Part I

BEHAVIORISM AND BASIC LEARNING CONCEPTS

Part I of this volume outlines what radical behaviorism is. Subsequent chapters describe respondent and operant behavior and their controlling variables. The later chapters outline more complex forms of behavior, such as verbal behavior. Throughout these chapters there are illustrations of the clinical applications of these concepts and their related interventions.

Chapter 1

STRUCTURAL AND FUNCTIONAL APPROACHES TO CASE FORMULATION

MIKE GALLAGER

Mr Mike Gallager says he is depressed because of his unhappy divorce two years ago. He admits repeatedly cheating on his former wife, but still believes that she should have been more understanding. He believes that she too was also unfaithful, but he just cannot pin her down yet. He claims that he also squandered money, which led to many family problems. He regrets the restrictions placed on the access to his two children, but also often feels too depressed to spend his assigned day with them. This causes further friction between his ex-wife and himself. He also bitterly resents that, as part of the divorce settlement, she has the family house, half of his pension, and that he has to pay her what he views as substantial sums of money each week.

He lost his job six months ago. His boss said his work had deteriorated. Mike denied it, saying his boss was determined to get rid of older workers and had a grudge against him. He had poor relationships with colleagues and refused to take direction from his supervisor. He was also found drunk at work. This incident finally led to his dismissal.

Over the past three years he has progressively become moody. He has experienced periods of depression when he cannot get out of bed. He is also often angry with his wife and many other people. Many minor disagreements are taken as major personal slights. He dislikes his flat which he had to take after the divorce. He has been taking anti-depressant for over two years, but with only some relief. He views his psychiatrist as incompetent and disinterested in him.

He lives mostly on take-out food and does not exercise. He has put on 50 pounds since being fired. He has periods when he is short of breath and believes he may have heart problems. Yet, he refuses to go to the doctor about it. He also has knee problems due to his weight, which sometimes limits his mobility.

Mr Gallager was the middle of three children. He has one brother and one sister. His father was an engineer working for the local railway company. His mother stayed at home. He reports that his early family life was good. He got on well with his siblings and parents. He was average at school and mostly enjoyed it. When he left school at 16, he trained to be

a mechanic. He has had a string of jobs as a mechanic since then. His parents divorced when he was 20 after several years of a deteriorating relationship. This was apparent to the children when their parents argued loudly at home over money and other matters. He recalls things being better after his father left and got remarried. Mike had several girlfriends prior to his own marriage at 23 years of age. He says none of the girlfriends was very serious. He recalls being in love with his former wife during their engagement and when they were first married. He described that the relationship deteriorated after the birth of the second child. Sometimes he says it was because his wife had postnatal depression. Other times says it was because of the increasing financial burden. He reported that his infidelity began at about that time. None of these relationships was serious or romantic.

When asked why he has come for therapy he states that it is because he is depressed and because his antidepressants do not work. When asked what his goals are for therapy he says that he just wants these bad feelings to go away.

HOW SHOULD WE PROCEED?

How should we proceed with Mr Gallager? We could screen him with psychometric tests and standardized interviews to see if he meets diagnostic criteria for major depressive disorder, dysthymia or bipolar disorder. We might speculate that, since he had a response to an antidepressant, he may have an underlying biochemical vulnerability to depression. Perhaps an interview will reveal a family history of mood disorders in a relative, if we search hard enough and use a broad enough criterion we will probably find one or two. We might note the lifelong pattern of disrupted relationships. We might explore his developmental history, especially his relationships with his mother, sister and his girlfriends prior to his marriage. Noting the predominance of anger and possible abuse of alcohol, perhaps he is fixated at the oral stage. Perhaps a psychodynamic assessment and some projective tests might be able to clarify this. Alternatively, we might note that some people adapt poorly after divorce and others felt better after the release from an apparently miserable marriage. Why did this man react in this particular way? Perhaps an assessment of his cognitive structures will reveal biases in perception and attribution. Anger suggests that personal rules have been violated. We might assess what his own rules are as to how others should treat him. Objectively there are some good things in his life, yet he perceived the world as bad. Perhaps correction of the cognitive schemata following the divorce has caused his depression.

All of these approaches to formulating this case have something in common. They locate the cause of the problem inside the person – his neurochemicals, developmental history, personality or cognitive processes.

These are all hypothetical variables. Clinicians cannot observe any of them. They can only infer from Mr Gallager's behavior. Absent from these formulations is any analysis of the relationship between the environment and Mr Gallager's behavior. They are all structural, rather than functional approaches to formulation. So, what are structuralism and functional approaches to case formulation?

