wish to do, and refraining from what they wish not to do (for another view on how much trouble these things can be, see Wegner, 1994). Although we have no clinical experience to rely on, we share a measure of Pervin's concern about the question of will. For the time being, then, we will simply continue to assume as a working model that feedback processes are fundamental, and see how far these assumptions will carry us.

5

Goals and Behavior

You must imagine your life . . . and then it happens.
(John Updike, *The Witches of Eastwick*)

To say that behavior is regulated by feedback processes is to assume the existence of reference values for behavior. In this chapter we consider reference values and some differences among them. For most practical purposes the term *reference value* is interchangeable with the term *goal*. Life, in this framework, is a continual process of establishing goals and adjusting patterns of behavior to match those goals more closely, using informational feedback as a guide.

GOALS

This emphasis on goals is very much in line with a growing emphasis on goal constructs in today's personality–social psychology (Austin & Vancouver, 1996; Elliott & Dweck, 1988; Miller & Read, 1987; Pervin, 1982, 1989). A variety of labels are used in this literature, reflecting differences in the emphases that various writers place on aspects of the goal construct. The next section briefly reviews a few of these constructs.

An Overview of Broad Goal Constructs

One of the earliest of this generation of goal constructs was Klinger's (1975, 1977) use of the phrase *current concern* to describe goals with which a person is presently engaged. This phrase conveys the sense that the goals are temporary. They occupy the mind for a while but eventually yield to other concerns. The phrase also suggests a sense of mental engagement with an issue or problem, a quality of unfinished business. This sense is certainly compatible with the idea that until a

goal is reached it engages the mind in the process of trying to move closer to it.

Another construct that tends to convey a fairly restricted scope is the *personal project* (Little, 1983, 1989). This resembles Klinger's current concern, though its label doesn't convey quite the same sense of urgency or engagement. A personal project is something you want to do, which might be brief (getting ready for an exam) or more extended (finding some good friends).

The sense of engagement seems more implicit in the term *personal strivings*, used by Emmons (1986), and the term *life task*, used by Cantor and Kihlstrom (1987). These constructs are similar in meaning, reflecting broad, overriding goals that can form themes in the structure of a person's entire life. They thus lack the sense of temporal limit suggested by current concern. On the other hand, although broad in scope, strivings or life tasks often vary from one phase of life to another and are sometimes adopted during transitions across phases. For example, the first months at college are typically a time of "trying on" life tasks suggested by a person's initial experiences of the college environment (Cantor & Fleeson, 1991; Zirkel & Cantor, 1990). The same may be said of the first months at a new job.

Miller and Read (1987; Read & Miller, 1989) are among the theorists who simply use the more prosaic term *goal*. They reserve this for the overall goal behind a given set of activities, using *plan* to refer to subgoals and strategies used to attain the overall goal. Miller and Read point out that the carrying out of plans depends on a variety of resources: money, social skills, access to relevant other people, and cognitive resources (Read & Miller, 1989).

In all these conceptualizations there are overall goals and subgoals. There's also room for a lot of individualization. For example, a life task or striving can be achieved in many ways, but each person chooses a path that fits with other aspects of his or her life (people have many current concerns which must be managed simultaneously) and other aspects of his or her personality. Thus, the strategies that people use for pursuing a given life task differ considerably from one person to another (Langston & Cantor, 1989). For instance, a person who's shy will have strategies for making friends that are different from those of a person who's more outgoing.

Another goal construct, mentioned in Chapter 4, which differs in several ways from the ones just listed, is the *possible self* (Markus & Nurius, 1986). This construct is intended to bring a dynamic quality

to theory about the self-concept. In contrast to traditional views of the self-concept, but consistent with other goal frameworks, possible selves are future-oriented. They concern how people think of their potential, the kind of person they might become (see also the *self-guide* construct, used by Higgins, 1987, 1996). This view thus involves the self-concept as a goal in the dynamics of behavior, as the person moves from the present toward the future.

Among possibles selves are hoped-for and feared selves. Markus and colleagues thus make explicit that people have avoidance goals as well as approach goals. This variation, however, can easily be applied to all the constructs named earlier. A person can have a personal striving to avoid a bad outcome (e.g., Emmons, 1996); the same is true of current concerns or life tasks. Although the emphasis is usually on the positive, all the goal constructs outlined above potentially imply avoidance as well as approach goals.

Theorists who use the constructs above have their own emphases, but in many respects the points they make are the same. All include the idea that goals energize and direct people's activities in organized ways (Pervin, 1982), that goals serve to engage the activities of those who adopt them. These views implicitly (and sometimes explicitly) convey the sense that goals give meaning to people's lives (cf. Baumeister, 1989). Each of these notions emphasizes the idea that understanding a person means understanding the person's goals. Indeed, it's often implicit in these theories that the self is made partly of the person's goals and the organization among them (which of course is explicit in the possible-self construct).

One difference among these constructs is their breadth. Although all are intended to be flexible, some are more readily applied to discrete and encapsulated transactions (current concerns, personal projects), whereas others seem broader in focus (personal strivings, life tasks, and particularly possible selves).

