has been overreached. The existence of separate and identifiable entertainment and tranquility goals is not in question, but to subsume these subgoals under a single goal is reasonable and provides the taxonomy with some degree of parsimony.

Making sure the taxonomy is internally consistent with comprehensive theoretical perspectives is also a desideratum of theoretical development. In the case of the M. E. Ford and Nichols (1987) taxonomy, D. H. Ford's (1987) self-constructing living systems framework is the underlying theoretical perspective. The Ford framework, along with many others (e.g., Powers, 1973a; G. A. Miller et al., 1960), places the goals in a hierarchical structure. This hierarchy is itself regulated by the intrinsic goals needed for gene propagation and physiological survival. Depending on the specific theoretical approach, a qualitative separation between the intrinsic goals and the action-perception goals is also hypothesized. One can visualize the structure of the taxonomy like a cone in which the surface is etched with layers of action goals, the bottom edge is the border with the environment (i.e., the muscle tension goals), and the inside of the cone is a lattice work of intrinsic goals that etch the cone's surface (e.g., reorganize the action hierarchy; Powers, 1973a). The advantage of a theoretically based taxonomy is much like the advantage the chemistry field gained after the introduction of the periodic table of elements. Dimensions can be tied to their placement in the taxonomy. For instance, Lord and Levy (1994) highlighted the relationship between the level of a goal in the hierarchy and its temporal dimension.

*The action hierarchy.* In the same conic structure, representations of the ideal self (Beach, 1990; Carver & Scheier, 1981) or world views (Pearce & Cronen, 1980; Royce & Powell, 1983) are found at the top of the action hierarchy. Researchers from Steele (1988) to McAdams (1985), Royce and Powell, and Markus and Wurf (1987) have speculated on the nature of the goal at the apex of the cone. As noted earlier, Steele used the principle of equifinality as evidence for a higher order goal. The observation that an individual can engage in many activities that restore some internally held cognitive representation (in this case, the self-identity or self concept) is evidence of its presence and functioning. As appealing as this conceptualization might be, the possibility that the self concept is a pattern of

subgoals on the surface of the cone cannot be ruled out. Markus and Wurf's dynamic conception is more in-line with this latter possibility. Specific aspects of the self concept shift in salience and activation depending on environmental contexts and self-regulation results. Nonetheless, the self concept often serves as a synonym for the highest goal in the action hierarchy.

Below self concepts or system concept goals are values (Rokeach, 1973; Schwartz, 1992), principles (Carver & Scheier, 1981; Lord & Levy, 1994; Powers, 1973a), career goals-aspirations (I. W. Miller & Haller, 1964), and personal strivings (Emmons, 1989). Many of the goals listed in Table 2 seem to belong in this category, such as interpersonal goals that regulate one's interactions with others. Indeed, much research and theory focuses specifically on just the interpersonal goals, which allows for a higher level of resolution. Thus, sample theories include impression regulation (Schlenker & Weigold, 1989), role theory (Biddle, 1964), and social cognition (e.g., Dweck & Leggett, 1988; Sorrentino & Higgins, 1986; Trzebinski, 1989), all of which focus on the role of other persons in goal content. For example, role theory in combination with symbolic interactionism (Stryker & Statham, 1985) postulates that individuals take on identities of others and themselves that they then attempt to maintain or enhance. This concept has been adopted by researchers interested in impression regulation to account for goals related to self and other identities. Specifically, identities are shaped and enhanced with three types of goals: glorification, consistency, or authentication (Schlenker & Weigold, 1989, 1992). Furthermore, the goals for these identities are regulated with respect to both the self and others (Leary & Kowalski, 1990). For example, S. T. Fiske (1993) discussed goals related to enhancing the positive images of important others (glorification), maintaining predictability of others in social interactions (consistency), and confirming expectancies regarding others (authentication). Goffman (1959) discussed how individuals strive toward consistently presenting other entities to third parties.

