BEHAVIORAL DEVELOPMENT BULLETIN

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CONTENTS

Moral and Legal Control

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Both immoral behavior and illegal behavior usually interfere with the well being of humanity, while moral behavior contributes to the well being of humanity. Society adds both moral and legal contingencies to counteract the natural contingencies of reinforcement and punishment that support immoral and illegal behavior and to supplement ineffective natural contingencies that fail to support moral and legal behavior. Because these contingencies are usually indirect-acting analog contingencies, they control behavior only when expressed as moral and legal rules. Generally, society adds moral analog contingencies to control behavior that is harder to observe and legal analog contingencies to control behavior that is easier to observe. Moral analog contingencies usually have nonmaterial outcomes, whereas, legal analog contingencies usually have material outcomes. Analogs to avoidance are more effective than analogs to reinforcement, because the avoidance deadline prevents infinite procrastination. Therefore, effective moral and legal analog contingencies must be based on aversive control.

I have based this analysis of legal and moral control on the three-contingency model of performance management (Malott, 1993, 1998). That model involves a number of definitions, principles, and guidelines, as well as a special way of diagramming behavioral contingencies. I will take the liberty of introducing necessary elements of this model, throughout the present analysis. I have also based this analysis on an approach I call *behavioral anthropology* (Malott, 1988). An earlier version of this analysis can be found in Malott, Malott, and Trojan (2000, pp 415-425).
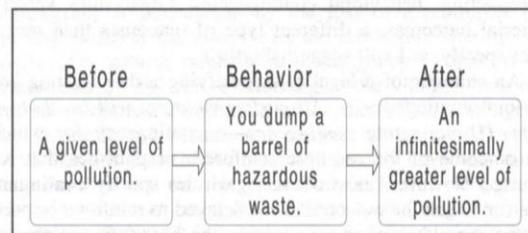
Ineffective Natural Contingencies

"Don't dump your hazardous waste here, buddy, because it will pollute the environment and decrease the quality of life for your friends and neighbors." (See Fig. 1.)

This is an example of a natural contingency. (A contingency that occurs in nature, without being designed by a performance manager to control behavior.) Society in general and we behavior analysts in particular are concerned with those natural contingencies that affect the quality of life of the individual and the members of our society but are, nonetheless, ineffective in controlling behavior.

Figure 1

An ineffective natural contingency. (Note that the "Before" condition in these diagrams is not the same as an S^D; it is more like, but not exactly like, an establishing operation.)

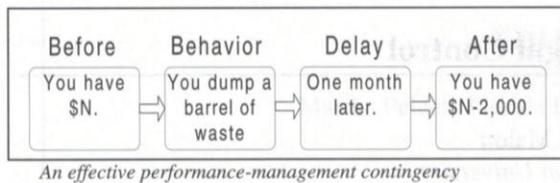| Before	Behavior	After
A given level of pollution.	You dump a barrel of hazardous waste.	An infinitesimally greater level of pollution.

(Contingencies are ineffective in controlling behavior if they involve outcomes that are too improbable or too small, though the cumulative impact of many such outcomes may be significant. Contrary to the standard lay and behavioral view, according to the three contingency model, the delay of the outcome is of little importance, as long as the behavior knows the rule describing that contingency.)

These ineffective contingencies fail to control our behavior directly as reinforcement or punishment contingencies. Also, such contingences often fail to control our behavior indirectly through rules describing them. The rule advising not to dump waste because it will pollute may be ineffective; and, if so, its ineffectiveness is probably because the impact of dumping only one barrel of hazardous waste may make too infinitesimal a contribution to the pollution of the environment. Because of the ineffectiveness of the anti-pollution rule, pollution may gradually overwhelm us, one infinitesimally significant barrel at a time, unless we intervene. One way to intervene is to pass laws against pollution.

Legal-Rule Control

"Don't dump your hazardous waste here, buddy; or we'll fine you." (See Fig. 2.)

Figure 2.

Before	Behavior	Delay	After
You have $N.	You dump a barrel of waste	One month later.	You have $N-2,000.

An effective performance-management contingency

That is an example of a performance-management contingency. (*Performance-management contingency*—a contingency that does not occur in nature and is designed by a performance manager to control behavior.) If the person obeys this rule and refrains from dumping, then we have an example of control by a legal rule. (*Legal-rule control*—control by rules specifying added, indirect-acting contingencies or added, direct-acting, behavioral contingencies. Legal rules specify material outcomes, a different type of outcomes than moral rules specify, as I will suggest shortly.)

An example of a legal rule specifying a direct-acting behavioral contingency is: *All curfew violators will be shot on sight.* (*Direct-acting contingency*—a contingency for which the outcome of the response reinforces or punishes that response.) However, most often, legal rules specify contingencies for which the outcome is too delayed to reinforce or punish the causal behavior; for example, the $2,000 fine might not actually be collected until a month after the behavior occurred. Nonetheless, rules specifying these indirect-acting contingencies can still control the causal response, in spite of the delay. (*Indirect-acting contingency*--a contingency that controls the response, but not because the outcome reinforces or punishes that response. To repeat, it is the rule specifying the contingency, not the contingency itself that controls the behavior, because the outcome involved in the contingency is too delayed to reinforce or punish the causal response; a rule might even control behavior, though the specified outcome of that behavior never occurs, as might be the case for religious rules specifying afterlife outcomes.)

