Chapter 1

The Power of Language

All psychological interventions rely on the power of language. Even those that emphasize silence, employ imagery, induce hypnosis, or conduct exercises to promote direct contact with the here and now do so by engaging language processes. Psychotherapists rarely intervene directly in their clients' lives—they create change largely through conversation. Effective therapists, by nature and by training, are skilled at using language; speaking articulately, listening with attention and understanding, and promoting psychological well-being through dialogue. Language builds alliance, provokes insight, and expresses empathy; it teaches concepts, shapes new skills, and guides therapeutic exercises. Language isn't just a vehicle for therapeutic intervention—it *is* intervention.

Not only is language an essential tool for promoting positive change in psychotherapy, it is involved in the development and maintenance of most forms of psychopathology. Language orients us to what we should be aware of, and as soon as we are aware, we begin to describe, evaluate, and analyze. Our direct experience of emotions, thoughts, memories, learning experiences, and bodily sensations become quickly interwoven with reasons and narratives that influence us as much as the experiences themselves.

The power of language to transform human experience is evident in most clinicians' caseloads. Language can transform a harmless object into a terrifying threat; imagination can become indistinguishable from reality; a memory of a long-gone trauma can open fresh wounds; anticipation of an improbable outcome can become a barrier to happiness. The ways we think and speak about our experience can take us away from the world we live in and trap us in an ever-expanding world within our own minds. Without language processes, we could not worry about catastrophic outcomes,

ruminate over past transgressions, or endorse delusional beliefs; we couldn't ascribe blame, defend perfectionistic standards, or doubt whether our lives have meaning or purpose. The price of language, it seems, is often our own flourishing.

Similarly, in the absence of language, it would be impossible to hope, to dream of a better life, to contemplate ideals, or to be touched by someone we've never met. Clinicians are often amazed at the resilience of the human spirit and our persistent capacity to cooperate, connect, and seek understanding. These experiences also rely on the core processes that underlie language. It is how we create and critique laws, literature, philosophies, histories, theologies, and the arts. It's no wonder that we call the fields that study these products of language "the humanities": they define us as a species.

The benefits of language are not limited to communication and understanding; language has a powerful influence on many forms of behavior. Humans alone can avoid terrible consequences by following good rules and advice. We can create useful and beautiful things, like rocket ships and cathedrals, from mathematical formulas and physical laws. We can infer the intentions and feeling states of others, allowing us to make predictions about how they will behave and adjust our behavior accordingly. After symbolically stepping into another's shoes, we may stop a bully or choose a perfect gift. We can compare, analyze, evaluate, and plan, thus solving problems more efficiently than any other species. We can even find hope and motivation to persevere in trying times by anticipating a brighter future.

Language, as we mean it in this book, is at the core of virtually all complex human abilities, including thinking, imagining, remembering, self-awareness, and perspective taking. Our relatively weak and defenseless species has been able to dominate this ancient planet after only a few thousand years of wielding this powerful tool—a tool, it seems, that is capable of creation and devastation in equal measure. Accordingly, language has long been a phenomenon of great interest within psychology and other fields concerned with improving the human condition.

TRADITIONAL APPROACHES TO LANGUAGE IN PSYCHOTHERAPY

Every mature psychotherapy system touches on the role of language, symbols, and meaning. Psychoanalytic traditions sought to resolve clinical conflicts by understanding the symbolism and covert meaning of common events through techniques such as dream analysis and free association. Humanistic therapists aim to actualize human potential by undermining comparative and evaluative language processes through unconditional regard and empathy. Cognitive therapists modify their clients' dysfunctional schemas and troublesome beliefs through Socratic dialogue and

restructuring the way clients think and speak about their experiences. While holistic and present-focused approaches, including Gestalt and mindfulness-based therapies, have warned against excessive verbal analysis and emphasized the importance of awareness and direct experience, they guide this very exploration in part through verbal means. Of all the major psychological traditions, only behaviorism showed a somewhat limited interest in psychotherapy based on language and symbolic meaning. Though B. F. Skinner claimed that radical behaviorism was "the very field of purpose and intention" (1974, p. 61), his analysis of verbal behavior led to a limited range of practical applications with verbally able clients. Many doubted that a science founded on empirical studies with nonhuman animals could provide insight into the most complex human behaviors.

So far, the different approaches to language and symbolic meaning have tended to divide traditions, not unite them, and none of these approaches has led to a generally applicable understanding of the role of language in psychotherapy itself. They have usually focused on the implications of how specific symbolic or cognitive content impacts clients rather than on providing a guide for the use of language as an active ingredient in psychotherapy. Like the air we breathe, language is as useful as it is pervasive, but we rarely notice it unless something goes awry—when we can't find the right words, communication breaks down, or misunderstanding ensues. What has been missing is a theory of language that shows us how to use this tool intentionally inside a variety of psychotherapy systems and treatment protocols. What has been missing is a behavioral science of language that can promote vitality and minimize harmful responses to psychological pain.

We seek an analysis and conceptual toolkit that can cast a useful light on clinical problems and guide and empower practitioners from all therapeutic traditions. That is the focus of the present volume.

A CONTEXTUAL BEHAVIORAL APPROACH TO LANGUAGE

This manual presents a theory of language that illuminates the complexity of human behavior and provides a pragmatic toolkit that can strengthen therapeutic practices from all traditions. This approach comes from a surprising source: a branch of behavioral psychology known as *contextual behavioral science* (CBS; Hayes, Barnes-Holmes, & Wilson, 2012; Zettle, Hayes, Barnes-Homes, & Biglan, 2016). It is surprising because behaviorism is the one psychological approach that almost foundered on the rocks of language and cognition. Language was the phenomenon that seemed beyond the limits of behavioral thinking; a distinctly human ability that a naturalistic, holistic approach to psychology could never explain. Or so it was thought.

Contextual behavioral science is not your grandfather's behaviorism, however. It seeks nothing less than to alleviate human suffering and advance human flourishing by developing basic scientific accounts of complex behaviors. It is a system of philosophical assumptions, scientific values, and methodological commitments that informs all aspects of theory development, empirical investigation, and translation of knowledge to practical applications. The approach to language you will discover in this book can be useful to therapists and broadly applicable across therapy traditions precisely *because* it is rooted in a contextual behavioral approach.

At the core of CBS is a holistic and pragmatic worldview known as *functional contextualism*, which consists of the philosophical assumptions and criteria for truth that are used to create, assess, and evaluate theories and evidence. In functional contextualism, the standard against which progressivity is measured is effectiveness—*How well does this theory help me meet my goals?* In contextual behavioral science, that goal is to alleviate suffering and enhance well-being. We encourage readers to experiment with the functional contextual criterion of effectiveness when evaluating the concepts and techniques in this book—Does this help me understand my client better? Does it improve the therapeutic relationship? Does it make my interventions more effective? Then check to see if it was useful to choose effectiveness as your benchmark for what is "good" or "true."

Within contextual behavioral science, *behavior is defined as the action of a whole organism within a particular context*. Accordingly, anything a whole human does is a behavior, including thinking, remembering, attending, feeling, and perceiving. Many readers will be used to distinguishing behavior from thought (or behavior from emotion) and find this use of the word awkward, or even wrong. As functional contextualists, we choose to use this definition because it helps us meet our clinical goals by allowing us to apply a relatively concise set of behavioral principles to a wide range of clinically important phenomena. The pragmatism in this principle-driven approach affords therapists the flexibility to respond to the diversity of human experience and countless unique combinations of client, setting, and situational factors, while remaining grounded in psychological science.