Debate over the merit of separating these types of goals can be engendered. To the extent the other entities are aspects of the individual's identity (Ashforth & Mael, 1989; S. T. Fiske, 1993; Tajfel & Turner, 1986), one could argue that one is merely managing self identities. However, the extent of social identification potentially becomes an important dimension absent from alternative impression regulation concepts and may determine different emotional responses to goal blockage (Higgins, 1987; Stein & Levine, 1991). Furthermore, interesting questions arise over the incorporation of the "other" identities into the self identity and the changes to the relative importance or level of the three kinds of goals throughout this incorporation process (Tajfel & Turner, 1986).

Below principle level goals are life tasks (Cantor & Fleeson, 1994; Cantor & Langston, 1989), personal projects (Little, 1983), and programs (Carver & Scheier, 1981; Lord & Levy, 1994). These are often the goals that become activated in the sense that Klinger (1977) used "current concerns." An example is R. M. Ryan's (1992) work on the goals of beauty, fame, and fortune that permeate American society. He analyzed the self-defeating manner in which these goals are adopted by many individuals (self-defeating in that those goals are seen by these individuals as means to happiness, but they rarely lead to that

outcome). Furthermore, work goals found at this level concern motivational researchers (e.g., Locke & Latham, 1990b; Robertson et al., 1989).

Progressing down the levels of Powers's (1988) hierarchy of goals are sequence, category, relationship, event, transition, configuration, sensation, and intensity goals. These levels correspond to levels of complexity in perceiving the external world, in serving specific functions, or both. For instance, the sequence goals control the order (e.g., sequencing) of the lower order goals when serial processes or temporal demands require it. In other words, these are the plans as described in the TOTE model of G. A. Miller et al. (1960). Transition goals relate to changes in configurations (Powers, 1973a). Configurations relate to groups of sensations, which are in turn aggregates of intensities. These lower order goals are constantly in flux, receiving their levels from (i.e., serving) higher order goals. Subfields (e.g., linguistics, perception) are devoted to mapping the structure and processes of these goals.

*Intrinsic goals.* In addition to the action hierarchy, the goals related to the operation and regulation of that hierarchy are a critical component of a comprehensive taxonomy of goals. Potential candidates for these slots are needs, emotions, and personality traits. Each is discussed in turn.

According to Ashby (1960), organisms have essential variables they must maintain within certain limits to survive. The internal representations of those limits are the most basic desired states of the organism. These needs, which Kuhl (1994) named the "homunculi," are the goals that drive and oversee the organization of the action hierarchy. Their representations are beyond conscious processing (Kuhl, 1994; Weinberger & McClelland, 1990), but their operation often results in affective experiences or influences the content of working memory (Powers, 1992). Texts on motivation include the regulation of hunger, thirst, sex, and aggressive self-regulation (e.g., Mook, 1996; Petri, 1996). Kuhl defined three basic needs: (a) sex and affiliation, (b) hunger and achievement, and (c) aggression and power. He described a model of these needs, along with propositional belief systems, operating on an associative network analogous to the action hierarchy described above. The specific operations involve inhibiting or activating specific linkages in the associative network of goals.

The importance of emotion and affect has been clear in theories of goal-directed behavior from Freud's (1920/1948) consideration of arousal reduction and the pleasure principle as basic driving forces in behavior to Carver and Scheier's (1990) consideration of emotional responses to the rate of progress on goal striving. The affective corollaries and consequences of goal-striving sequences and goal conflicts are multivariate and multilevel, ranging from subjective well-being and life satisfaction (Diener, 1984; Reker, Peacock, & Wong, 1987) to transient mood states (Larsen, 1989) and perceptions of cognitive overload (Hart, 1986). Frijda (1986, 1988) noted that perceived or expected goal attainment leads to positive emotions and that perceived or expected threats to goal attainment lead to negative emotions. Stein, Trabasso, and Liwag's (1993) review suggests that affect is regulated by goal outcomes of attainment, frustration, or abandonment. The key conclusion is that emotions can often be regulated as goals themselves (M. E. Ford & Nichols, 1987). For example, the stress-diathesis model of

Lazarus and others conceptualizes coping as attempts to maintain negative emotions at low levels (Edwards, 1991; Lazarus, 1991; Lazarus & Folkman, 1984).