Task-Specific Goals

Some uses of the goal construct are even more focused than those just discussed. They deal with the nature of the goal a person has in mind in undertaking effort at some particular task. Often these applications are specific to performance or achievement domains, which also reflects a narrower focus than we've taken thus far. An example comes from the work of Dweck and her collaborators (Dweck, 1996; Dweck & Leggett,

1988; Elliott & Dweck, 1988; see also Ames & Archer, 1988; Nicholls, 1984; Ruble & Frey, 1991). Much of this work focuses on children, but its themes are easily generalized to adult behavior.

A fundamental idea behind this research is that task engagement can reflect several possible goals. Sometimes people have the goal of *performing* well to demonstrate or verify they have the skill necessary to perform the task. At other times they have the goal of *learning* from their experiences with the task, to increase their skill. Children with performance goals are vulnerable to deterioration in effort when they aren't doing well at the task, whereas such deterioration doesn't occur among children who approach the task with learning goals.

This particular difference in influences is an interesting one, to which we return in Chapter 11. For the moment, however, what's important about this difference between goal orientations is its very existence. The act of trying a challenging task has two different meanings, depending on which kind of goal is in mind. With a performance goal, the child is trying to demonstrate or verify skill. With a learning goal, the child is trying to acquire skill. These goals are different. An important question is how to conceptualize the difference.

Another literature that's relevant to the discussion of goal constructs in performance domains is work on goal setting (Locke & Latham, 1990a). Studies of goal setting focus on how performances are affected by establishing various goals before people begin to perform. The most frequently noted finding, quite reliable across a range of studies, is that performances are better when a high goal is set than when a lower goal is set or when subjects are told to "do your best."

This finding is usually interpreted in terms of the efforts that people mobilize. A higher goal causes people to make stronger efforts, thereby doing better at the task, than does a lower goal. A "do your best" goal appears never to be taken at face value. Rather, when given this instruction people "satisfice" (Simon, 1953, 1955) – that is, adopt a goal that's less than their best but seems adequate to the situation.

For our present purpose, the importance of this literature is to raise the general issue of standards of performance or of excellence. Performance standards, though not always relevant, are certainly relevant in some circumstances. Indeed, the question of stringency of standards could potentially be applied to any goal construct. A personal project, personal striving, or life task might be viewed not only in terms of content (being nurturant in relationships, performing well in a class, repairing your car, or deciding on whether or not to go to law school) but also in terms of the level of excellence taken as your goal (being the ultimate nurturer, getting a perfect score on the final exam, keeping your car in perfect repair, or making the best possible decision about your professional future).

One implication of the goal-setting literature is that people perform at a higher level if their goals are high than if they are lower or are only vaguely established. It should be noted, though, that there's an important boundary on this effect of high goals. This boundary raises a caution about generalizing the point too far. Specifically, a goal that's *too* high causes lowered performance, apparently because performers fail to adopt the goal and thus don't try. As with the difference between learning and performance goals, we return to this point in Chapter 11.

HIERARCHICAL CONCEPTIONS OF GOALS

Something that's obvious from this brief review of goal constructs is that some goals are broader in scope than others. Exactly what the difference in breadth means isn't always easy to put your finger on. Sometimes it reduces to a difference in temporal commitment to the goal. For example, the personal project of being well prepared for a test may be multifaceted, but this is a goal with a fairly short life span. The life task of being well prepared for business meetings has a longer period of relevance. Sometimes, however, a difference in breadth is more than that. It's a difference in the level of abstraction at which the goal exists.

Basic Premise: Goals Can Be Differentiated by Levels of Abstraction

The notion that goals differ in level of abstraction is easy to illustrate. You might have the goal of being an honorable person, or a self-sufficient person, or a person who always comes out on top when dealing with others. These goals are at a relatively high level of abstraction. You may also have the goal of avoiding contact with the office gossip, or of making dinner for yourself, or getting a good price on a car. These goals are all at a lower level of abstraction. Although the first set of goals may apply for a longer time than the second set, that isn't the only way they differ. The goals of the first set are more abstract in nature than those of the second set. The first set concerns being a particular kind of person; the second set concerns completing a particular kind of action.

You could also think of goals that are even more concrete than the latter set, such as that of walking quietly to your office and closing the

door without being heard, or cutting up vegetables into a pan, or keeping your face blank while offering a dollar figure to a salesman. These goals (which some of the theorists cited earlier would call plans or strategies) are closer to specifying individual acts than were the second set listed above, which served more as summary statements about the outcomes of intended action patterns.

How should we think about this difference in abstraction among goals? As you may have noticed, the examples we used for concrete goals (and even more-concrete goals) relate directly to the examples of abstract goals. This was to make the point that there are links between abstract and concrete goals. In this section we consider a way of thinking about the nature of that relationship: the idea that goals are organized in a hierarchy of levels of abstraction.