You'll notice that this definition of behavior does not separate the action of an organism from the environment in which it occurs. This is because CBS is situated within the larger field of evolution science, which considers behavior in terms of variation and selective retention, and because of its pragmatic goal: the only way to determine if a behavior is effective is to see how it works in a given context. *Context is the setting in which a behavior occurs; it contains everything that influences when, how, and why it happens*. Context refers to both historical and situational sources of influence on the organism's behavior, including biological, social, and cultural variables, development and learning history, and the organism's current internal (e.g., cognitive, affective) and external environment. Behaviors are

influenced by multiple elements of the context, but it is possible to weaken or strengthen the influence of particular variables, thus, altering behavior.

Altering elements of the therapeutic context, including language, can generate substantial changes in aspects of the client's experience that psychotherapists can't access directly, such as physiological, cognitive, affective, and motivational states. This puts the power to change firmly within the hands of therapists and clients because both can observe and operate the mechanism that drives therapeutic change. It also leads to interventions that are quite efficient, impacting a wide range of treatment goals by simultaneously targeting core behavioral processes and functions rather than specific forms of thoughts, feelings, and actions.

The overarching aims of this book are to help therapists and their clients to (1) identify the contextual features that influence behavior and (2) use the power of language to alter the context in ways that support adaptive responses. Our approach is based on a contextual behavioral theory of language and cognition called relational frame theory (RFT; Hayes, Barnes-Holmes, & Roche, 2001) and its dynamic program of research, which, though relatively new, includes over 150 empirical publications in the areas of psychopathology, theory of mind, implicit cognition, intelligence, rule following, problem solving, sense of self, and scores of other clinically relevant topics (Dymond & Roche, 2013). Its principles have been successfully applied in the areas of education, developmental disabilities, health and safety behaviors, performance enhancement, relationship intimacy, organizational management, and community and cultural change. Acceptance and commitment therapy (ACT; Hayes, Strosahl, & Wilson, 1999, 2012) was the first psychotherapy explicitly linked to RFT and is an empirically supported treatment for a diverse range of problems in living (see the lists of evidence-based programs maintained by the American Psychological Association's Division 12 and the U.S. Substance Abuse and Mental Health Services Administration). The present volume is not an ACT manual, however. It is not meant to describe another or better way to do ACT, nor to suggest that you need to become an ACT therapist in order to apply RFT in your clinical practice. It is not meant to replace ACT or, indeed, any other treatment. Instead, this book is an attempt to explore and explicate principles that apply to a common core mechanism of *all* psychotherapies—language.

LANGUAGE IS A LEARNED BEHAVIOR

Building and Responding to Symbolic Relations

Modern human beings have been around for under 200,000 years (McDougall, Brown, & Fleagle, 2005), but most of the psychological processes that impact us are much, much older. Operant and classical conditioning are learning processes that appear to be over 500 million years old (Ginsberg

& Jablonka, 2010); habituation is even older. Language, however, could be as young as 100,000 years old (Nichols, 1992). Even if language extends back to the time that hominids branched off from chimpanzees, as some have argued, it is a relatively recent development; five million years is an eye-blink when considered on an evolutionary time scale.

Sometime in the last few hundred-thousand years, modern human beings began to create symbolic relationships that allowed them to mentally put things together and pull things apart; to recognize similarities and detect differences; to create analogies and predict outcomes. From humble beginnings in simple acts of naming emerged a collection of amazing and uniquely human capacities—to analyze and plan, to assign and compare values, to imagine futures that have never been experienced, to be self-aware, and to adopt others' point of view. These behaviors are referred to in other traditions as symbolic behaviors, higher order cognitive processes, or executive functions. We call them language.

In everyday use, language generally refers to the capacity to communicate, but in this book we mean much more than that. For now, we can define language as *the learned behavior of building and responding to relations among objects and events based in part on socially established cues*. That last phrase simply means that these relations are not based solely on the intrinsic[1] characteristics of the things being related. If we told you "This is Alfred," you would learn that those two things (the person and the name) are the same and this knowledge would influence how you respond to them. You may look at the person when you hear the name, for example. Yet there is nothing inherently equivalent about the person and the name; the relation is symbolic, based on that little word "is." The cue (i.e., *is*) telling you how to respond to the person and the name is based on social convention. Thus, the meaning of this cue has to be learned and depends on who is speaking and listening. On the one hand, "is" has a particular meaning for English speakers, and you wouldn't learn a thing about the person and the name if you haven't learned English. On the other hand, there is nothing unique about "is." You can still learn the relationship between the person and the name if we give you a completely different set of socially established cues ("C'est Alfred"), assuming you have learned French, of course. This is what we mean when we refer to socially established cues as *symbols*, and relationships based on these arbitrarily applicable cues as *symbolic relations*. With this understanding, we can simplify our definition: *language is the learned behavior of building and responding to symbolic relations*.

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[1]By intrinsic, we don't mean independent of our perception, but independent of our symbolic interpretation. Thus, in the context of this definition, the color of a rose we see red is intrinsic because it doesn't depend on language, but it still depends on our perception (some animals, or humans with impaired vision, might see it differently).

This behavior of building and responding to symbolic relations is special because it transforms the way we experience our world, imbuing objects and events with meaning and altering their impact on our thoughts, feelings, and actions. So, language is not a thing that we possess; it is a skill that we learn and can apply to a range of situations that extend far beyond communication.

From an RFT perspective, language doesn't have to comprise words; mathematics (a form of language), for example, uses numbers and icons to describe relationships. Nor do language symbols have to be written or spoken. They can be gestures, as when we put our thumbs up to communicate approval, or visual images, like a red octagon that signals drivers to stop. The symbols that make up a language are not meaningful by themselves, but rather gain meaning through their participation in sets of relations. These relational networks influence our psychological responses to the objects and events they contain, including our evaluations, preferences, motivations, urges, and physiological and emotional reactions. Therapists care about language because these symbolic relationships have a profound influence on virtually all clinically relevant behavior—a fact they can use to their client's advantage.

Although there is some debate as to whether symbolic relating is *unique* to humans, there is no doubt that it is characteristic of humans. Thus far, research suggests that humans alone are able to acquire all of the features of symbolic relationships without having to rely on intrinsic properties (e.g., an object's size, shape, or color). We can assign value and meaning that is not inherent to the thing we are describing, such as when we describe Christina Aguilera as a "bigger" celebrity than Meatloaf, though Meatloaf stands 8 inches taller and 100 pounds heavier than Aguilera. The particular symbol we use can be based on social whim. Since a symbol can change over time and across social groups, its meaning must be understood based on the context in which it occurs. If asked what the word "cool" means, a number of definitions might come to mind, but if told that Christina Aguilera is cooler than Meatloaf, you would understand that we weren't referring to her temperature.

There are other definitions of language that are valid and useful for different purposes, such as those used in the domains of linguistics, philosophy, or literature. There are also more technically precise and detailed RFT definitions of language available (e.g., Hayes et al., 2001; Törneke, 2010). We do not want to distract readers with a debate over which is the true definition or whether language is best thought of as a behavior, or a cognitive function, or something else entirely. We propose, rather, that approaching language as a learned behavior is particularly useful for psychotherapists. Our goal in the present volume is to distill this theory down to its practical essence, using terms that everybody can understand. Let's start with the first two terms in the theory's name.