Powers (1992) conceived another hierarchy devoted to the regulation of emotions, which is linked to the action goal hierarchy. Emotions that can be regulated are included in Table 2. The first two (entertainment, tranquility) relate to the consequences of goal striving for an optimal level of arousal (M. E. Ford, 1992) as mentioned above. The third (happiness) relates to the consequences or anticipated consequences of goal striving in general (M. E. Ford, 1992; Frijda, 1987). The last two (bodily sensations, physiological well-being) relate to the consequences of goal striving for biological and physiological goals mentioned earlier (M. E. Ford, 1992; Seeman, 1989).

Personality theory has seen some consensus surrounding five broad factors of personality (D. W. Fiske, 1995; W. T. Norman, 1963) after years of skepticism and disagreement (O. John, 1990). The big five includes Surgency (or Extraversion), Agreeableness, Conscientiousness, Emotional Stability (vs. Neuroticism), and Intellect (Culture or Openness to Experience). The primary issue is whether the list is of five underlying (i.e., latent) aspects of individuals or five variables that capture the perceptions individuals can have of themselves or others (D. W. Fiske, 1995; Hough & Schneider, 1996). In either case, these constructs deserve a place in a taxonomy of goals.

Conceiving the five superfactor traits as aspects of the intrinsic system, we may facilitate our incorporation of these facets into a general understanding of the individual. For example, D. W. Fiske (1995) noted that surgency is the rate at which energy is expended, regardless of place and time. This idea corresponds with a goal for energy expenditure—the dimensions of which may differ between individuals. Alternatively, based on Eysenck's (Eysenck & Eysenck, 1985) definition of extraversion, this first factor may be at least partly a function of an intrinsic goal—the stimulation set point. This conceptualization differs somewhat from more empirically derived definitions (McCrae, 1992) but has several implications. First, physiological mechanisms have been identified that relate to behavioral or motivational tendencies (e.g., D. G. Gardner & Cummings, 1988). Gray's (1982) work with behavioral activation and behavioral inhibition systems is exemplary in this regard but largely conducted with nonhuman populations. With that understanding, measures and manipulations for human research and application can be devised (Revelle, 1989). Stimulants, for example, are given to hyperactive children to help them to get to their set points more easily, thus to focus their attention on relevant school activities.

D. W. Fiske (1995) speculated further that emotional stability refers to one's internal control of emotional expression. Specifically, individual differences in stability may be a function of the level or importance of a desired amount of emotional expression or the capability to achieve or monitor that goal. Dependability refers to the general ability one has to maintain one's goals (D. W. Fiske, 1995), perhaps linked to a generalized commitment tendency. Thus, like the goal-orientation variable (Button, Mathieu, & Zajac, 1996; Farr et al., 1993; Frese et al., 1987), or the quality of one's cognitive inhibitory processes (Diefendorff, Lord, Quickle, Sanders, & Hepburn, 1995; Gernsbacher & Faust, 1991; Lord & Levy, 1994), stable differences in



the degree that individuals can maintain goals in attentional focus may be reflected in this personality factor. Agreeableness seems highly related to the interpersonal goals mentioned earlier. Finally, the conundrum of the Intellect factor (D. W. Fiske, 1995) may be solved by one examining the differences in the operation of an intrinsic goal that regulates one's satisfaction with one's mental models. Individuals with higher error sensitivity may rely more on environmental feedback than on mental models developed from past experience. For example, Chaiken's (1987) goal of confidence determines systematic versus heuristic processing, whereas Weary and Edwards's (1996) motivation to resolve causal uncertainty determines social information-processing goals.

Although we explicitly discuss personality in the intrinsic goal section, note that individual differences across situations can follow from aspects of the entire taxonomy. Higher order goals (e.g., system concepts and values) act in a top-down fashion to drive a certain level of consistency. Middle-level goals with relatively high importance may also result in consistency (although the high level of importance is probably a function of higher order or intrinsic goals). Finally, consistency can be found in a limited array or highly connected lower order goal scripts that limit an individual's means for accomplishing one's ends (as in our example of the individual who constantly turns to violence to deal with frustrations in goal attainment).