STRUCTURALISM

Structuralism has a long and broad intellectual history. Varieties of structuralism are present in linguistics, anthropology, literary criticism, and sociology, as well as psychology. Different varieties of structuralism have a common theme. Namely, that observed behavior or surface is only significant as an index of some more important unobserved, underlying and occult entity. This hidden structure is the real subject matter. The job of structuralists is to take the surface material to interpret it in order to reveal these hidden elements. This hidden reality is the true subject matter and that which is observed is unimportant other than as a token of the hidden structure. The job of the researcher or clinician is to select and interpret the relevant surface structure and to uncover the hidden structure (Cone, 1997; Nelson, 1977; Nelson-Gray, 2003.)

In linguistics, structuralist approaches can be seen in the work of Saussure (1916/1977), who distinguished between *parole* and *langue. Parole* –words – was roughly the surface structure of language. *Langue*, the specific "word acts" that linguists observed. Saussure distinguished between the surface signifier and the underlying signified or the meaning. Saussure emphasized the formal relationships between observed words. This analysis echoes the debate between Chomsky and Skinner on the nature of human language. For Skinner (1957), verbal behavior was behavior that we can study and analyze like any other behavior. It was not necessary to reify it. It was not a special class of behavior. Chomsky's (1959) structural approach was that individual specimens of verbal behavior were mere tokens of underlying grammatical structures.

There are also structural schools of anthropology. The structuralist approach to anthropology suggests that thought processes are uniform in all cultures. These underlying thought processes can be discovered by observation of kinship, myth, and language. Cultural acts are used to divine these underlying meanings and uniform thought processes. We can understand individual cultural acts within the context of the greater cultural gestalt. Levi-Strauss believed that specific cultural practices were an expression of a "deep grammar of society." He borrowed Saussure's idea of langue and parole in that specific cultural acts were seen as expression of underlying structures. The deep grammar was hidden, unconscious and represented fundamental mental structures caused such cultural practices.

A final example of structuralism comes from literature. Here, structuralism refers to the idea that specific narratives reflect underlying narrative structures. Many different narratives contain these fewer structures. The linguist analyzes the surface structure of the narrative to reveal its hidden, universal structure that is also in other narratives that have completely different surface structures. Sometimes the linguist uses notation similar to Chomsky's phrase structure grammar.

Structuralism and Psychology

Structuralism appears in psychology in a number of guises. In which ever form it appears, it emphasizes the discovery of hidden cognitive structures, such as the work of Piaget or cognitive therapists, personality structures, developmental stages or personality types that cause human behavior. Biological psychologists posit occult biological defects, such as biochemical disturbances or brain damage – observable or non-observable as causes of human behavior. Researchers sometimes observe these variables, but clinicians are hardly ever able to do so. The observable behavior results – a test score of performance on a specially selected experimental task, spoken words or motor behavior, including pathological behavior and psychiatric symptoms – are said to be signs of these unobservable constructs.

Early in the history of modern psychology Wundt proposed that the aim of psychology was to discover the "anatomy of the mind"; that is, the cognitive structures underlying human behavior. Trained observers introspected their own experience. They then verbally reported their introspections. In one of Wundt's typical experiments trained observers responded "yes" or "no", or pressed a telegraph key to indicate the presence or absence of a stimulus or some quality of a stimulus. Wundt used trained observers' reports of introspection to reveal the hidden cognitive structures of the mind. Specifically, he hoped to be able to analyze mental life into the elements of thought. Individual sensations were analyzed into their constituent parts of modality, intensity, and quality. Wundt analyzed his introspections of his own feelings that accompanied sensations analyzed into the component pleasantness–unpleasantness, excitement–calm and strain–relaxation.

Structuralism is also used in a more narrow sense to refer to one school of psychology – Tichner's structuralism. Tichner believed that the individual elements of mental life could be detected through introspection. Using the metaphor of atomic theory and the periodic table, Tichner hoped to discover the elements of mental life, to order them and to explain their combinations to describe individual conscious experiences. Mental elements were the elements of perception, ideas and emotions. These elements were thought to combine into complex mental experiences through their history of association with other mental elements (Hergenhahn, 2001.)

Structuralism and Contemporary Psychology

Much contemporary psychology implicitly embraces structuralism. Personality theorists attempt to uncover the structure of personality that causes us to behave in our own characteristic ways. Developmental psychologists attempt to discover children's mental structures or stages that cause them to behave the way they do. Biological psychologists attempt to uncover the neuroanatomical or neurochemical causes of behavior. They build circuit diagrams of the brain or mind to explain behavior. Cognitive psychologists attempt to detect the pathogenic schemata, memory or attentional processes that cause observable behavior. They build models with multiple modules representing hypothetical processes and structures that they infer. They have yet to observe them. They use the computer as metaphor for the brain. So, structuralism is alive and well in many branches of psychology!