Relational Framing

Relating is simply responding to one thing in terms of another, as when we understand "mother" to have a particular kind of relationship to "child" or when we evaluate something as "bigger" by relating it to something "less big." When we relate objects and events, we learn something about them. For example, if we told you that Michèle is the mother of Matthieu, you could derive other information from this relationship without us saying another word: Matthieu is the child of Michèle, Matthieu and Michèle are members of the same family, Michèle is a woman, Matthieu is younger than Michèle. You learned all of this information without being explicitly taught by combining the information entailed in these various relationships into a network of meaning and understanding. For this reason, the capacity to symbolically relate objects and events dramatically increases the efficiency with which we learn.

Many forms of learning are relational in a broad sense, but symbolic relations have several special characteristics that account for the incredible generativity of language and its powerful effect on the way we experience our world. Framing is a metaphor for this process.

Imagine you are looking at a landscape of sunshine streaming through the branches of majestic pines surrounding a clear mountain lake. If you were looking at this scene through a window frame, you might be motivated to interact with what you see and begin to prepare for a hike, a swim, or a picnic. Your attention might be drawn to features of the landscape related to those activities, like the gradient of a hiking trail, the privacy of a swimming cove, or a tree stump that would serve as the perfect picnic table. If the landscape was framed in gold and hanging in an art gallery, you might interact with it more passively, contemplating it as an object of beauty or inspiration. You may be more likely to notice the composition of the image or to appreciate the variations in color. If the scene was framed by a theater curtain and stage, you might not notice the landscape much at all, as you began to anticipate the story about to unfold against its backdrop. One scene. Three frames. A whole range of perceptions and responses. The landscape didn't change, but its influence on you did.

An example from daily life will help illustrate how our behaviors are shaped by conceptually framing objects and events according to how they relate to other things. Have you ever had to purchase something you didn't know much about—maybe a car, a computer, or a special bottle of wine? Confronted with the range of options that modern stores provide, you may have found it difficult to choose a product. Perhaps you asked for advice from the sales clerk, who may have made comparisons among your options (e.g., this computer is cheaper than that one, but it runs slower; this wine is perfect with meat, and that one would be better with dessert). As the salesclerk described, compared, and distinguished among products, he was

building a network of relations (e.g., wines from Chile are cheaper than Bordeaux; the Left Bank of Bordeaux is more sophisticated than the Right Bank; 2009 was a good vintage; this bottle tastes great with meat but not with fish). This network of relations was like those picture frames: they changed the way you looked at your options. You started to eliminate some choices and became more attracted to others. Perhaps you were able to try the product yourself, in a test drive or taste test, and you began establishing new relations that were added to the network. Eventually, you made a purchase based in part on the meaning that emerged from the relational network, not solely based on your direct experience with a particular car, computer, or bottle of wine. Language framed your experience of the products and influenced the way you perceived and responded to them.

Relational frames not only influence your rational mind but your emotions and desires as well. Neuroeconomists at Caltech studied this phenomenon by organizing a double-blind wine tasting inside an fMRI scanner. Participants sampled five bottles of Cabernet Sauvignon that were distinguished solely by their selling price, ranging from $5 to $90. Unbeknownst to the participants, they were repeatedly sampling the exact same wine, which was alternately labeled as costing $10, $45, or $90. What did they discover? Participants took greater pleasure in drinking the "more expensive" wine, despite the fact that they were drinking the same stuff. Relating to the wines as "different" and "more expensive" increased both the subjective experience of pleasure and the brain activity associated with satisfaction (Plassmann, O'Doherty, Shiv, & Rangel, 2007).

Within the RFT literature, there are a variety of highly precise technical terms that address particular features of these processes. That literature is there to be explored, but our purposes here are simpler and more pragmatic. For now, the idea to remember is that language is a process of learning to relate things based on symbols, which in turn transforms the way we learn and the way we experience our world. We will explore the technical details a bit more by considering why this capacity for symbolic learning may have evolved in the first place. It was certainly not just to sell cars or improve our enjoyment of wine.

THE EVOLUTION OF LANGUAGE

Have you ever noticed how big the human brain is relative to the rest of our bodies? Humans have the highest encephalization quotient of all mammals, which poses a particular challenge for a class of animals that give birth to live young: how to get that big brain out of the birth canal. Evolutionary processes resulted in a neat solution to this problem; humans are born with a small brain that continues to grow and develop throughout childhood, adolescence, and even into early adulthood. This solution affords our

species unique advantages. Human brains are fine-tuned by the environment in which they are meant to function, including the social and cultural contexts in which they develop. The downside is that human children are highly dependent on others to meet their survival needs and that caretakers themselves are more vulnerable due to this extra burden. This dependency requires that caregivers be so invested in the well-being of children that they respond to all the unpleasant sounds and smells that infants emit with the urge to approach and nurture rather than run away or attack. A strong interpersonal attachment, fostered by affiliative emotions, joint attention, perspective taking, and empathy, improves the chances of survival for both individuals, as well as others in their social group. This level of human bonding is so useful that it enables human groups to be the unit of evolutionary selection more so than the individuals within them (Nowak, Tarnita, & Wilson, 2010; Wilson & Wilson, 2007). Thus, human survival depends on a culture of cooperation and thrives on a culture of eusociality, both of which are enhanced by language processes.

RFT seems to make most sense if language and cognition are thought of as forms of cooperation that emerged initially to extend and take advantage of the intensely social nature of human groups (Hayes & Sanford, 2014). Consider one of the first instances of language we observe in children: naming. When a young child learns to say "apple" upon being presented with a particular round red object, and then to point to that particular object upon hearing someone say "apple," a relation has been established between the symbol ("apple") and the object (apple). Notice that these relationships always go in both directions: if an object is related to a symbol in a particular way, it implies a specific kind of relationship between the symbol and the object, too. Some functional properties of one object can thus be experienced in another object based on the bidirectional relationship that connects them. Once the child learns that "apple" means the same thing as apple, she will begin to respond to the symbol and the object in similar ways under certain circumstances. If she dislikes apples, she may wrinkle her nose in disgust when she hears "apple" even when she does not experience the unappetizing taste or texture of the fruit.

The bidirectionality inherent in symbolic relations is not built into normal learning processes. Pavlov's dogs salivated to the sounds of the bell—they did not prick their ears up when presented with food. Yet bidirectionality is at the core of the most characteristically human form of learning—language. How have humans come to depend on it?

It seems likely that it is because we are social, cooperative primates. To see how symbols extend cooperation, think of the roles involved. If a child sees an apple held up and hears someone say, "This is an apple" (this is the speaker role of "see apple → say 'apple' "), later she might be asked if there are apples across a canyon or around a corner (the listener role of "hear 'are there apples?' → look for apples)." The naming relation "is" likely began

with simple objects and actions that took advantage of how social humans are. We can look from the point of view of the speaker or the listener. We can learn one side of the relation and *derive* the other side. The community had a powerful reason to train the derivation of mutual relations because cooperation leads to social success. And once we learned to do it, we had a template for other types of symbolic relations.

Switching roles between speaker and listener is also part of why it is so useful to communicate with symbols, now thousands of years of cultural evolution later. Through symbolic communication, we can influence the behaviors of other people (and even ourselves) simply by talking or thinking. It began with simple social exchanges, such as a child asking an adult to give her an apple even when it is out of sight, but human culture has expanded this ability to abstract thinking, storytelling, problem solving and the myriad abilities we see every day.