We make one final point on our proposed taxonomy. Despite the organization of this section of the article, a definitive distinction between an action hierarchy and a more intrinsic set of goals is unlikely. Metacognitive goals that regulate the action hierarchy are trainable (Karoly, 1993; D. C. McClelland, 1987), implying the incorporation of these goals into the action hierarchy. Indeed, efficiency gains from making these goals accessible to conscious processing, a process termed "goal cognition," is one of the success stories of research on self-regulation (Karoly, 1993). Thus, an advantage of conscious control of goal striving is demonstrable. However, we agree with Bargh and Barndollar (1996) that nonconscious processing has received undue ridicule.

### *Methods for Assessing Goals*

Researchers pursuing the goal construct have used extremely varied methods, which is in keeping with the horizontal and vertical span of the goal construct. Five issues are critical: uniqueness, shared meaning, dynamics, interaction among goal systems, and the latent versus phenomenological distinctions. Uniqueness is the qualification that each individual's cognitive representation of desired states is like no one else's; that is, goals are idiographic. No self concept, for example, is identical to another. This caveat is critical when attempting to build a science of psychology (Runkel, 1990a). However, the usefulness of an idiographic science without nomothetic principles seems limited. As a result, many researchers have developed combination idiographic-nomothetic (i.e., idiothetic) instruments (Klinger, 1995; Pervin, 1983; Roberson, 1989; Winell, 1987). The computer simulation method might provide a solution through the use of individual values for universal constructs.

Shared meaning is a related idea that any term used to symbolize a goal may not have the same meaning for more than

one individual. To develop a shared meaning, individuals must interact. That is, to pursue mutually interdependent goals, individuals develop symbols (e.g., vocabulary) among themselves. However, symbolic interactionism principles emphasize the process involved in developing a shared meaning (Stryker & Statham, 1985). Hence, the psychologist's job is made easier because mutually interacting individuals seek a shared set of symbols and understandings.

Meanwhile, the dynamic nature of goals makes the enterprise of assessing goal content difficult. Internal representations of desired states, the associations of subgoals and superordinate goals, the focus of attention and other resources devoted to achieving a given goal, and the dimensions of the goal over time, people, and in relation to other goals all change. Thus, for lower level goals, which may change rapidly, ranges of goal levels and importance may be more appropriate to measure than the level or importance at any one time. Furthermore, accessibility to working memory (Higgins, 1987) may be at least as relevant as level or importance, particularly if the researcher is relying on self-report methods of assessing goal content.

Accessibility is defined not only with respect to time but also with respect to the interaction among goals. Highly connected goals are more likely accessed than goals with few connections. Another interaction issue is that other types of dynamic processes lead to homeostatic behavior patterns like the virtual goal problem mentioned earlier. For von Bertalanffy (1968) and for Powers (1973a), these kinds of goals are problematic because they can cause misspecifications of the models of the organism examined. Indeed, what some have called goals or needs, others have described as dynamic interactions. For example, Murray (1938), D. C. McClelland (1965), and Deci and Ryan (1985) have each described a desire for a state of autonomy. Yet, Deutsch (1968), speculating on a complete feedback network (e.g., a goal hierarchy), implied that the desire for autonomy will emerge out of the operation of the system. Specifically, if effective systems have been developed to maintain certain goal levels, constraints on applying those systems become sources of frustration for each goal system. The frustration arises without any particular goal for autonomy. If the systems are not well-established, constraints are less likely, reducing the appearance of a need for autonomy. Careful research must be directed at determining the correct specification of proposed nomothetic goals like autonomy.