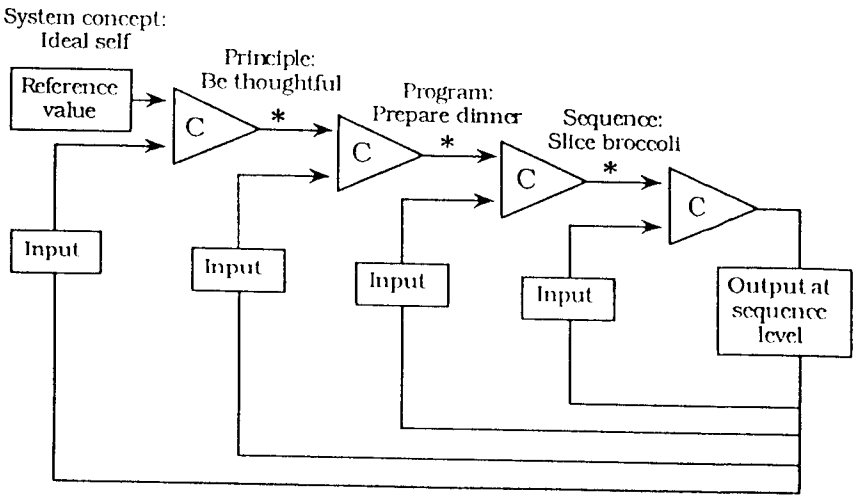
The notion of "hierarchicality" has been around for a good while. Miller, Galanter, and Pribram (1960) wrote about it, noting that any broad goal can be decomposed into subgoals. You behave honorably by avoiding the office gossip, which you do (in part) by walking especially quietly when you enter your workplace. This, in turn, you do by creating sequences of movements among your limbs. Overall goals are realized by subdividing them into constituent elements, which themselves are realized by mechanisms creating conformity to them. Arguments of a similar form, though differing in many of their particulars, have also been made by a number of other theorists focusing on very different aspects of behavior (see, e.g., Baron, 1987; Broadbent, 1977; Dawkins, 1976; Gallistel, 1980; Toates, 1980).

We won't review in detail the many statements on hierarchical organization. Rather, we pursue this discussion by describing one particular conceptualization we've found interesting and useful over the years. We then turn to a consideration of how this view fits with other goal models.

A Control Hierarchy

In 1973, Powers argued that a hierarchical organization of feedback loops underlies the self-regulation of behavior in living organisms (1973a; see also Powers, 1973b). Since feedback loops imply goals, this argument also constitutes a model of hierarchical structuring among the goals involved in creating action.

Powers took as his own goal describing how a hierarchy of feedback processes might be embedded in the nervous system. He was especially attentive to issues that arise at lower levels of abstraction, where



* In each case, this constitutes both an output from the system to the left and a reference value for the system to the right

Figure 5.1. Four-level hierarchy depicting the organization of goals and control processes of a person trying to behave in accord with an idealized sense of self, by behaving in line with a principle of thoughtfulness, which is presently being realized by the act of preparing dinner for a friend, which involves a series of action sequences including the cutting up of broccoli for steaming. (Adapted from the hierarchical model of Powers, 1973a.)

mechanisms had to be postulated for the coordination of movements of muscle groups. Though he had much less to say about the levels in which we're most interested, the principles with which he worked can be generalized fairly readily.

The theory runs as follows: In a hierarchical organization of feedback systems, there are superordinate loops and subordinate loops. The output function of a superordinate loop consists of the resetting of reference values at the next lower level of abstraction (see Figure 5.1). To put it differently, higher-order systems "behave" by providing reference values (goals) to the systems just below them. Presumably, selecting a particular reference value relies at least partly on associations between classes of perceptions and classes of actions that have proven to be discrepancy-reducing at the higher level in similar situations in the past (cf. Colwill, 1993; see also MacKay, 1956).

The reference values specified as outputs become more concrete and restricted as one moves from higher to lower levels of the hierarchy. Control at each lower level regulates some quality that contributes to the

quality controlled at the higher level. Each level within the hierarchy monitors input at a level of abstraction appropriate to its own functioning, and each level adjusts output to minimize its own discrepancies. These functions are assumed to occur in parallel at each level. It's assumed not that one processor is handling functions at various levels of abstraction, but that structures at various levels handle their separate concerns simultaneously.

Powers argued that such a hierarchy underlies the physical execution of actions that people engage in. We've been most interested in the implications of these ideas at relatively high levels of abstraction. The illustration of the nature of hierarchical organization in Figure 5.1 also illustrates the several highest levels in the organization Powers proposed. At the highest level shown (labeled *system concepts*) are such values as the global sense of idealized self (cf. Burke, 1991; Klein, 1987, pp. 65–68). Self isn't the only reference value that might be used there, though it's probably the most intuitive example and may be the most frequently used. Other values include the idealized sense of a relationship (cf. Read & Miller, 1989) or of a society (cf. Markus & Kitayama, 1991).

Goals at this level are very abstract. As one considers the attempt to self-regulate with respect to such values, a reasonable question to ask is what behavioral outputs are even relevant to the attempt. How do you act to minimize discrepancies between these highly abstract values and your behavior? How do you "be" your ideal self? Powers (1973a, 1973b) suggested that the output of this highest system consists of providing goals to the next lower level, which he termed the level of *principle* control. To put it more concretely, you "be" who you want to be by using guiding principles implied by the idealized self to which you aspire. The makeup of the idealized self to which a person aspires obviously differs from person to person. Thus, the principles specified as output will also vary from person to person.