LANGUAGE IS A FORM OF LEARNING

Language did not spring forth fully formed; it evolved from learning processes that are at least 5,000 times older. *Yet language is a unique learning process in two important ways; it is the only learning process that itself has to be learned, and once learned, it alters all other forms of learning.* All psychotherapies promote some type of learning, whether it is called insight, skill building, cognitive restructuring, or actualizing potential. In this section we will briefly review the different learning processes that influence human psychology, as the RFT approach to language is best understood when compared and contrasted with these learning processes. For a more thorough, though highly accessible and pragmatic, primer on learning principles for clinicians, we recommend *The ABCs of Human Behavior* (Ramnerö & Törneke, 2008).

Habituation

One of the simplest types of learning is *habituation,* which is the decrease in response to a stimulus (or environmental cue) when the stimulus is presented repeatedly. Babies will startle and cry when exposed to sudden loud noises, but if the noises continue, the startle response will subside, and the child may sleep soundly in spite of the din. The central nervous system is involved in habituation in organisms that have one (Thompson, 2009), but single-celled organisms such as the amoeba or paramecium show habituation, as do single cells within multicellular organisms, like the macrophages in our immune system (Harris, 1943; Nilsonne, Appelgren, Axelsson, Fredrikson, & Lekander, 2011). This suggests that habituation is virtually as old as cellular life itself, arguably the first form of learning. Habituation

is likely involved in some clinically significant phenomena, such as in arousal responses to possible dangers. Habituation is often appealed to when explaining the effects of exposure therapies, but the actual mechanisms of action are likely to be more complex since habituation readily mixes with other, newer, learning processes (Gallagher & Resick, 2012) including language processes (Kircanski, Lieberman, & Craske, 2012).

Respondent Learning

Imagine that a child steps on a cat's tail, and the cat returns the favor by scratching her leg. After this unfortunate experience, the child may become fearful and cry whenever she sees the cat. This tendency might readily generalize, and the girl may cry when *any* cat comes into view. This phenomenon is called *respondent learning* because individuals learn to *respond* to an element of the context based on its proximity to objects or events that trigger similar responses. The girl sees the cat, feels scared, and cries.

The cat's scratch is a *stimulus*—an element of the environment that stimulates a *response* from the girl. The girl's immediate response to the cat scratch required no learning; experience was not necessary to teach her to feel pain or jerk back her leg when scratched by the cat. These types of reactions are sometimes referred to as reflexive or instinctive. This is not true of the girl's responses to other stimuli that were present when the cat scratch occurred, such as the garden where the incident happened, the activity the child was engaged in at the time, or the size and color of the cat itself. None of these elements of the context would produce a reflexive response of distress. Since all these features were part of the context in which she was scratched, however, any of them could *acquire* the function of stimulating responses such as fear or crying. This is the process of respondent learning, which is also known as "associative learning" or "classical conditioning."

Several parameters influence which elements of the context will become cues for similar responses through respondent learning. Contextual features that are novel and highly salient are particularly likely to do so. If, on the one hand, the garden where she was scratched was unfamiliar to the child, it could more easily become associated with the painful stimulus and the girl might become fearful when approaching the garden in the future. If, on the other hand, the garden was a place she visited often, it would already be associated with a range of positive, neutral, and negative experiences that would compete with the cat scratch as a source of influence on the girl's behavior. It would therefore be less likely to acquire the function of triggering a fearful response if a painful event occurred there. The cat itself was a particularly salient feature of the environment—probably the thing she noticed most when the scratch occurred—and therefore is very likely to cue fearful responses in the future.

Contextual elements that share physical similarities with the cat (now a learned or *conditioned* stimulus) will also tend to produce a fearful reaction through *stimulus generalization*. For example, if the offending cat had long black fur, the child might be more likely to be afraid when seeing a cat with long gray fur than one with short orange hair. These reactions gradually dissipate as the child learns to distinguish among objects and events that initially seem similar. For example, she might become less frightened of cats with short hair of any color and not at all frightened of cats whose fur color is anything other than black.

Evolutionary processes have altered the parameters of respondent learning in some instances. For example, learning to avoid poisonous foods can occur through respondent learning even if sickness occurs many hours after eating the tainted food (Bernstein, 2000), even though classical conditioning typically works best when a response immediately follows a stimulus. Presumably, this is due to the strong impact of learning to avoid poisonous food on evolutionary fitness. Respondent learning is also easier in some cases than others, since evolution has preorganized certain contextual elements into functional categories. It is easier to learn to be afraid of a wiggling snake-like object than it is to learn to be afraid of an electrical outlet, even though in the modern world the electric outlet is far more likely to cause harm. Thus, even basic learning processes such as these are evolving as the contexts in which humans live are transformed.

Operant Learning

Additional learning processes may impact the child's responses to being scratched by a cat. For example, if she runs away from the cat, the cat disappears from her sight. The removal of the cat (reducing any chance of a cat's scratch) may function as an important consequence of running away, and avoidance or escape may be selected as the dominant response to seeing a cat. Without planning or thinking about it, the child is applying the most logical and adapted learning strategy of all animal species: avoiding threats to survival by avoiding stimuli that announce harmful consequences. This is the principle of operant conditioning, or learning by consequences.

Consequences that are not directly associated with threat may also influence the child's behavior. The child's parents may be distressed by seeing her expressions of pain and fear and may try to soothe her when she whimpers about cats. Being comforted is an advantageous consequence, and expressions of distress may occur more frequently due to the positive social consequences that follow. Learning of this kind is called operant learning because responses *operate on* the environment in order to alter consequences.

Consequences can also weaken the likelihood of behavior occurring. A behavior followed by a disadvantageous consequence will tend to decrease

in frequency. For example, approaching the cat and accidentally stepping on its tail were followed by a painful consequence. Thus, approaching or walking near the cat may become much less likely.

Sometimes, a disadvantageous consequence comes in the form of the removal of something pleasant. For example, if the girl was carrying a lollypop and lost it as she was running away from the cat, this would be another reason for her not to play around the cat anymore.

A similar effect could happen if the parents notice that holding their child each time she whimpers leads to a greater fear of cats. They may decide not to soothe her when she acts this way, thus no longer providing this reinforcing consequence. This principle, called *extinction*, describes what happens when a maintaining consequence no longer occurs following operant behavior. The expressions of distress would be expected to increase briefly (extinction burst) and then decrease when the holding and soothing no longer occurred.

Both respondent and operant learning are sometimes called associative learning, but we prefer the term "contingency learning" to refer to them both. A contingency is simply an "if . . . then" relation. In respondent learning there is a stimulus–stimulus contingency, whereas in operant learning there is an antecedent–response–consequence contingency. Using the term "associative" when referring to operant and classical conditioning can become confusing when we examine language as a relatively new form of learning, as we will see later in this chapter. Associative models of meaning are as old as psychology and they have never worked out very well. Mistaking the relational learning that underlies language for that type of associative model would make it difficult to see what is new and useful in RFT.