A final issue is the phenomenological versus latent distinction articulated in Goal Structure. The primary issue is that measuring goal content through self-report tends to assume the phenomenological perspective and is limited to conscious goals. This is probably not a problem, provided the limitation is understood (Secord & Greenwood, 1995). In fact, Klinger (1995) noted that self-report procedures are often required if one is to have any hope of assessing the goals of current interest to the individual, especially given the issue of uniqueness. A secondary issue is the inferences participants (and researchers) make regarding goals. That is, often researchers attempt to measure latent goals and dimensions through self-reports of desires and typical behaviors. The use of reports (or even observations) of behaviors requires an inference that the behaviors were activated to achieve the set of goals assessed (or the level of dimensions related to the set of goals). Indeed, individuals as lay sci-

entists seek to understand their own and other's behavior (Kruglanski, 1989). Suggestions of goals that one might pursue may be readily accepted as legitimate reasons for actions. A danger is that a taxonomy of goals can be constructed by providing a set of nonconflicting goals that seem consistent with actions, regardless of the actual goals individuals pursue. The more limited and narrow the context, the more likely this will happen. Again, the issue is awareness of the potential invalidity in the measure of one's construct, not that self-report or the use of measures of behaviors is necessarily invalid.

A more precise method for identifying goals, the test, is discussed by Powers (1973a) and Runkel (1990a). The test involves (a) hypothesizing a variable for which the individual has a desired state (i.e., a goal), (b) disturbing the variable, (c) looking for actions to restore the variable (this assumes that the disturbance moves the perceived current state of the variable away from the desired state), (d) looking for a way for the individual to sense the current state, (e) blocking the sensing mechanism, (f) disturbing the current state again, and (g) looking for *no* action to restore the variable. It is through this method that we learned that Cannon's (1932) original guesses regarding the regulation of thirst and hunger were wrong, but a much more complicated homeostatic set of goals were involved (Mook, 1996). The crux of the method is that well-functioning, self-regulating systems squelch variance. What is interesting, and what one looks for during the test, is that something related to the system is stable despite changes in the environment that one might think would cause change (Powers, 1973a). This is the basic observation of self-regulating systems. Meanwhile, the behavior of a system can be highly variable. Not only must the system detect or anticipate a disturbance to the variable that it is monitoring in relation to a goal, it must also choose a means (i.e., a set of subgoals) that it thinks is capable of reducing the disturbance but will not disturb other monitored variables and continue to use opportunities afforded by the environment. All of these issues are of concern when applying the test (Runkel, 1990a). A significant role exists for models of decision making in self-regulation (e.g., Ajzen, 1991; Bandura, 1991b; Beach, 1990; M. E. Ford, 1992; Klein, 1989; Latham & Locke, 1991; Tubbs & Ekeberg, 1991). Unfortunately, the test does not acknowledge problems associated with maintaining and shifting the focus of attentional resources, or is it always ethically or practically possible (Runkel, 1990a). In such cases, the use of self-report methods is advocated by Powers (1992). Note also that higher level goals are rarely susceptible to experimental manipulations but that their positioning makes them influential in determining lower level goal cognition and planning processes.

### Summary

Attempts to study and track the types of goals that individuals pursue over time are returning to prominence. Theoretical and empirical methods for constructing and evaluating taxonomies of goals have been advocated, with caveats clearly specified by researchers. Furthermore, goal content derived from classic models supports the value of the work of those earlier researchers. Finally, we discussed the issues and means for assessing particular content. In the final section, we bring together the im-

plications of the goal construct in psychology and the promise of coordinated investigation of the topic.

### Conclusions

This review has indicated an abundance of research and theoretical activity, especially fervent over the last decade, on the goal construct (i.e., internally represented desired states). Diversity arises over considerations of properties and arrangements among goals; the manner of representations; the operations designed to achieve goals; the invocation, monitoring, and modification of behavioral sequences to implement plans and strategies and control goal attainment; and the decision-making processes involved in goal establishment, attainment, revision, and persistence. Furthermore, there is considerable diversity of terms and methods across the domains, which conceals what we believe is an underlying continuity. The use of goals to understand behaviors, ranging from the movement of a hand to life tasks to the way one sees the world, may leave some a bit queasy. Yet, in all cases, the goals serve as a standard with which perceptions of current or anticipated states are compared, which in turn affects some processes.