Like academic psychology, clinical psychology, too, embraces structuralism. Neuropsychologists diagnose the brain damage that causes attention-deficit hyperactivity disorder (ADHD) in a child who does not do well in school or a learning disability in a child with reading problems. Cognitive clinical psychologists attempt to diagnose the damaged cognitive apparatus or processes in their clients. Psychoanalysts attempt to uncover the true causes of distress buried in their clients' histories. They seek the real causes of their clients' problems, or even their clients' real problems located under their clients' skins.

Critiques of Structuralism

Critiques of Early Structuralism in Psychology

Tichner's structuralism died out because it relied on introspection as its window into the mind. Introspection used highly trained observers who reported on their own experiences, such as sensations. The method failed. Despite their training, different observers reported different results when introspecting the same stimuli. Thus, the data were unreliable and depended on which person introspected and what they were looking for inside themselves. Critics of introspection noted that it depended on the observer's memory of a sensory event, even if it was a recent memory. It was also criticized because the process of observing a private sensation might change the observed stimulus. Hence, Tichner's introspection failed because it used an unreliable method of data collection, which is an absolute requirement of science (Hergenhahn, 2001.)

What is called introspection is not truly introspection. One cannot simultaneously report a private event as it occurs. Hergenhahn (2001) suggested that it might better be termed *retrospection.* This might not seem too serious a problem if one is retrospecting something that happened a

few seconds ago. However, when one's clients are recalling cognitions from events a few days or weeks ago, or when they are allegedly recalling events months and years ago, the accuracy of these retrospections must be called into question. Prospective studies have shown that memory of events become inaccurate and stereotypical. Nineteenth-century introspection was also criticized because the process of introspection might change what was reported. Again there is good evidence that the process of asking people about their history changes, and actively creates, new memories, which may not be factually based. Studies of memory of alleged traumatic events may be influenced by popular literature, other mass media and therapists' suggestions, which sometimes result in people reporting memories that can not be true (Loftus, 1993, 1994.) Thus, the process of retrospecting for hidden trauma may change the original memories by inadvertently planting new memories during therapy (Loftus, 1993, 1994.)

Other criticisms of early structuralism included its turning away from applied aspects of psychology. Indeed, like much of experimental psychology, structuralism is concerned with a very narrow sample of behavior of a narrow sample of people in a peculiar setting. It ostentatiously turns its back on naturally occurring behavior in the real world. Nineteenth-century commentators noted this lack of interest in applied questions. Introspections were disinterested in higher mental processes, individual differences, education, abnormal human behavior, animal behavior, and child development. Perhaps this was because of the lack of a method that could be used with many populations and in a real-world setting. Perhaps it was also because introspectionism viewed the discovery of mental anatomy and cognitive elements, rather than everyday behavior, as the real topic of psychology.

More recently, post-modernists have criticized structuralist approaches to linguistics: anthropology and literature have been criticized for positing absolute truths and structures, and for failing to recognize the relativistic notions of knowledge; they were criticized for embracing the idea that there were absolute truths to be discovered. Structuralism has also been criticized for implicitly embracing determinism and for failing to acknowledge individual freedoms and autonomy, which were said to be outlawed if structures caused behavior (Hergenhahn, 2001.)

Critiques of Structuralism and Implications for Case Formulation

Structural approaches to psychology and clinical psychology have a number of significant weaknesses. The criticisms laid at the feet of the nineteenth-century structural psychologists, such as Wundt and Tichner, can also equally be laid at the feet of their contemporary intellectual offspring.

Introspection Again! The first weakness is that structural approaches to case formulation depend on introspection. Cognitive psychologists for example, train their clients in the new methods of introspection. Instead of training their clients to introspect their sensations, they train them to introspect their thoughts and feelings. Based on these new introspections, cognitive psychologists infer the presence of a damaged mental apparatus. It is these damaged mental structures – schemata, or mental processes, memory and attribution – that cognitive psychologists infer from these introspections. However, the cognitive psychologist cannot observe the presence of these damaged structures. They can only infer them from the client's unreliable retrospections.

Introspection has returned to psychology. We, generally, no longer ask trained subjects to introspect their sensations in experiments. However, cognitive psychologists ask their clients to introspect their minds and report on their cognitions and attributions. Psychoanalysts ask their clients to introspect their memories to keep looking for the hidden events that caused their current problems. Counselors ask their clients to introspect their feelings. Wundt introspected sensations. Cognitive clinical psychologists teach their clients to allegedly introspect their feelings. What is allegedly introspected has changed. Nevertheless, introspection is alive and well in clinical psychology.