Social Learning

Social animals, including humans, have a variety of behaviors that may be learned by exposure to other members of their social group. Some of these actions are genetically established, others are based on imitation, and still others are brought about by interactions with contingency learning. For example, young birds may need to hear their species' songs (even while in the egg) in order to produce them accurately as adults, as if a kind of template is laid down that the young birds will later use to determine if they are performing the song accurately (Catchpole & Slater, 1995). Children have some elements of gestural imitative responses at birth (e.g., tongue thrusting), but more complex forms of imitation rely on contingency learning processes (Ray & Heyes, 2011). However, social learning is not merely imitation. For example, after seeing an adult extract tasty ants from a log, a young chimpanzee may approach the log and figure out how to extract dinner by trial and error. The social nature of human beings gives many opportunities for social and cultural processes to interact with other

learning processes. Language makes these types of interactions between social and learning processes even more likely in humans.

Relational Learning

The capacity to relate objects and events is acquired through operant learning and facilitated by social learning, so it should not be a surprise that most nonhuman animals can very quickly learn to relate things based on the intrinsic properties of events in the natural environment, such as their relative size, darkness, or speed (see Reese, 1968, for an early summary of this extensive learning literature). Modern evolution science is fairly clear that humans have evolved specialized abilities for relating events symbolically, and that the differences between humans and nonhumans become greater the more complex the relations involved (Penn et al., 2008). Evolutionists agree that in human symbolic behavior, "tacit systems of higher order relations" allow humans to "judge and discover novel relations within those domains" (Penn et al., 2008, p. 118).

What evolution science has not yet specified is where this "tacit system of higher order relations" came from, or what its properties are and how they are regulated. Such an understanding could inform clinical guidelines for regulating symbolic learning and using language principles to promote positive psychological functioning. That is what RFT and this volume aim to provide. The remainder of this chapter will explain how symbolic relational behavior is learned and how it becomes a learning process in its own right.

HOW LANGUAGE IS LEARNED

In the past 2 decades, RFT researchers have conducted over 150 studies that reproduce the stages of relational learning that underlie language development. RFT research is notoriously difficult to comprehend, even for those with a keen interest and familiarity with the jargon and experimental methodology. To be fair, testing RFT hypotheses often requires challenging and time-consuming preparations—such as building unique learning histories that mimic language development in the natural environment, but have never before been experienced by the participant—before the actual hypothesis can be tested. These challenges resulted in the development of methodological innovations and novel research paradigms leading to practical knowledge and applications that touch on all aspects of human behavior. It is not our intention to delve into RFT research here (see Dymond, May, Munnelly, & Hoon, 2010, and Dymond & Roche, 2013 for recent reviews and analysis). Nevertheless, our experience in teaching RFT to clinicians suggests that understanding RFT ideas is easier when you

understand a little about how RFT researchers conduct their experiments. Spoiler alert: these next few pages are a bit geeky. We humbly ask you to hang in there while we explore these RFT principles, and we promise that you will be rewarded soon for your effort.

Contextual Cues Specify Relationships

How do we go from interacting directly with the world to talking and thinking about it symbolically? It begins with learning to relate things in particular ways, based on cues that are present in the learning environment. Consider the following example of a toddler playing with an educational game that consists of fitting three-dimensional figures into holes in a board according to their shape and color. The child looks at the board and sees holes shaped like triangles, circles, and squares. Each hole is framed in blue, red, or yellow. At the same time, an array of plastic figures shaped like triangles, circles, and squares in blue, red, and yellow are lying at his feet on the floor. By trial and error, the child learns to select the right figure according to the relation it shares with the holes. For example, he may first try to put a triangle in a circular hole. When he realizes that the corners on the triangle prevent the figure from fitting in the circular hole, he may pick up another figure and discover that the round figure with no corners fits perfectly. He is delighted when the figure is swallowed by the hole, and he continues to make things disappear by matching figures to holes of the same shape.

Now imagine that, as the child is learning to place the objects in the correct holes, his parents are around to help. When the child puts a red triangle in the triangle hole framed in red, his parents exclaim, "Hooray!" But if he puts a blue triangle there instead, they say, "No, that's not the right one. Look . . . which one has the same color?" Because the child doesn't have language skills yet, he doesn't understand the verbal[2] cue his parents just gave him. For this reason, the parents may take the hand of the little boy, guide him to the red triangle, and say, "See? This one is the same," and praise him as he places it in the correct hole. What happened in this situation is that the parents created a social context that allowed the child to learn the meaning of a *contextual cue*, in this case the word "same," which

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[2]Although in the behavioral literature on language, the term "verbal" is used as a synonym to symbolic, we only use this term in this book when it refers to symbols made of words, in order to avoid confusion for readers unfamiliar with this literature. In this view, nonverbal cues can thus also be symbolic (e.g., gestures, images). We refer to nonsymbolic cues and functions as "intrinsic." However, when we use the term "verbal interactions," we refer to symbolic interactions, generally speaking (including gestures, postures, facial expressions, tone of voice, etc.) in order to match the more common use of this term.

describes the type of relationship shared by the color of the figure and the color of the hole.

Once the little boy has learned that the word "same" establishes a relation of equivalence between two things, his parents can teach him to relate other objects and events in the same way, for instance, that "cat" and the furry creature at his feet are the *same*. Many contextual cues can establish the same type of relation (e.g., "is," "like," "similar," "same") and don't need to be made of words. For example, sameness can be established through the application of symbols such as "=" or by gestures, as when pointing an index finger at one's chest while saying one's name out loud.

This example shows how language may develop initially based on operant learning of relationships, which are cued by features of the learning context. In this case, the relationship was based on intrinsic features—the shape and color of the figures and holes. Learning to detect intrinsic relations is a precursor to symbolic learning—it is not itself symbolic, nor is it unique to humans. Infants and fish and pigeons can readily learn similarities and differences among shapes or colors, but they cannot compare values that are socially determined.

Relationships Can Be Symbolic

Once learned, contextual cues that specify relationships can be applied to any object or event in our environment. For a young child who is not yet able to form symbolic relations, the words he hears are not unlike the stars in the night sky, disconnected and devoid of meaning and purpose. But once he learns to relate things as *similar* or *near to* or *brighter than*, he can connect those distant dots in myriad ways. "See those nine stars there? That one is Leo, because it looks like a lion. That's your sister's sign—she was born in August, which makes her a Leo." When someone shows him how these stars can be related to form constellations, the elements that were once isolated and didn't make any particular sense begin to fit together. If he views those stars as a constellation frequently enough, it will become difficult to see them as he once did; they can no longer be disconnected and meaningless. In 15 years, when he travels far away from his family, he will look up at those nine stars and feel close to his sister. He may even learn to use these constellations as a guide to know when and where he is on the planet. That is similar to the kind of transition that language training creates with symbolic learning.

In RFT terms, this behavior is symbolic because relational contextual cues can be applied arbitrarily—based on social convention, and not dependent on intrinsic characteristics of the things being related. We could all decide tomorrow that *apple* is now the word for a banana and *banana* is the word for an apple. This is the sense in which relational cues are social: if we all decided to change the terms for things, we could do so merely by

specifying the proper relational cues. It would initially feel arbitrary, but it would soon become normative. This is exactly what happens when we decide to change the name of certain concepts because it no longer seems appropriate. For example, Third World countries are now called developing countries because it is considered more respectful (until it changes again). It can take a bit of time to change our habits, but a simple change of social convention can make this new appellation begin to occur.