This perceived underlying continuity leads us to envision a possible future where the goal construct is a central, parsimonious construct that can transcend long-standing traditional boundaries in psychology. Americans, in general, have shunned grand theories in favor of mini- and microtheories (Pinder & Moore, 1979). Meanwhile, Germans (Frese & Zapf, 1994; Hacker, 1993; Hacker, Volpert, & von Cranach, 1982; Hacker & von Cranach, 1982; Heckhausen, 1991; Kuhl & Beckmann, 1985a), Russians (Anokhin, 1969; Kozulin, 1986; Wertsch, 1981), and some Americans (e.g., D. H. Ford, 1987; Naylor et al., 1980; Newell, 1990; Powers, 1973a, 1989) aspire to establish plausible large-scale theories of goal-directed behavior. Tendencies toward integrative theories suggest some bidirectional influence between American and European researchers (Gollwitzer & Bargh, 1996; Kuhl & Beckmann, 1994; Spaulding, 1994). In this concluding section, we discuss more pointedly the advantages of integration around the goal construct. The advantages can be found in (a) limiting the confusion among construct definitions, (b) understanding the numerous sources of variance in a construct, (c) identifying and bridging differences in assumptions, (d) examining the functioning of multiple goals, (e) using multiple methods from differing areas, and (f) understanding the constraints on goal-directed behavior. We elaborate each of these points below.

### Confusion Among Constructs

A proliferation of interrelated goal dimensions makes an examination of the goal construct problematic. There are too many putative dimensions floating around with minimal interconnections established empirically. However, we advocate including latent perspectives, along with the more commonly found phenomenological perspectives, when considering the interconnections. Instead of simply seeking discriminate validity in the form of relatively low intercorrelations, structure models of goal dimensions may be used to explain phenomenologically related constructs. For example, goal commitment appears to

result from a combination of the temporal dimension and agency beliefs associated with the higher order goals that invoke them and the importance of the focal unit's goal. Also, by simply developing a single vocabulary to describe goal dimensions, we may substantially increase the efficiency with which psychologists can conduct their science and can communicate between different domains of psychological functioning (cf. Pfeffer, 1993).

One case for combining and clarifying psychological concepts can be illustrated in the use of *intentions*, which has surfaced throughout this review. Several researchers include intentions within their theoretical frameworks (Bandura, 1986; Bargh & Gollwitzer, 1994; Bratman, 1987; Halisch & Kuhl, 1987; Lewis, 1990; Tubbs & Ekeberg, 1991). Although these researchers express some accord, they also evidence considerable disagreement (e.g., Bargh, 1990). Attempts to distinguish goals from intentions (Bargh, 1990; Tubbs & Ekeberg, 1991) and goal intentions from implementation intentions (Bargh & Gollwitzer, 1994) may further confuse the construct definition. One recommendation would be to work on distinguishing elements of goal processes (e.g., striving, planning) from goal dimensions and content (e.g., specificity, situational cues).

### *Sources of Variance*

The value of cooperation and integration can also be found when one attempts to understand the sources of variance in goal dimensions and behavior. Someone who is striving with many committed resources (e.g., effort, time, attention) toward a goal may be doing so because of (a) a high goal level, (b) a high goal importance, (c) a perception of the current state that systematically underrates the actual state, (d) few other goals that are competing for the resources, (e) efficient intrinsic operations that inhibit competing goals, (f) several higher order goals that evoke the goal to achieve their ends, (g) a volatile environment that constantly disturbs the current state, or (h) a mental model that projects a current state different from the goal. We may have missed a few, but the point is that researchers working with a particular goal or in a particular domain are likely to miss one or more of these possibilities. Equipped with a general understanding of goal dimensions and processes, these errors are less likely to occur.