Principles begin to provide some form for behavior, but the form is still pretty vague. Principles are aspects of behavior for which there are names in everyday language – for example, honesty, responsibility, thrift, and expedience (or honor, self-reliance, and dominance, to return to the examples we used earlier). They're the sort of qualities to which people apply trait labels. As such, they're fairly abstract. Just as traits aren't behaviors, but qualities that can be manifest in many ways in particular kinds of situations, principles are specifications not of acts, but of qualities that can be manifest in acts of many types (see also Schank & Abelson's [1977] discussion of meta-scripts). You don't go

out and "do" honesty, or responsibility, or thrift, or expedience. Rather, you manifest such qualities in behavior by doing specific activities.

These specific activities, in which behavioral output finally becomes more recognizable as behavior, are *programs* (cf. Schank & Abelson's [1977] script). A program-level goal specifies a general course of action, but one in which there are decisions points and in which many details are left out. The details are unspecified because what's done at any point depends upon the nature of the circumstances encountered at that point. Much of what people do in day-to-day life appears programlike in character. Going to the grocery store, cooking dinner, writing a report, taking a walk – all these are programs. They all have a general, overall goal, but they are incompletely specified because they may entail many decisions along the way.

Principles provide reference values for program-level control in two ways. The first is by suggesting certain kinds of programs as potential goals. For example, one output of the principle of thrift or frugality would be a program involving dinner at home rather than dining out. The second way principles provide reference values concerns choices made within programs. A person who's already committed to the dining-out program might be influenced by the thrift principle to choose an inexpensive restaurant rather than a pricier alternative, or to choose the least expensive dish on the menu and avoid drinks, appetizers, and dessert.

Programs are the sort of activities that people take for granted as "behavior." Although programs sometimes are undertaken to attain relatively abstract goals, the programs themselves are sufficiently concrete and overt that they are easily recognizable as actions. It's easy to describe the actions in a program. Executing programs, however, involves more complexity than may be readily apparent. In the model proposed by Powers (1973a, 1973b), programs act by specifying yet more restricted qualities as reference values to lower-level control structures.

More concretely, you enact a program (partly) by enacting *sequences* of movement. One difference between programs and sequences is that programs involve choice points where decisions must be made (ranging from trivial to important), whereas a sequence is executed all-at-a-piece. When an action becomes sufficiently well learned that its enactment (once begun) is automatic rather than effortful, it can be thought of as having become a sequence rather than a program. Sequences, in turn, are composed of even more restricted qualities, which we won't go into.

Another way of portraying this hierarchy is shown in Figure 5.2. This diagram omits the elements of the feedback processes, simply using

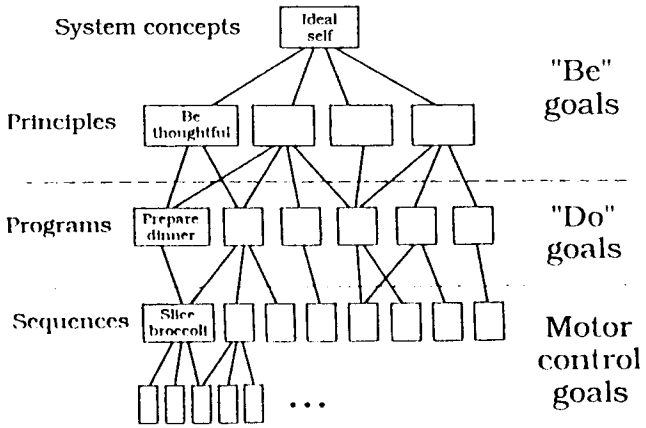


Figure 5.2. Another way to represent a hierarchy of goals (or of feedback loops), using the same example as in Figure 5.1. Lines indicate the contribution of lower-level goals to specific higher-level goals. They can also be read in the opposite direction, indicating that a given higher-order goal specifies more-concrete goals at the next lower level. The hierarchy described in the text involves goals of "being" particular ways, which are attained by "doing" particular actions.

lines to indicate hierarchical connections among goal values. The lines imply that moving toward a particular lower-level goal contributes to attainment of a higher-level goal (even several at once). Multiple lines to a goal indicate that several lower-level action qualities contribute to its attainment. As indicated earlier, this hierarchy assumes the existence of both goals where the point is to "be" a particular way and goals where the point is to "do" certain things (and at lower levels, goals where the point is creation of physical movement).

The process of specifying high-order, abstract qualities in terms of lower-order, more concrete qualities of action brings to mind the notion of means–end analysis (e.g., Newell & Simon, 1972). The *end* is a higher-level goal; the *means* is a set of lower-level action qualities used to attain it. This phrase was coined in the context of problem solving, to label an active process of dividing a behavioral problem into component steps to resolve it, working from the higher level toward very concrete acts. One might think of a means–end analysis as creating a new program of action, as opposed to using a program that's already familiar.

In general, use of the term means–end analysis implies that the analysis is conscious and effortful. In contrast, this assumption isn't part of the model we're discussing. In the functioning of this hierarchy to guide behavior (as opposed to learning a new behavior), something akin to the

outcome of a prior means–end analysis is being evoked from memory, as standards are specified down through the hierarchy. The process is typically implicit and automatic, rather than conscious and effortful. On the other hand, a degree of conscious means–end analysis often occurs at the program level because of the need to choose from several potential strategies within a program of behavior. Indeed, there is evidence that conscious means–end analysis can be helpful in keeping people on track as they manage their day-to-day lives (Gollwitzer & Brandstätter, 1997; Taylor & Pham, 1996).