Unfortunately, the current popularity of introspection has not resolved the method's limitations which were identified in the nineteenth century. These critiques of retrospection can all be made of contemporary use of introspection. Only one person can introspect their cognitions. Reliable data are not possible since no second person can simultaneously observe the cognition. Reliable measurement is a requirement for science. Therefore – using syllogistic reasoning – methods using introspection are not scientific.

Circularity A second weakness is that structural approaches to explain psychopathology and treatment are necessarily circular. Cognitive psychologists use behavior to infer the presence of the unobservable structures. Cognitive psychologists then use the unobservable structures to explain the observable behavior. We observe a client say "I only passed the test because I have a good memory, I am not really smart." From that we infer a defect in the client's attributions. The cognitive psychologist then explains the client's depressed behavior as being caused by the defective attribution that was inferred from the client's behavior in the first place (Skinner, 1950, 1990.) Worse yet, psychotherapists using cognitive approaches sometimes used independent variables and dependent variables that are unobservable. For example, when a therapist allegedly changes a client's schema and measures its effect on self-reports of mood. Yet, neither independent nor dependent variables can be reliably measured.

Applicability Structural models of psychopathology are ultimately pessimistic concerning treatment. If a psychoanalyst could truly demonstrate that some past event caused the client's presenting problem, what can be done? The client and therapist cannot change the past. They can only manipulate variables in the current environment. More insidiously, structural approaches to psychopathology and treatment often have an implicit medical model in which the therapist diagnoses the client's structural defect. The therapist then has two practical and logical problems. First, they must remedy the alleged structural defect. Second, they must know if they have remedied the structural defect that caused the client's presenting problems. How can a cognitive therapist know if they changed the cognitive structures that caused their client's depression? Are the structures still there and dormant after successful treatment waiting to be turned back on again in the future? How could a cognitive therapist distinguish between a cognitive structure that is dormant and one that is not there in the first place? They only have their clients' unreliable retrospections on which to base their inferences.

Structural approaches to psychopathology are stuck in a traditional causal model of behavior. The structuralist assumes that the brain damage that resulted from the stroke caused the client to become disinhibited and to yell a lot. While there may apparently be a tight correlation between the stroke and the subsequent yelling, assuming that the brain damage caused the yelling is not justified. The damage brain part, if it can be isolated, is part of a large system. That system includes other parts of the brain, other parts of physical organism, the client's behavior, and the environment. Other variables may also have changed that may have caused the yelling. If the brain damage is for ever present, how then could that account for the increases and decreases in the rate of yelling? Must we infer that the brain damage is waxing and waning with the behavior? Or, shall we infer that the brain damage is always there, but the client's unobservable self-control or inhibition waxes and wanes instead? When the structuralist is asked to explain the behavior of a child with ADHD they might note the possible changes in serotonin levels sometimes found between children with ADHD and other children. But, what about *this* specific child? The structuralist did not observe this child's serotonin level. They only observed their behavior. Again, what of the variations in the child's presenting problems? Must we infer that the child's serotonin levels are changing along with the child's behavior? How can we do so independently of the child's behavior?

Contrasting structural and functional approaches to two problems – language acquisition and rehabilitation and theory of mind – illustrate the limitations of structural approaches to applied questions.

Chomsky's (1959; Virues-Ortega, 2006) critique of Skinner's *Verbal Behavior* received much attention. Some interpreted it as a damning critique of behavioral conceptualizations of verbal behavior. Unfortunately,

subsequent behavioral comments have generally not been acknowledged (MacCorqoudale, 1970; Palmer, 2006.) Yet, other than waiting for the Language Acquisition Device to mature, Chomsky had no intervention to offer people with language problems, such as people with psychotic disorders, developmental disabilities or dementias. Neither did he have anything to offer on how to promote language development in typical children. There has been no line of research producing effective language interventions based on Chomsky's views of language. In contrast, applied behavior analysis (ABA), with its functionalist approach to behavior change, is optimistic about change. Consequently, behavior analysis has contributed extensively to the area of language teaching and rehabilitation. Examples include teaching language to children (Mann & Baer, 1970), teaching children with intellectual disabilities to read (Conners, 1992), remediation of language problems in children with autism (Lee & Sturmey, 2006), adults with schizophrenia (Wilder & Wong, 2007) or acquired brain damage (Dixon & Bihler, 2007), and Alzheimer's disease (Bourgeois, 1990.) Structuralists are notable absentees from language training and rehabilitation.