### *Bridging Assumptions*

We found that a split between those who see goals as conscious and those who see them as latent has slowed progress in psychology. One way to join the split in assumptions is to conduct research that spans levels. Thus, at the cutting edge are researchers who examine the relationship between conscious and unconscious goals (e.g., Bargh & Barndollar, 1996; Epstein, 1994) and between serial and parallel processes (e.g., Simon, 1994). Dulany (1991), for example, contended that only conscious contents can be causal (cf. Klinger's, 1987a, current concerns). Yet, it appears that goals may have complex effects beyond conscious ones. Wegner's (1994) research program on ironic processes highlights the conundrum faced when one tries to regulate conscious cognitive processes. Specifically, operating mechanisms that control the working memory process often re-

quire working memory to monitor progress. When the goal is the removal of a type of thought from memory, to monitor the type of thought ends up keeping it in working memory.

Another example centers around volition (Hershberger, 1989). Kuhl and Goschke (1994) defined *volition* as the set of processes that mediate goal maintenance and disengagement. Volitional issues are at the center of a fundamental dispute between choice models (e.g., Ajzen, 1991) and structural models of goal striving (e.g., M. E. Ford & Nichols, 1987), which has spilled into psychology more generally (Bandura, 1991a; Klein, 1991a; Locke, 1991a, 1991b; Powers, 1991). We cannot solve such disputes here but maintain that one resolution is likely to be found in the acceptance and creation of new goals, the dynamics of goal commitment, and choices among alternative goals followed by volitional control (T. Nelson, 1993). Another solution might involve the joint design of crucial tests by the protagonists as illustrated by Latham et al. (1988). Furthermore, answers to these questions need to come from a range of research methods, but issues in conceptualizing and evaluating cross-level linkages and mechanisms will remain (cf. Cacioppo & Berntson, 1992).

### *Multiple Goals*

Concerted efforts at examining multiple goals at multiple levels of abstraction will improve the understanding of psychological phenomenon. Multiple goals or goal systems are activated at any one time for an individual and shift in activation over time (Pervin, 1992). Multiple goal striving appears to be the rule, yet little empirical research addresses the topic. Exceptions include Kernan and Lord's (1990) comparison of control theory and expectancy theory models for a two-goal task performance situation, and Sheldon and Emmons's (1995) investigation of the integration and differentiation within a combined framework of personal strivings and possible selves (principle and system-level standards, respectively). We advocate adding perceptions of conflict and examining patterns of shifting commitments to these multiple goal paradigms. Furthermore, Sharkey and Bower's (1987) cognitive model for interacting goals could be harnessed with Kernan and Lord's motivational and Sheldon and Emmons's personality perspectives. Last, it is with respect to multiple goals that Broadbent's (1985) idea of a heterarchy or the concept of a reticular arrangement of goals that makes goal cognition for humans especially flexible. Add the consideration of temporality as advocated by action control theory, and goal processes can be linked with goal structures within content domains that may vary (e.g., work vs. family, task vs. relationship, self vs. other).

### *Multiple Methods*

Although the scope of goal construct is intimidating, the methods of investigation developed across the various psychological domains and levels of analysis can be usefully applied throughout. For example, projective devices are recommended by some personality theorists for measuring less accessible aspects of goal motives (D. C. McClelland et al., 1989; Spangler, 1992; Weinberger & McClelland, 1990). Life history research (Runyan, 1984) provides a personality perspective on the study

of abstract goals as life tasks (Cantor & Fleeson, 1991, 1994) and personal projects (Little, 1983, 1989; Palys & Little, 1983). Life tasks and personal projects bridge the long-run level of life history narrative and the mundane level of daily activities. Cognitive studies of autobiographical memory by K. Nelson (1993) illustrate an alternative emphasis from the cognitive domain. Cognitive process methods, including reaction time (Puff, 1984), have been used by motivational researchers to study goal acceptance decision processing (Earley et al., 1992). Multiple-task methods from the cognitive domain (Damos, 1991; Mane & Donchin, 1989) are used by motivational researchers to isolate the facets of goals (e.g., difficulty, specificity) that detract from overlapping tasks (Kleinbeck, Quast, & Schwarz, 1989; Schmidt, Kleinbeck, & Brockmann, 1984). Another example involves the use of computer simulations (Simon, 1992; Tomkins & Messick, 1963) to study hierarchical goal-action models. Sharkey and Bower (1987) proposed a model of organization for interacting goals arranged in hierarchies; Marken (1991) applied simulation to show how control theory could account for movement coordination. Meanwhile, both experimental and correlational studies will be crucial in developing valid and realistic content, input, and comparison parameters for simulations (R. Kanfer, Ackerman, & Cudeck, 1989).