Hierarchical Functioning Is Simultaneous

It may or may not have been apparent from this discussion that this hierarchical view treats control as simultaneous at all levels of abstraction below the level that's guiding the activity. That is, you don't engage in a high-order action, then stop and wait for lower-level activities to catch up. Nor do you engage in low-level act qualities as preparation for attainment of high-level acts. Rather, the process of carrying out a high-level act *consists of* carrying out low-level acts (see also Vallacher & Wegner, 1985, 1987). For example, if you're conforming to the principle of kindness by doing a favor for a neighbor, the conforming is being enhanced throughout the doing of the favor, not just when the favor is completed.

In this view, exceedingly restricted and concrete behavioral acts (e.g., changes in level of muscle tension, changes in postural orientation) are embedded in the creation of very abstract behavioral qualities (e.g., conveying a certain mood in a piece of art, being gracious to others, delivering a speech with style). To put it differently, whenever some level of control is engaged as functionally superordinate, so are all levels below that one, to permit the carrying out of the action.

One of the strengths of this sort of model is that it links the kinds of activities that are of interest to social–personality psychologists (high-level planning, developing of intentions) to views of how the intentions are carried out physically. To paraphrase Gallistel (1980, p. 287), the problem of motivation becomes a problem of motor coordination as one descends the action hierarchy. Most psychological theorizing at high levels devotes no attention to the processes by which behavior actually occurs. Although the model of action that Powers proposed may be wrong (indeed, the whole family of models to which it relates could be wrong), the effort to make a link between abstract goals and management of physical movement strikes us as important.

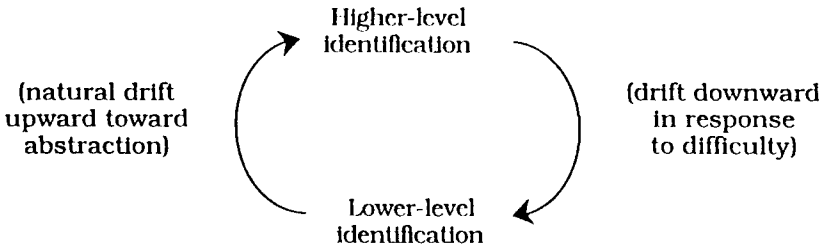


Figure 5.3. Action-identification theory assumes a natural drift upward in identifying your own actions, so that more abstract identification tends to emerge as you become more comfortable with the behavior. If you have difficulties in maintaining the behavior's identification and regulation at the higher level, there's a complementary tendency to drop downward to more concrete identifications, which function better in handling whatever condition is producing the difficulty.

Action Identification

Although the Powers hierarchy has not been studied empirically, another theory that strongly resembles it – Vallacher and Wegner's (1985, 1987) action identification theory – has received several tests. This model is framed in terms of how people think about the actions they're engaged in, but it also conveys the sense that the way people think about their actions is informative about the goals they're using to guide their actions.

People can identify a given action in many ways. Of particular interest is that act identifications vary in level of abstraction. High-level identifications are abstract (e.g., becoming more cultured), lower-level identifications become more and more concrete (e.g., attending a ballet; listening to sounds and watching people move around while you sit quiet and still). Low-level identifications tend to convey a sense of "how" an activity is done; high-level ones tend to convey a sense of "why."

Vallacher and Wegner posited a natural tendency for people to drift upward to higher levels of identification (a process they term *emergence*), as long as they can successfully maintain them (see Figure 5.3). For example, someone driving across the United States may come to identify the behavior as "relocating to the West Coast" rather than "driving down Interstate 10." When there's difficulty in carrying out an activity as construed at the higher level, the person drops downward to a lower-level identification. For example, a period of frequent traffic hazards may cause this driver to identify the activity as "staying out of accidents" or "maintaining a safe distance from other cars." Consistent with this line of thought, easy and familiar actions occur more smoothly when the person holds a high-level orientation, and more difficult and unfamiliar actions are facilitated by a lower-level orientation (Vallacher, Wegner, & Somoza, 1989; Vallacher, Wegner, McMahan, Cotter, & Larsen, 1992).

Movement from a lower level to a higher level depends on an emergent property at the higher level (a notion that's also tied to the Powers hierarchy). This means that a given lower-level identification can often be absorbed into several alternative higher-level identifications. The availability of many potential higher-level construals, in turn, suggests that the emergence process is vulnerable to influence by transient cues. Consistent with this, subjects placed in a low-level orientation were found to be responsive to cues implying a particular high-level construal of their actions. That is, exposure to the cues made them more likely to adopt that construal, compared to subjects who were already in a high-level orientation and exposed to the same cues (Wegner, Vallacher, Kiersted, & Dizadji, 1986).

As implied by that finding, once a relatively high-level identification is adopted, it tends to be maintained while the action is taking place (subject to forces leading to shifts either upward or downward). To put it differently, people are resistant to putting aside one identification of an ongoing action in favor of another identification at the same level. Shifts in identifying a continuing action are more likely to occur upward or downward.