The second example of a structuralist theory is Baron-Cohen's (1997) "Theory of Mind." It posits that autistic behavior, including language, is caused by the lack of a theory of mind. The absence of a theory of mind is inferred through observable behavior, such as a child not describing other people's perspectives and beliefs that are different from their own. For example, in the Sally-Ann task the experimenter presents the child with two dolls. Sally has a basket and Ann has a box. Sally puts a marble in her basket. Ann then leaves. While Ann is away, Sally places the marble in Ann's box. The experimenter then asks the child observing this where Ann will look for her marble. If the child understands that, since Ann's belief is different from everyone's belief she will look in the basket. However, if the child does not understand that people have differing perspectives and beliefs from one another, then the child will say that Ann will look in her box for the marble.

Theory of mind is said to explain a wide range of behavior (Baron-Cohen, 2007) and is the basis for intervention to remedy children with autism's inherent "mind blindness" (Hadwin, Baron-Cohen, Howlin & Hill, 1997). Theory of mind researchers have attempted to teach theory of mind concepts to children with autism. Yet, even their own research has produced only modest evidence of efficacy. They have shown some evidence of acquisition of theory of mind skills in teaching situations in some, but not all studies (Hadwin et al., 1997.) When one looks at the intervention methods used to teach theory of mind skills they seem weakly designed and incompletely described. They use reinforcement, but prevaricate on its use and do not describe their interventions operationally (Hadwin et al., 1997.) Hence, researchers and parents cannot replicate these studies and researchers cannot measure if the treatment took place. It gives the impression that

advocates of the theory of mind do not try very hard to teach theory of mind skills. Theory of mind researchers are too willing to accept the null hypothesis that theory of mind deficits can not be taught.

In contrast, behavior analysts have embraced the challenge that theory of mind skills can be operationalized, analyzed, and taught (LeBlanc, Coates, Daneshvar, Charlop-Christy, Morris & Lancaster, 2003.) Instead of seeing this as an impossible task, behavior analysis sees it as a new and interesting set of social behaviors to be taught. They may – or may not – be a little more difficult to teach than other behaviors, but they are not fundamentally different in nature.

Individual Differences Finally, structural approaches under-emphasize individual differences. Medical models that emphasize diagnosis, or psychological models of specific disorders, all implicitly state that all members of the class of individuals are the same in some important way. The notion that there is an effective treatment for depression assumes that all people with depression have something important in common that determines treatment outcome. How then can this approach account for the large individual differences between clients with the same diagnosis receiving the same treatment? One could plausibly appeal to differences in treatment integrity to explain these differential outcomes. But what if treatment integrity was demonstrated and individual differences still remained? How would a structuralist account for such individual differences? From a functional perspective individual differences are the key to determining treatment design, even when all clients have the same diagnosis or presenting topography. Mismatching the treatment to the client's individual problems may result in ineffective treatment (Nelson-Gray et al., 1989.) or worse still, harm to the client (Iwata, Cowdery & Miltenberger, 1994.)

Structuralists in the Office

Structural approaches to human behavior deemphasize the environment. It assumes that the therapist treats an omnipresent person. The interaction between the person and the environment is deemphasized or ignored. Thus, if one is studying cognitive structures or repressed memories, one can study them anywhere. Why not study these structures in the office?

There is good reason. Human behavior is greatly influenced by the environment. However, many therapists are office-bound. They see only a small sample of their client's behavior in one setting. They either have to assume the client behavior that is seen in the office is representative of client behavior elsewhere and/or have to rely on client reports of their behavior elsewhere. These client reports may be incomplete and inaccurate.

Summary

Current structural approaches continue to suffer from the same limitations as they did in the nineteenth century. They are more likely to focus on private events revealed through self-report, to be more pessimistic about changing some structural feature of the person, such as their brain, to focus on the damaged person rather than the pathogenic environment, and to be office based, rather than interested in the rest of the world.

FUNCTIONALISM

Like structuralism, functionalism is present in many branches of science and thought. Although the applications of functionalist thinking are very varied, they share a number of features. Keller (1973, cited in Hergenhahn, 2001) noted eight features that distinguished functionalist from structuralist psychology:

1. Functionalists rejected the mentalistic approaches of structuralists searching for the elements of mental life as sterile.
2. Functionalists viewed mental life as an adaptive process that led to organisms functioning more effectively. They were interested in the purpose of mind, not its structure.
3. Functionalists embraced the idea of psychology as an applied science.
4. Functionalists broadened the applicability of psychology. They addressed novel populations, such as clinical populations, children and animals. They also used novel methods, such as puzzle boxes and mental tests.
5. Functionalists were interested in motivation. The organism behaved differently in the same environment on different occasions. Hence, even though it presumably had largely the same mental apparatus it had previously, something else had to be invoked to account for these different performances.
6. Functionalists were interested in both mental life and observable behavior. Introspection was only one of many methods of psychology.
7. Functionalists emphasized individual differences, not commonalities amongst people.
8. Darwin's evolutionary thinking strongly influenced functionalism.