### Constraints

Finally, additional research is needed on the constraints and opportunities of neural and biological systems on goal systems. We developed a new-found appreciation for those who attempt to integrate the physiological and cognitive levels of psychological phenomenon (e.g., Cacioppo & Berntson, 1992; Gallistel, 1985, 1994; Klinger, 1995; Kuhl, 1994). Lezak (1994) and H. Gardner (1994) pointed to the use of brain damage and neurological evidence to triangulate on mental functioning. Shallice (1982) linked specific neurological deficits to planning. Unfortunately, specialization has made integration across these boundaries rare. This review, for example, barely touched the physiological and connectionist models on which goals are represented and operate. Those psychological theories and models that have incorporated physiology and neuroscience are that much further ahead (e.g., Kuhl, 1994; Lord & Levy, 1994; Powers, 1973a).

Indeed, we focused on the cognitive, personality, and motivation domains in psychology. Other domains ought to be incorporated as well. For example, developmental research has looked at the appearance and expression of goal striving and volitional competence across the life span (Bullock, 1991; Corno, 1993; Corno & Kanfer, 1993; Reker et al., 1987). Bullock and Lutkenhaus (1988), studying the development of volition, concluded that volitional action control, including a focus on outcomes, goal-based evaluation of behavior, and affective expression, emerges during the period between 20 and 32 months of age. Developmental delays in acquisition of volitional competence at this age could have negative ramifications for later schooling (Corno, 1986; Dweck, 1986; Snow, 1989), and, ultimately, for occupational-career success. A life span perspective (Baltes & Reese, 1984; Harter, 1990) directly implies that researchers should examine early and later segments of the life history for relationships among goal striving and achievement,

well-being, and dysfunctional psychological constructs (Reker et al., 1987; Robbins, Lee, & Wan, 1994). Furthermore, it is possible to frame such stage-sequence models using Cantor and Zirkel's (1990) "age-graded normative goals" (p. 138). Robbins et al. found evidence for a relationship between continuity of goals and more successful adaptation in early retirement, which agrees with Rapkin's (Rapkin & Fischer, 1992a, 1992b) findings concerning goals and life satisfaction. An action control theory perspective on development is provided by Brandtstadter (1989).

As we noted at the beginning of this review and have conveyed throughout, the goal construct is central for the psychologist's nomological net. Goals serve both theoretical and practical purposes. Besides the information overload problem associated with a fertile field, we foresee two dilemmas for researchers of goal constructs. One dilemma is balancing knowledge generation and application (Argyris, Putnam, & Smith, 1985; Lewin, 1946; Trist & Murray, 1990). Goal constructs have been used to make theoretical advances in cognitive, personality, and motivation domains. Goals are also applicable to problems from school (Ames, 1992), the playing field (Burton, 1993), work (Locke & Latham, 1990a; R. Kanfer & Kanfer, 1991), and clinics (F. H. Kanfer, 1987; F. H. Kanfer & Hagerman, 1987). Our belief is that investigations that address theoretical issues in applied settings will lead to greater progress than either theoretical or applied investigations alone. The other problem is striking a methodological balance among experimental, observational-correlational, simulation, and other methods (Cronbach, 1957; Kimble, 1994; Simon, 1992). Informed methodological pluralism helps to converge on reliable understanding of goal structure, process, and content. Thus, this review provides an evaluation of the state of knowledge and research methods on the goal construct. Whether one is interested in the key theoretical questions or the practical implications of psychology, the study of goal constructs promises to be a stimulating research area, particularly given their potential for integrating psychological domains. Lest one think we have reached our desired state vis-à-vis understanding the goal construct, we end with this quote from George Bernard Shaw (1911):

Science becomes dangerous only when it imagines that it has reached its goal.

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