Although people drift upward and downward as circumstances change, there's also evidence that people differ in the levels they tend to maintain as they think about what they're doing (Vallacher & Wegner, 1989). Some people report typically thinking of their actions in low-level terms; others typically think of their actions in high-level terms. These differences are reflected in a variety of ways. For example, compared with high-level identifiers, low-level identifiers tend to be more impulsive and less planful or stable in their behavior, consistent with the idea that they're especially vulnerable to cues implying different identifications.

In considering the relation between the action-identification model of behavior and the Powers hierarchy, there are two points to make. First, although the Vallacher and Wegner (1985, 1987) model is explicitly hierarchical, it doesn't specify what qualities define various levels. It simply assumes that wherever there's a potential emergent property, there's the potential for differing levels of identification. On the other hand, the examples used to illustrate action-identification processes map quite well onto the levels of the Powers hierarchy: sequences, programs (with variations among smaller-scale and larger-scale programs), and

principles. Thus, the work on action identification tends to suggest the reasonableness of these levels of abstraction in thinking about behavior.

COMPARISONS OUTSIDE PERSONALITY–SOCIAL PSYCHOLOGY

How do these ideas about hierarchicality compare with those of others? We first consider two reference points from outside the field of personality–social psychology. We begin with comments about hierarchicality by Miller, Galanter, and Pribram (1960). Then we briefly examine hierarchical models of motor control.

Hierarchical Plans

Although emerging from its own distinct path of development, the hierarchy proposed by Powers (1973a) turns out to have several interesting similarities to ideas expressed by Miller et al. (1960). Miller et al. argued that a hierarchical organization of goals underlies behavior, that attaining an abstract goal requires it to be broken iteratively into subgoals, until the subgoals are sufficiently concrete that they can be attained by whatever are the body's basic operational mechanisms. Alternatively, understanding the creation of complex activity involves putting feedback loops around increasingly larger and larger segments of behavior. Although Miller et al. made no attempt to specify how many levels might be needed to reach the body's fundamental operational mechanisms, it's clear they regarded such questions as important ones.

Another similarity between the Miller et al. (1960) statement and the Powers (1973a) model concerns the distinction between digital and analog processes and the idea that the two can work in concert within a system. The Powers model is mostly analog in nature (i.e., both feedback and discrepancies are represented continuously and quantitatively). It deviates from that quality only at the program level, where behavior is a digital process (i.e., a linear string of decisions). In the same way, Miller et al. (1960, p. 91) argued that "planning at the higher levels [equivalent to Powers's programs] looks like the sort of information-processing we see in digital computers, whereas the execution of the Plan at the lowest levels looks like the sort of process we see in analogue computers." They went on to suggest that development of a skill is comparable to providing a digital-to-analog converter for the output of a digital machine. Thus, Miller et al. saw the two kinds of systems as compatible. Indeed, their depiction here is very similar to the structure of the Powers model.

Miller et al. also discussed the "roughing in" of movement, the creation of good first approximations to an intended movement prior to the arrival of proprioceptive feedback, a function often labeled feedforward (Chapter 2). They discussed this process in terms of an order generated by the digital device and issued to the analog system for execution. Their implication was that subplans are stored in a distributed fashion and are ready for execution at lower levels, awaiting only a call to do so from a higher level. The more precisely encoded is the subplan, the less the adjustment needed from feedback in order to manifest the action as intended. The sense of this discussion is very similar to the arguments that Powers made about the hierarchy he proposed.

Hierarchical Models of Motor Control

Another useful comparison is to the literature of motor control, in which hierarchicality is used more explicitly than in most areas of psychology. Many of today's conceptions of motor control share with Miller et al.'s statement a tendency to divide the system managing behavior into two levels, a higher level at which central planning takes place and a lower level of motor programs (cf. Greene, 1972). One question at issue in this literature is what form is taken by the lower level.

This question has been addressed in ways that range from explicitly hierarchical (e.g., Keele, Cohen, & Ivry, 1990; Rosenbaum, 1987, 1991b; Sternberg, Knoll, & Turock, 1990; see also Baron, 1987; Greene, 1972) to less so (e.g., Schmidt, 1987). Rosenbaum's approach illustrates a conceptual theme that hierarchical motor control models share with the Powers model. Rosenbaum (e.g., 1991b) argues that programs for movement sequences are structured as a tree diagram of simple segments embedded within larger segments. Higher-level nodes in the tree diagram contain information about how the sequence is broken into segments; bottom-level nodes provide information about the movements themselves. Rosenbaum argues that motor programs aren't simply read from memory as a string of instructions. Instead, information is decoded at several levels of abstraction. This arrangement is held to be functional partly because it permits great behavioral diversity to be assembled from a small number of programs stored in memory (for a

discussion of the computational savings created by hierarchicality, see Pinkerton, 1993).

COMPARISONS FROM PERSONALITY–SOCIAL PSYCHOLOGY

We return now to social–personality psychology. We start by considering the relationship of the hierarchical model to goal models reviewed earlier in the chapter. Although none of the theories reviewed earlier makes a point of differentiating among levels of abstraction in the goals they assume, it's possible to infer some variations in that respect among – and even within – theories.