Functional psychologists, such as William James, reacted against introspectionism. He emphasized empiricism and the pragmatic value of psychological ideas. So, he opened up psychology to many methods of study beyond introspection and placed great value on the usefulness of these ideas. Influenced by Darwin, he also noted that mind had an adaptive value and helped the organism adapt to its environment. He was also

interested in human learning and its application to assist people to lead better lives. Many of his observations prefigure operant and respondent learning and their application to every day living. James also gave practical advice to develop better ways of living through learning and environmental design. His maxim to "[p]lace yourself in circumstances that encourage good habits and discourage bad ones" prefigured interventions based on stimulus control. Another of his maxims stated that you should "Force yourself to act in ways that are beneficial to you even if doing so at first is distasteful and requires considerable effort." This advice prefigures contemporary behavioral treatments of depression (Lejuez, Hopko & Hopko, 2007) amongst others clinical problems.

Keller's (1973) eight features of functionalism all suggest parallels with behaviorism:

1. Behaviorism, like functionalism generally, eschews searching for the elements of consciousness (Hergenhahn, 2001, p. 297.) It emphasizes the analysis of observable behavior.
2. Functionalists search for the adaptive function of the mind. Behaviorists similarly search for the adaptive function of both public and private behavior, including thinking and other private behavior. An organism's current behavior is seen as the result of selection of the most adapted forms of behavior by the environment during the lifespan of the organism. Even psychopathological behavior, that harms the organism, is painful and distressing, is seen as kinds of adaptation.
3. Behavior analysis does distinguish two branches of the science of behavior. The experimental analysis of behavior (EAB) studies basic learning processes that are of theoretical rather than applied significance. Applied behavior analysis (ABA) uses these basic principles to change behaviors of social significance. ABA also contributes to the basic science by describing new phenomena not observable in basic preparations and by extending the basic principles to applied settings. When Baer, Wolf and Risley (1968) first described the seven features of ABA, they emphasized that ABA must produce large changes in socially important behavior that are meaningful, that people recognize as being important using methods that are acceptable and valued, and that are based on the basic principles of the science of behavior, rather than on a technology of behavior change.
4. ABA has studied a very wide range of human populations, including children, people with various severe disabilities and non-human animals. It uses methods other than introspection, primarily direct observation of behavior in the natural environment.
5. Whereas early functionalists used the term "motivation" to account for the "why" of mental life, behavior analysis has used the terms such as reinforcement, reinforcer deprivation and reinforcer satiation as a central concepts accounting for the "why" of behavior.

6. Functionalists studied both mental life and behavior. Behaviorism has a range of positions on the status of mental life and how and why it may be studied. (See Friman, Wilson & Hayes 1998a, 1998b; Lamal, 1998; Taylor & O'Reilly, 1997 for a spectrum of views within behavior analysis on this issue.) In any case, behavior analysis surely studies public behavior.
7. Individual differences, coming from both genetic sources and differences in the organism's learning history, are central to behaviorism. However, ABA emphasizes those individual differences related to learning, since they can be manipulated during the analysis and treatment of behavior. The purpose of behavioral approaches to case formulation and behavioral treatment is to detect those individual differences that affect treatment. Commonalities, such as a diagnosis or demographic variables are seen as variables that do not contribute greatly to treatment design. Individual differences that cannot guide treatment design are ignored.
8. As noted previously, James's emphasis on pragmatism and applications of psychology directly parallel subsequent behavioral work. Behaviorism took the ideas of variation and selection from evolution and applied them directly to such topics as the evolution of the operant within the organism's lifespan and to cultural evolution (Skinner, 1953.)

Functionalism, Evolution and Psychology

One of the most important examples of functional approaches to explaining behavior that influenced behaviorism greatly is biological evolution. Evolution noted that the reproductive capacity of organisms vastly exceeded that which the environment can support. It also noted that there were considerable variations amongst members of a species. Some of this variation was due to genes that were passed on from generation to generation. An organism may have had adaptive features, such as physical features, physiology, reproductive strategies, and behavior, which may have contributed toward the survival of its genes in the next generation. If these adaptive features had a genetic component, then they will be more likely than other features to appear in the next generation. An organism was said to be "fit" if it could survive to reproductive age and pass on its genes to the next generation. Contemporary version of evolution, such as sociobiology and evolutionary psychology, emphasize the gene as the unit of selection. The organism is merely the hapless vehicle, a mere wrapping around genes to transport them from one generation to another. Genes can be transported into the next generation both directly through offspring and through investment in related organisms, such as siblings and cousins, since they share some genes with the organism doing the investment.