Progressively, this ability allows us the enormous advantage of being able to bring anything into the present moment via language using symbols, even when it is not physically present in our environment. Indeed, imagine that as the child plays with his toys, the red triangle is hidden under the board and the parents say, "Where is the red triangle?" The child, who has now acquired rudimentary language skills and thus understands what all these words mean, recognizes that the red triangle is not present and begins looking for the triangle in hidden places. As we will see in the next chapters, this is also a powerful tool to bring elements of the client's life into the therapy room. Assessing and changing psychological problems becomes possible without having to directly intervene in the client's natural environment.

There Are a Variety of Symbolic Relationships

If things could only be related according to their similarities, the utility of language would be quite limited. Language probably started with the relation of sameness, however, because it is the simplest and the most central to cooperation. It is simply because the relationship between two things is exactly the same in both directions—when two things are equivalent, "this is like that" in exactly the same way "that is like this." This makes it easy to abstract information about one event based on its relationship with another (i.e., to bring the functions of a referent into the moment when hearing the name, such as when saying, "You will find my house easily. It's the one that looks like an old Victorian house."). That in turn was put to good use by those cooperative primates called "humans." But there is no reason for relating to end there, and it doesn't.

Building a symbolic world that adds to our directly experienced environment becomes really sophisticated when considering the variety of relations that can be established. RFT researchers have demonstrated the establishment of relations of opposition (e.g., Dymond & Barnes, 1996), comparison (e.g., Dymond & Barnes, 1995), hierarchy (e.g., Slattery & Stewart, 2014), temporality (e.g., O' Hora, Roche, Barnes-Holmes, & Smeets, 2002) or perspective (e.g., McHugh, Barnes-Holmes, & Barnes-Holmes, 2004). All these types of relations and many others are of interest when analyzing clinical issues and employing appropriate clinical techniques, which we will explore in detail in later chapters. For now, simply

consider how crucial aspects of a client's life are related to each other in a quote such as the following:

> "If only I were more confident, then I could initiate conversations, share my thoughts with friends . . . do all the things that make you feel intimate with someone. But I will never be happy because I'm worthless. You can't imagine what it's like for me. You are successful. I'm a failure."

Framed in this way, there is a network of relations that are self-supporting. We will restate what the client is saying and embolden relational cues that are particularly critical here:

> "I will **never have** intimacy **because** intimacy **includes** things **like** initiating conversations and sharing thoughts, which are **conditional** on confidence, and **I am not** confident. Therefore, I and happy **are incompatible** because happy **is dependent** on confidence, and I **am distinctly not** confident—I **am** worthless. Further, **you** and **I** are in **opposition because you can't** see **my perspective** and the characteristics of **you** are the **opposite** of those for **me**. Therefore **you can't** know what it **is like** for **me**."

From an RFT perspective, each of these relations provides crucial information about the way the client perceives her life through the filter of language and how psychological interventions might address her difficulties.

Symbolic Relationships Make It Possible for Everything to Mean Anything

This is where we break away from nonhuman animals, the tiny breaking point where humans stepped forward just enough to enter the symbolic world; the point at which relational learning transitioned from intrinsic relations to open "frames" into which *anything* can be placed. We are now dealing with language.

This tiny step forward probably began merely with naming, likely controlled by that cue called *is* or cues carrying a similar function (e.g., pointing in the direction of an object while making a sound with the mouth), and an act of cooperative communication that was directly reinforced, much as any operant. But *is* has expanded now to include myriad learned relations, arranged into networks. This process of expansion began as operant learning, but by breaking away from intrinsic relations the transition to something truly new began. With millennia of cultural and social support, the expansion has become the core of the human mind: symbolic behavior.

Let's observe how this principle of symbolic expansion works. Think of two concrete nouns—any two different objects. Actually, do that before continuing. Think of two concrete nouns. Now, suppose your future depends on answering this next question: "How is [*say the name of the first object*] the father of [*say the name of the second object*]?" Take your time—don't just read these words. Do the task as if it was really important to find a great answer because your future depends on it.

We have done this exercise in scores of workshops, using many different relations, including really obscure ones (e.g., "reveals the essence of"). Given a few minutes, the groups always come up with answers. . . . and not just answers. They come up with really good ones! They often come up with answers that are downright insightful and that cause the entire group to see both objects in a different way because seemingly the relation between the two objects *exists intrinsically*. Did you find a good answer for your *is the father of* challenge? If the answer was especially apt, somehow it seems that the first object really *is*, in a sense, *the father of* the second.

This exercise shows well how tricky the mind can be. We can create any kind of symbolic relation among any objects and events. Then, we begin to believe these relations exist outside the mind. This illusion is part of what tripped up behavioral psychologists historically when dealing with human language. They missed the power of relational cues to create symbolic meaning and instead focused on the later process of how language helped humans deal with the natural (intrinsic) properties of things. You cannot understand human symbolic behavior this way because you miss the key issue—that breaking point—of relational cues being able to be applied to anything and thereby creating relations where none previously existed.

Contextual Cues Specify Functions

One of the traditional objections to considering symbolic meaning from a behavioral point of view can be summed up in the following question: if a symbol and an event are framed as "the same," why doesn't a person just lick the word "candy" or run from the word "tiger"? The answer is that the psychological functions (e.g., taste, fear) that transfer through symbolic relations are also controlled by contextual cues. Some of these cues are not symbolic; seeing ink on paper is likely enough to keep us from licking the word "candy." Some are themselves symbolic events, such as the word "taste" in the query "What does an apple taste like?" versus the word "look" in the query "What does an apple look like?" In these cases, the relation of "apple" and actual apples is the same, but the functional cues "taste" and "look" select specific functions that are evoked by the word, given the underlying relation of sameness. Sometimes these functional cues may be paralinguistic. For example, singing a depressing thought out loud may evoke different functions than saying it in a normal tone of voice.

Most often these contextual cues are used to select among the various possible functions of an event in a symbolic network, such as whether a pen is seen as a writing implement, hollow tube, sharp point, lever, something to extend reach, or so on. But contextual cues can also be used to diminish any behavioral impact of symbolic events. For example, chanting, meditation, word repetition, unresolvable paradox, and similar means can be thought of as episymbolic control systems, altering the behavioral impact of symbolic events very much as epigenetic processes can alter the likelihood that genes will produce proteins (Wilson, Hayes, Biglan, & Embry, 2014).

The Nature of Objects and Events Is Transformed through Relational Networks

When all of these properties come together, networks of symbolic relations alter the functions—that is, the meaning and impact—of the objects and events contained within them. In the clinical example we visited earlier, the client's language, in addition to simply describing different experiences, also implied a certain way of interacting with them. For example, saying, "If I were more confident, I could talk to others" implies more confidence was required to talk to others: it was necessary and sufficient. However, saying, "But I am worthless" implies that working on being more confident is useless. A no-win situation.

Language often changes the way we experience objects and events by orienting us to functional features that might be missed without language. Consider what happens when you taste some wine, read the description on the label, and then taste it again. If you are not an expert, you may only taste grapes and alcohol at first. However, after reading the label stating that this wine tastes like tobacco and chocolate, you may now start to experience these flavors. The description on the label establishes a relation of equivalence between the wine, tobacco and chocolate, and "tastes like" indicates the relevant functional features that are involved (e.g., the taste is similar but not the color). A combination of chemical elements leads the wine to taste the way it does, and to some degree language may be drawing out what was there to be tasted.