Relations to Goal Models Outlined Earlier

Two theories mentioned earlier appear to focus on goals at the highest level of the Powers hierarchy. One of them is the possible-self construct of Markus and Nurius (1986). The hoped-for self seems a global, coherent entity, corresponding to the idealized sense of self at the top level of abstraction in the hierarchical model. The self-guide model of Higgins (1987, 1996) and collaborators also captures the sense of overall identity within its central constructs. That is, the ideal self and the ought self might be viewed as very integrated goals. The same sense pervades Burke's (1991) model, in which the desired sense of identity is a goal to be regulated against.

Although these models have the conceptual flavor of the top end of the hierarchy, the operationalizations of the constructs in research differ considerably from this. When subjects report on the hoped-for self (or the feared self or expected self), they list several qualities that fit that label. Our experience suggests that it's rare for subjects to write down "complete" hoped-for selves; more often they list several facets of a single hoped-for self. The same is true of operationalizations of self-guides in research by Higgins and collaborators. Subjects write several ideals or oughts, but these qualities typically are facets of a more unitary sense of self.

Neither of these research procedures places constraints on what people can write down. Thus, the responses vary from abstract ("honest person"), to more concrete ("be enrolled in law school"). In practice, however, the responses generally reduce to two types: traitlike statements ("honest," "good looking," "more social"), and statements of places

or way stations along some path of activity ("enrolled in law school," "happily married," "have a good job"). It's of interest that these two categories tend to recapture the qualities of principles (*be* goals) and programs (*do* goals) from the Powers hierarchy. Thus, again, it would seem there's a natural decomposition from high-order abstraction (ideal self) to particular kinds of lower-order goals.

As we noted, several theories reviewed earlier in the chapter are harder to pin down regarding their level of abstraction. A life task may be abstract ("acquire wisdom"), but it can also be more concrete ("decide whether to go to law school or graduate school"). A personal striving can be abstract ("help others feel good about themselves") or concrete ("look attentive in class"). As Little (1989) put it, some projects are "magnificent obsessions," others are "trivial pursuits." Once you consider the possibility that people may vary in the levels of abstraction that constitute their goal systems, virtually all these theories can be explored further in these terms.

Consistent with this, Emmons (1992) found evidence that people differ in levels of abstraction they characteristically use when reporting their personal strivings (cf. Vallacher & Wegner, 1989). Some people report strivings that are broad, abstract, and expansive. Others report strivings that are narrower, more concrete, and even superficial. These tendencies are also reflected in moment-to-moment construals of behaviors they're engaged in. When randomly paged and asked to report what they were doing, high-level strivers reported they were engaged in relatively high-level activities; low-level strivers reported they were engaged in relatively concrete actions.

Hierarchicality behind Task Efforts

Another model of goals discussed earlier was Dweck's analysis of children's task behavior. Dweck's view seems to imply a hierarchical organization (Figure 5.4). Task performances sometimes are a means by which children hold onto self-esteem. This is particularly clear in the group Dweck and her colleagues term "helpless" children. These children hold performance goals (goals of demonstrating they have skill) and are experiencing failure. They aren't able to maintain self-esteem with good performances, so they engage in self-inflating verbalizations: talking about skills in domains other than the one pertaining to this task, or boasting of wealth and possessions. Such behaviors seem to reflect a desire to regain threatened self-esteem in domains other than

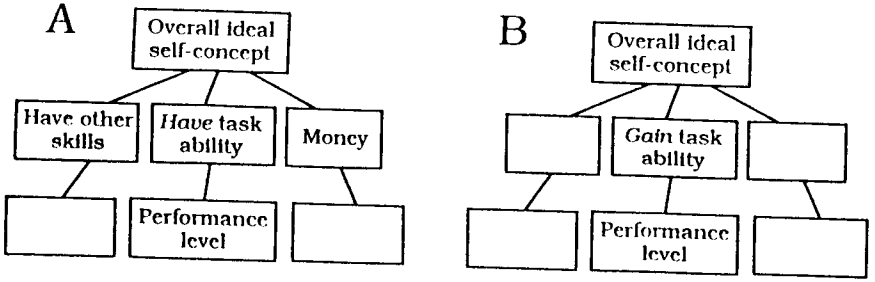


Figure 5.4. Three-level goal hierarchies of (A) a child who holds a performance goal and (B) a child who holds a learning goal. For the child with the performance goal, performing well creates the sense of having a high level of the ability that's relevant to the task, which contributes to the overall sense of self-esteem. For the child with the learning goal, performing well (eventually, though not necessarily right away) provides evidence of gaining the ability, which contributes to the overall sense of self-esteem. Other qualities, of course, also contribute to self-esteem in both cases. In the case of children with performance goals who were failing at the target task, however, several other contributors to self-esteem were mentioned spontaneously.

the one that's responsible for the threat. This, in turn, suggests a kind of hierarchicality in the child's goals structure, such that many different areas contribute to the overall sense of self-esteem.

Children operating with learning goals (goals of acquiring skill) also have a hierarchy underlying their behavior, but it appears to differ from the hierarchy of children with performance goals. The self-esteem of a child with a learning goal depends partly on acquiring new skills. Attaining this goal doesn't require good performance all the time. Thus, children with learning goals who fail at a task don't display compensatory efforts to look good in other ways. Both orientations have an intermediate-level goal concerning ability, but in the learning-goal hierarchy the intermediate goal is more dynamic in nature (*increase* ability versus *have* or *display* ability).