Hence, there may be selection for genes that promote behaviors, such as investment in kin (Hergenhahn, 2001; Wilson, 1975.)

Early evolutionary scientists were concerned with behavior and other issues that behavior analysis addressed in a number of ways. Behavior contributed to survival of genes into the next generation and some behaviors were heritable to varying degrees. Darwin published on the possible genetic basis of human emotional behavior and its relationship to emotional behavior in non-human animals. Darwin's description of his son's development was one of the first accounts of modern child development based on observation of behavior in the natural environment.

Darwin's contemporary and codiscoverer of evolution, Spencer, wrote about both learning and cultural evolution. Spencer assumed that the complex human nervous system contributed to human fitness by permitting better, faster learning and thus contributing to individual and cultural survival. Spencer also suggested that contiguity of stimuli and the consequences of behavior, such as "success", pleasant feelings, and painful feelings influenced learning that contributed to the organism's survival. Thus, Spencer's work prefigured Thorndike's and Skinner's work on operant behavior. Spencer was also interested in cultural evolution. He suggested that evolution meant progress toward perfection of individuals and societies. Spencer therefore advocated *laissez faire* capitalism and criticized social programs for the poor. Thus, early on, evolution was interested in its implications for design of society. Although they reached very different conclusions about what kinds of society to promote and how to design cultures, Spencer and Darwin's discussion of selection of societies prefigured Skinner and other behavior analysts' work on cultural evolution and design (Skinner, 1948, 1971.)

Summary

Functionalism is found in many branches of science and thought, including literature, sociology, linguistics, and anthropology. Evolution is one of the best examples of functionalism as it emphasizes the fit of the organism to its environment. Behavior analysis is an extension of evolutionary thinking in that it applied the notions of variations and selection to the behavior of individual organisms and cultures.

MR GALLAGER REVISITED

So what do structuralism and functionalism have to do with Mike Gallager? Structural approaches would attempt to detect the hidden structure of Mr Gallager's allegedly real problem – his hidden problem. One way or another, Mr Gallager's complaints would be used to make

inferences about entities that his therapist cannot directly observe. These hidden entities might be psychiatric illnesses, disturbances in his brain or synapses, or cognitive processes or personality. Diagnosticians might debate which of many diagnoses might be most appropriate – major depression, dysthymic disorder, general anxiety disorder, adjustment disorder, a personality disorder perhaps. Psychotherapists might debate the relationship between his presenting symptoms and his distant history. Clinicians might suggest mapping of potential treatments from diagnoses or presenting problems. If he is depressed, perhaps cognitive-behavior therapy might be appropriate. This is not a bad choice. There is good evidence of the effectiveness of cognitive-behavior therapy for depression (Roth & Fonagy, 2004.) But he also experiences anger and anxiety – should his therapist put him in an anger management group or an anxiety management group. Perhaps he should be in three groups – one for mood, one for anger and one for anxiety. Is he one of the people who did not respond in the randomized controlled trials (RCTs) that evaluated these treatments? If he is, what is his therapist to do? His relationships have been disrupted for many years. His present problems are part of a larger pattern of disruptive and unsatisfactory relations. Should he not receive psychotherapy to understand this pattern better and gain insight into his real problem? There are too many solutions that might map onto all these possible diagnoses and problems. How should his therapist decide what treatment to implement?

These problematic approaches are structuralist. So what would functionalist do? A functionalist would begin by seeing the presenting problems as in some sense an adaptation by Mr Gallager to his environment. The presenting symptoms are useful. The environment has selected these forms of behavior over time, even though they are painful and limiting to him. So the first step is to discover the relationship between current environmental events and his problematic and non-problematic behavior. His assessment should identify current, modifiable environmental variables that influence his behavior. The therapist might work with Mr Gallager to agree which form of his behavior is problematic, which is not and what he would like to do if he was problem-free. His presenting problems, which are many, might be simplified into a smaller number of areas, such as relationships with others, mood, and health. Below is a preliminary list:

1. Get better relationships with other people
   - Former wife (handling disagreements)
   - Children (lack of visits, lack of satisfactory visits)
   - Former boss (taking direction)
   - Coworkers
   - Physician
   - Establish stable relationship with girlfriend
2. Improve mood management