Much the same thing happens when a therapist asks her client, "Could you tell me what happens in your body when you feel anxious?" and the client answers, "My muscles are tense." The therapist's evocation of the client's symbolic network may help them have a better mutual understanding of the client's experience of anxiety. Rather than assuming that her client feels the same way other clients feel when they are anxious, asking this question allowed for a function of "anxious" that was more specific to her experience. The clinician might follow up with further questions such as, "Exactly where do you feel the tension?" or "If you could draw a line around the tense area, what is its shape and size?" With each question, the

experience of anxiety is elaborated. It now has a quality that in turn has a place, a shape, and a size.

Some of the process described above is noting features of the internal and external environment that were there in the first place, but just as in the *is the father of* example, relational networks can also *create* new functions that only appear in hindsight to have been there. Deceptive blind tests are funny situations in which we observe the transformation of perceptual functions through the arbitrary application of contextual cues. Imagine that you have guests for dinner and pour them a glass of cheap wine while pretending that it is an excellent wine that was recommended to complement the particular dish you prepared. And you describe the wine this way: it offers a seamless, harmonious progression of fruit, chocolate, and black tea tones. Likely, many of your guests will actually experience these aromas. Of course, some may just want to be polite and pretend that they tasted what matched the description. But very often, even if you reveal the trick, some will sincerely maintain that they really tasted chocolate and black tea. Simply saying, "This wine tastes *like* chocolate" transformed the perceptual functions of the wine, regardless of its actual composition.

Relational Networks Expand Rapidly Due to Derivation

Once contextual relational cues are learned, they can be applied flexibly and in combination with other relational cues. Imagine that a parent says to his child at the zoo, "Look at the baby panther! It looks just like the mama panther, but smaller!" A relation of sameness between the panther and her baby is specified by the cue *just like*, while a relation of comparison is specified by the cue *but* smaller. As with all relations, there is a mutual relation to be derived: if the baby is *smaller*, the mother is larger.

Imagine that the little girl who runs away from cats and the little boy who saw a panther at the zoo end up in the same class at the same primary school. They become best friends and love talking for hours about the experiences of their young life. One day, the little girl asks, "What's your favorite animal?" The little boy says, "Panthers! I love panthers! I saw a panther and her baby once at the zoo!" to which the little girl replies, "What's a panther?" "It's like a big, big cat!" says the little boy. The little girl stops smiling, yells, "Cats are dangerous!" and runs away. Upon returning home, the little boy and the little girl both ask their parents, "Is it true that panthers are very dangerous?"

In this situation, it is fascinating to observe that the girl has never seen a panther and that the little boy has never been told that panthers are dangerous. Yet, they both now think they are. What led the little girl to think that panthers are dangerous started with the same principle we observed in the previous section of this chapter. When the little boy said, "It's like a big, big cat," he established a relation of comparison between cats and panthers

using the contextual cues *like* and *big*. Since cats have the function of being dangerous for the little girl, the establishment of such a relation results in the transformation of function of the stimulus *panthers*. They are now dangerous too, and probably even more so since they are bigger. The boy also learned something that he was not directly told. In everyday language, we might say that he deduced that panthers are dangerous since cats are dangerous. From an RFT point of view, this reflects how derived relations expand from mutual relations (as in the learning of the word "apple") to entire networks of derived relations in which relations combine.

Looking at the way in which RFT experimental studies make sense of this process of language can be useful for understanding how to apply these basic principles in the therapy room. A typical experiment first consists of establishing a relation between two stimuli. For example, a relation of equivalence is established by training the participants to pick *aaa* among a series of stimuli (*aaa*, *bbb*, and *ccc*) each time *xxx* and the contextual cue "is like" are presented (see Figure 1.1). At some point in the experiment, instead of presenting *aaa*, the researchers present *aaa* and the contextual cue "is like," while the participant has to pick a stimulus among *xxx*, *bbb*, and *ccc* (see Figure 1.2). In other words, after being directly taught that *aaa* is like *xxx*, the participants have to answer the question "*xxx* is like _____?" This is exactly what happened in this paragraph. We told you that *aaa* is like *xxx*, but we never told you what *xxx* is like. Yet, how hard would it be to answer this question? It would probably be very easy. And yet, this very simple answer requires that you travel in the reverse direction of the relation that was directly trained.

In RFT, this principle is called *mutual entailment*; that is, a relation between a stimulus *A* and a stimulus *B* entails the reverse relation between
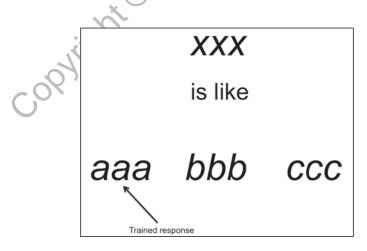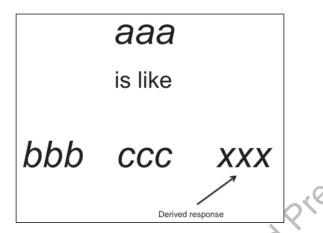
FIGURE 1.1

FIGURE 1.2

B and *A*. If *A* is like *B*, you can derive that *B* is like *A*. If A is the opposite of *B*, you can derive that *B* is the opposite of *A*. If *A* is bigger than *B*, you can derive that *B* is smaller than *A*, and so on. Thanks to this principle, children quickly learn the meaning of new words once contextual cues are established in their verbal repertoire. All they need to be told is that "*x* means *y*." Then, they can use *x* in new sentences when they want to talk about *y*. For example, if a kid asks, "What does being hungry mean?" and his father tells him, "It's when you have not eaten for a while and you feel that you need food," then the kid can say, "I am hungry," when he feels that way. The relation *being hungry* = *needing food* leads to derive the mutually entailed relation *needing food* = *being hungry*.

Let's go a little further. Now that you know that *aaa* "is like" *xxx* and vice versa through mutual entailment, imagine that we also told you that *xxx* is like *zzz*. What could you conclude about the relation between *aaa* and *zzz*? In other terms, if *A* = *B* and *B* = *C*, what is the relation between *A* and *C*? You can say that *A* = *C* and that *C* = *A* or that *aaa* is like *zzz* and *zzz* is like *aaa* thanks to the principle of derivation (see Figure 1.3). However, while deriving that *B* is like *A* after being directly taught that *A* is like *B* was based on mutual entailment, that was not the case for *A* and *C* (and vice versa) since no contextual cue ever connected these two stimuli directly. That is the same, of course, for *aaa* and *zzz*. Before we asked you what kind of relation they share, they had never even been in the same sentence together. In RFT, this type of derivation is called *combinatorial entailment*: you need to *combine* two relations to derive a third one. An easier way to think of this, instead of the technical terms of mutual and combinatorial entailment, is just to remember that symbolic relations are mutual and that they combine into networks. Teaching two relations
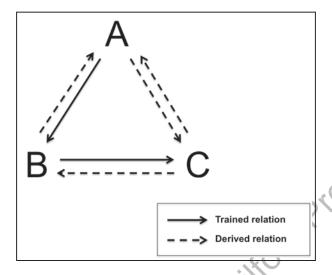
FIGURE 1.3

between three stimuli can lead to deriving four additional relations. As our colleague J. T. Blackledge says, "Buy two, get four for free!"[3]

These networks can then change the functions of things they contain. Let's go back to cats and panthers. The girl told the little boy that cats are dangerous. Before that, what he knew was that panthers are like big cats. If we translate these two sentences in RFT terms, he was told that $A = B$ (cats = dangerous) and he already knew that $C = A$ (panthers = cats). When he asked, "Is it true that panthers are very dangerous?" he derived the relation $C = B$ through combinatorial entailment. Because he also knew that along the dimension of size, $C > A$[4] (panthers are like *big* cats), he could even derive that panthers are *very* dangerous, even though he was never told so.