This difference in dynamic quality becomes even more apparent when the goals are linked to children's views of what ability consists of (Dweck, 1996; Dweck & Leggett, 1988). Children with performance goals think of ability as an entity, something that everyone has to one degree or another, which doesn't change over time and with experience. They try to have it *be* there when they undertake their task efforts. Children with learning goals tend to think of ability as something that's more fluid and volatile, something that can change. They try to figure out ways to *increase* it when they undertake task efforts. Thus, the goals in the hierarchy are more dynamic in one case than in the other (for a somewhat different view, see Ruble & Frey, 1991).

Hierarchicality in Other Models

The notion of hierarchicality is center stage in only a relatively few models in personality–social psychology, but it's implicit in a wide variety of others – more than many people may realize. Here are a few more examples.

Hierarchicality plays a clear role in symbolic self-completion theory (Wicklund & Gollwitzer, 1982). This theory isn't about moment-to-moment construal of action, in the manner of action-identification theory, but about broader construals of the self. It holds that there are ways in which the sense of self can be damaged or incomplete. People try to remedy whatever sense of incompleteness they feel by creating symbolic manifestations of the missing quality.

This theory focuses on the self-presentational, or public, aspects of the self. That is, it assumes that the symbols people create increase their sense of completeness only if those symbols are seen to register on others. By having an impact on others' reactions to the self (causing confirmatory social feedback), the symbolizing activity moves the person toward the goal of creating the desired social construction about the self. Thus, creating the symbol is a lower-order goal that helps attain the higher-order goal of a particular public construal of the self.

The theme of hierarchicality is also implicit in most theories which incorporate the idea that people are motivated to maintain a positive self-evaluation or positive self-image. People make self-serving attributions for outcomes (e.g., Weary, 1980; see also Taylor & Brown, 1988). They go out of their way to create esteem-protective explanations for potential bad outcomes before they occur, though doing so often handicaps their own performances (e.g., Snyder, Higgins, & Stucky, 1983). People bask in the accomplishments of others close to them when it reflects well on them, but avoid such information when it creates unflattering comparisons (Tesser, 1980a, 1986, 1988; Tesser & Campbell, 1983). In sum, people try in a variety of ways to affirm or maintain a positive sense of self (Steele, 1988; Tesser, Martin, & Cornell, 1996).

These effects appear to reflect attempts to prevent discrepancies from arising between a desired sense of self and perceptions of self. In each case, people try to protect a quality that's central to them (to minimize discrepancies at the highest level) by the expedient of taking steps to create certain perceived realities at lower levels. These effects thus seem compatible with the logic of hierarchical organization.

Terror management theory (Greenberg, Pyszczynski, & Solomon, 1986; Solomon, Greenberg, & Pyszczynski, 1991) is another model in

which hierarchicality seems implicit. This theory holds that juxtaposing the desire for continuance of life with the knowledge of impending death leads to existential terror. People guard against this by adopting a world view that in one form or another guarantees their continuance into the future, either literally or symbolically. Holding to the world view thus is a means to attain immortality. The world view, in turn, specifies standards that people should uphold behaviorally. In day-to-day life, then, people regulate their behavior according to the specified values. Acting to uphold those values places them in conformity with the cultural world view. The world view, in turn, allows access to the higher-order goal of immortality.

SUMMARY

In sum, many theories in contemporary personality–social psychology make extensive use of goal concepts. Because these theories assume reference points that people try to move toward or away from, the theories fit easily with feedback models of behavior. Many of these models can also be viewed as incorporating notions of hierarchicality, either explicitly or by implication. Thus, we suggest, many of their themes can be integrated into a model of hierarchically organized goals.

The principle of hierarchicality among goals has a good deal of integrative potential. It also raises a number of questions and issues that go well beyond the points we've made thus far. These issues are the subject of the next chapter.

6

Goals, Hierarchicality, and Behavior: Further Issues

In Chapter 5 we discussed the goal construct in personality–social psychology and argued that it's useful to view goals in terms of a hierarchy of abstractness. We focused on a particular view of hierarchicality and its relation to other ideas about goals. For clarity, we skipped a number of issues and questions raised by it. Some issues represent challenges to the model – suggestions that it's wrong. Others are questions about how a hierarchy would function. Questions also emerge from the idea that people typically have several current concerns rather than just one. These issues are the subject of this chapter.

Another matter we've sidestepped so far concerns the nature of the self. We wrote in Chapter 3 about self-directed attention. An important question behind the self-focus construct is what's meant by *self*. This question is touched on here as well.

CHALLENGES TO HIERARCHICALITY

We start by considering a few challenges to the hierarchical aspect of the model outlined in Chapter 5. The idea of hierarchicality has proven useful as a heuristic. But is it really necessary? Is it desirable? Is it even *plausible*?

Hierarchies, Heterarchies, and Coalitions

Some theorists are wary of notions of hierarchicality, preferring ideas such as *heterarchies* or *coalitions* (cf. Broadbent, 1977; Turvey, 1977). There appear to be several bases for this wariness. One of them is a shade of meaning that sometimes attaches to the word *hierarchy*. This word can convey a sense that a command from an executive is carried