- What to do when feeling depressed
- Not to drink when depressed

3. Better health
   - Attend appointments for physical health
   - Work with current psychiatrist or get a more acceptable psychiatrist
   - Get antidepressants reviewed
   - Eat more healthily
   - Exercise more
   - Drink less
4. Obtain better living situation
   - Find a better flat
   - Find a job or equivalent structured daily pattern of life

Given the large number of problems, it might be useful to identify which ones are priorities for Mr Gallager. When he stated the reason for referral, the prime reason he gave was to remove negative feelings. A constructionist approach might seize on this and begin to identify situations associated with positive mood (Lejuez et al., 2002.) Even the brief description at the beginning of this chapter identifies a number of aspects of his behavior that suggests he has effective ways of behaving in his behavioral repertoire or at least has had effective ways of behaving in the past. An important part of the pretreatment assessment would be to identify all of his strengths in these areas.

Since behavioral approaches emphasize not merely behavior, but its relationship to the environment, an important part of the pretreatment assessment would be to work with Mr Gallager to help him discover these relationships (Skinner, 1953.) Interviewing might help him to begin to describe some of them. For example, if poor relationships with other people was key area for him, his therapist might ask if there are relationships with some people or aspects of relationships that are successful. His therapist might also ask if there social skills he has or activities he carries out with other people that are meaningful and rewarding to him. As well as interviews, his therapist might also use self-recording and observation of his behavior to discover which interactions are meaningful and satisfactory and which are not. Perhaps there are visits with his children that go well and those that do not. His therapist might ask what the differences between these visits are. By doing this his therapist may discover relationships between environmental variables and Mr Gallager's behavior. More importantly, Mr Gallager might also do the same. The information given at the beginning of the chapter is incomplete. Yet, one might begin to frame assessment questions that reflect a functionalist perspective on these problems. For example, if appropriate interaction with others has decreased what might account for that? Has he become more punitive to others? Has interaction with others become less reinforcing for him? Has he learned patterns of interaction that are

inappropriate or has he lost social skills he used to have? Perhaps the other people have changed in some way. Has he moved from one setting to another where previously effective behavior is no longer effective? Each of these possibilities suggests alternate approaches to the problem. If he has become more punitive to others and they avoid him, what can be done to make him more reinforcing to others? Can he learn social skills to make himself more interesting and reinforcing to others? Can he be taught to engage in activities with others that are more interesting to them? Are there things he is doing that are irritating to others that he should stop? What new behavior would be effective for a new setting?

Mr Gallager identified removal of bad feelings as the main reason for seeking therapy. Part of the pretreatment assessment might be again to discover the relationships between activities and his mood. Again retrospective information during an interview might give some broad information. A week or two of self-recording mood and activities might give some more useful and interesting information about activities associated with depressed and happy mood. By beginning to instruct Mr Gallager to self-record and to describe the relationship between the environment and his mood, his therapist has already begun to accomplish two important tasks. First, his therapist has begun to teach him to discriminate his own behavior and its relationship to the environment more carefully and effectively than he had previously done. In so doing, the implications and uses of the observed functional relationships between his environment and behavior might become apparent to Mr Gallager himself. Second, we have also begun to change the way Mr Gallager speaks and writes about his own behavior. Thus, pretreatment assessment has already induced significant behavior change that may make intervention more likely and more effective. Later, this might be the basis of a more overt treatment plan (Skinner, 1953.)

His behavioral repertoire and the range of environments might be quite restricted compared to his past. There may be important functional relationships that we cannot now observe. It might also be useful for his therapist to enquire as to the things he used to do that he used to enjoy, but no longer does. Additionally, it might be useful to begin mini experiments to try out activities in which he currently no longer engages that might both suggest further functional relationships and have implications for treatment. For example, if he used to take a drive when bored he might try that again to observe its effects on his mood. If that does not work, perhaps there are other strategies he could begin to try.

This assessment information might suggest lawful relationships between his activities and mood. This information can be used to help Mr Gallagher arrange the environment to increase the situations associated with positive mood and to remove or modify those situations that are associated with negative mood. If there are certain activities that he enjoys more than others perhaps he can begin to schedule these activities

more frequently over a number of weeks. If there are certain ways to make visits with his children more rewarding, then perhaps he can learn to schedule more of these activities to make the visits more rewarding for both parties. If he can discriminate the onset of periods of negative mood early, he can take action early to avert his negative mood becoming more severe. Perhaps he can learn to avoid some activities that are associated with negative mood or modify them in some ways to make them less difficult for him. For example, he might be able to learn to interact with his former wife in a more effective manner or to terminate the interactions prior to them becoming aversive.

We now have the beginning of an incomplete, but partially useful, functionalist case formulation. Much information is missing. Yet, his therapist is now in a position to help Mr Gallagher.