Language and cognition[5] in the RFT approach are based on the properties of relational framing: mutual relations combine into networks that

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[3]Technically though, it is never totally "free," since we do have to engage in the process of derivation. But once this process is learned and well established, it becomes so rapid and natural that it can feel automatic and effortless if the relations being derived are relatively simple (we are generally much more aware of the effort required by the derivation process when we try to solve a complex problem, for example).

[4]Throughout this book, "<" means "smaller than or less than," and ">" means "bigger than or greater than."

[5]We occasionally add the term "cognition" after "language" in order to remind you that, from an RFT perspective, thinking and talking correspond to the same behavior of building and responding to symbolic relations.

then change the functions of events. All of this is controlled by the relational context and the functional context. In human beings, that is what thinking is all about.

Deriving Symbolic Relations Accounts for the Generativity of Language

The principle of derivation is a cornerstone of the RFT approach to language. It accounts for *generativity*, which is one of language's crucial properties. With language, we can produce new networks of relations, including sentences and schemas, that we have never been taught or directly exposed to. Moreover, the function of stimuli can be changed through the derivation of new relations and the presentation of the proper functional cues. Like what happened for the little girl who thinks panthers are very dangerous because of the relation they now share with cats in her mind. As we will see in the next chapters, psychological interventions can benefit from an analysis of the derivation processes operating in clients' relational networks.

Consider the following example of one of our clients, a college student who suffered from obsessive thoughts centered on the risk of being contaminated. During our first session, he told us about a TV documentary he had watched that had made things worse for him. After learning about the risks of cholera spreading through contaminated water, he felt compelled to avoid contact with water altogether. He was now stuck with a dilemma: either take a shower and risk contamination with cholera, or avoid bathing and risk contamination by germs. To resolve this crisis, he decided he would clean his entire body using only hand sanitizer. This method made him feel less anxious for a while, but quickly, water kept popping up in his relational network. He could no longer read his chemistry textbook after he saw the letters "H_2O." Because these letters referred to the chemical formula of water, he became very nervous, closed the book, and decided not to open it again. Soon, going to his chemistry class became unbearable because of the risk of being in contact, even if only psychologically, with water. In this situation, we can see that a relation between water and contamination originally established by watching a documentary led to the derivation of a new relation between chemistry class and contamination through the expansion of the client's symbolic network: a relation of condition between water and cholera, then a relation of equivalence between water and H_2O, and finally, a relation of hierarchy between H_2O and chemistry class (H_2O *is one of* the formulas used in chemistry class) led to the transformation of function of the chemistry class. Going to the chemistry class was now in a causal relation with contracting cholera, while no direct experience or direct verbal learning ever established this relation. Rather than cholera spreading through water, our client had experienced how psychological functions, such as fear, disgust, and avoidance, spread through a language network.

Although this example illustrates the excesses of human language, it also shows why language has continued to evolve culturally in the human species. Evolution works by a simple principle: variation and selective retention. Without variation, evolution is impossible. That is as true of behavioral and cultural evolution as it is of genetic evolution. Let's expand our "buy two, get four free" principle, using an example described by Deacon (1998). Suppose that we teach eight symbol → object relations. In nonhumans, if we teach them in one direction, we get them in one direction. But if we teach them to humans, each relation is mutual. We are up to 16 relations, not eight. But all of the symbols can also be related one to the other. And each object can be related to each other object. And each relation among objects can be related to each relation among objects (e.g., if two things are the same, and two other things are the same, then those two relations are also the same relation); the same goes for symbols. And each symbol can be related via combination to each object. On and on it goes. By the time you are finished, how many possible relations exist in a network with just eight symbol → object relations? Incredibly, the answer is *nearly 4,000!* Now *that's* variation!

What manages this chaos is contextual control over relating and contextual control over the change of functions. As of yet, however, human beings are not very adept at wielding such contextual control intentionally. Said more simply, we are not very good at putting our minds on a leash. We are great at generating and exploring relational networks. That is the source of our greatest achievements in science, literature, or philosophy. But that is also the source of much of our misery too, in which even taking a shower can be fearsome because of its place in an enormous relational network.

Learning to manage these relational processes is the challenge of human existence, individually and culturally. The science of RFT suggests ways that we can use language processes consciously as practitioners to do the job of psychotherapy more effectively. To that topic, we now turn.

CHAPTER SUMMARY

In this chapter, we presented the basic principles of how language evolved as a unique form of learning based on building symbolic relationships among objects and events. Here are some key elements that will be useful to remember throughout the more practical sections of the book:

- We use the term "language" to refer to the learned behavior of building and responding to symbolic relations. This behavior is special because it transforms the way we experience our world, imbuing objects and events with meaning and altering their impact on our thoughts, feelings, and actions.

- Relating is simply responding to one thing in terms of another. Some animal species can learn specific relationships or how to relate things based on intrinsic characteristics, but only humans can learn how to build symbolic relationships. The capacity to relate to things symbolically dramatically increases the efficiency with which humans learn. Entire networks of derived relations can emerge from only a small number of trained relations.

- Symbolic relationships "frame" our experiences, transforming their meaning and impact. We combine the information entailed in these various relationships and derive a vast network of meaning and understanding. The ways we think, feel, and act toward things in the network are strongly influenced by their symbolic relationships with other objects and events.

- Relational learning is a behavior that results from a combination of evolution and a special kind of operant learning history. Human beings learn to relate objects and events based in part on socially established cues, rather than solely on the intrinsic properties of the things being related. Thus, language is a form of cooperation that builds on the social nature of human groups and enhances a culture of eusociality in which humans thrive.

- Although symbolic behavior is based originally on contingency learning, *it alters the impact of all forms of learning* because symbolic relationships transform the way stimuli function as antecedents and consequences.

- There are many types of symbolic relationships or "relational frames." Among them are relations of coordination, distinction, opposition, comparison, condition, hierarchy, and perspective. They are all potentially involved in the analysis and treatment of clinical issues.

- Symbolic relations are not merely words—they are deeply intertwined with virtually everything that is meaningful to human beings. Thoughts and mental images, memories, beliefs, mood and affect, self-awareness, and consciousness itself depend on symbolic relationships. Thinking in this way allows therapists to apply a parsimonious set of behavioral principles to a broad range of clinical issues in a coherent, efficient way.

- Most clinically relevant thoughts, feelings, and behaviors involve an interaction between symbolic relationships and other learned and unlearned processes. Clinicians cannot avoid language, even if it is not a central focus of their therapeutic approach. Even interventions that emphasize silence, use imagery, induce hypnosis, or conduct mindfulness exercises do so by engaging symbolic relationships.

- The capacity to derive symbolic relationships and the transformation of stimulus functions that occurs through them enables a level of behavioral

variation that constitutes an enormous evolutionary advantage. Language is the source of our greatest human achievements, but it is also the source of much of our misery. On an evolutionary time scale, symbolic learning is a relatively new adaptation and we humans are still learning to harness its power without creating unintentional suffering. The conversations that happen in psychotherapy and other clinical interactions are, in part, a process of learning how to manage relational frames and the contextual cues that regulate them in the service of living well.