This anti-pollution contingency is an analog to a penalty contingency (*Analog to a penalty contingency*--an indirect-acting penalty contingency where the delay between the causal response and the loss of the reinforcer is too great to punish that response.) As indicated earlier, the rule specifying this indirect-acting analog to a penalty contingency can control the causal response, even though the contingency itself does not directly do so.

Again, rules describing contingencies can fail to control our behavior for two reasons: (1) The outcomes are too improbable (e.g., the low probability of the need for a seat belt results in a low frequency of wearing seat belts); and (2) Any single instance of the outcome is too small to be significant, though the accumulation of many such outcomes would be significant (e.g., the small polluting effect of dumping a single barrel of to toxic waste.) Social agencies often attempt to supplement these ineffective natural contingencies with effective performance-management contingencies. In other words, they pass laws that consist of rules describing the performance-management contingencies. The laws are effective to the extent that the contingencies they describe involve outcomes that are both sizeable and probable. If these laws or legal rules are ineffective, it is generally due to their lack of enforcement (the probability of the outcome) rather than the magnitude of the penalty (the size of outcome).

Moral (Ethical) Rule Control

"Ah, ain't nobody lookin.' So I'll just dump this hazardous waste over here and. . . ."
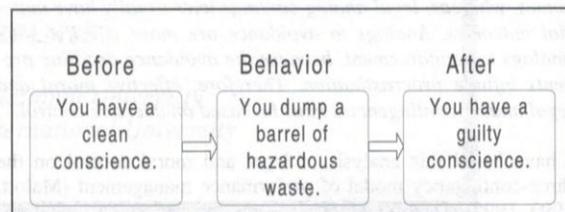
"STOP!"

"What? Who's that? Who said that?"

"This is your conscience, brother. Even when the cops aren't around, I'm always here to keep you on the straight and narrow"

"Well, hee hee, I was just kidding. I wasn't really gonna' . . .." (See Fig. 3.)

Figure 3
A potentially effective performance-management contingency

Before	Behavior	After
You have a clean conscience.	You dump a barrel of hazardous waste.	You have a guilty conscience.

That is another example of a performance-management contingency: if the person obeys the rule and refrains from dumping, then we have an example of control by a moral rule. (*Moral-rule control*—control by rules specifying added indirect-acting contingencies or added direct-acting behavioral contingencies; moral rules specify social, religious, or supernatural outcomes.) In the present case, the outcome is immediate; thus the contingency would be a direct-acting punishment contingency. However, the aversive outcome (e.g., the guilty conscience) might not present itself until later that night when the person is having difficulty falling to sleep because he found himself contemplating the evilness of his deed. In that case, the guilty-conscience outcome would be delayed, and this would be an indirect-acting contingency, an analog to a punishment contingency. Regardless of whether the contingency were direct acting or indirect acting, it would only suppress the person's polluting behavior, if the person's moral

training were sufficient that the resulting guilty conscience would be both probable and significantly aversive.

"Come on, conscience; it'll cost too much to move these barrels over to an authorized hazardous-waste dump."

"Brother, you dump it here and you'll be a polluter"

"So?"

"Polluters are evil people who don't care about anything but the fast buck"

"Well, for sure I don't want to be an evil person."

"Brother, I knew you'd choose the moral path"

"But still, I've only got a few barrels; and that won't hurt much."

"NO!"

"Why not, conscience, just a few barrels?"

"Because God will not like you. There is no room in Heaven for polluters"
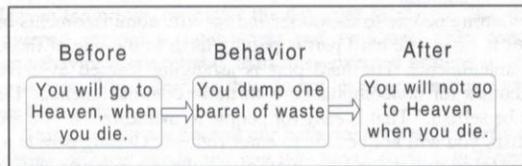
"Are you sure? No room for just one or two?"

"No room for even the little toe of a single polluter. Never!"

"That's heavy." (See Fig. 4.)

Figure 4

A potentially effective performance-management contingency. (Note that in Fig. 2, the delay between the behavior and the outcome (after condition) is indicated by a separate box; however, in this and subsequent diagrams, when the before condition is in future tense, then it seems best to indicate the delay in the before and after conditions themselves, rather than in a separate delay box.)

Before	Behavior	After
You will go to Heaven, when you die.	You dump one barrel of waste	You will not go to Heaven when you die.

That is another example of an indirect-acting, morality-based performance-management contingency. In this case it is a religious contingency, because it involves a spiritual or supernatural outcome. Religious contingencies are indirect acting, if they involve a delayed outcome, such as entrance to Heaven or Hell, excommunication, or reincarnation into a higher or lower caste. However, sometimes religious contingencies can be direct acting, such as an immediate lightning bolt from God or an immediate answer to a prayer for intercession. (Perhaps a more precise way to put it is that the relevant religious rules would describe indirect or direct-acting contingencies, regardless of the actual existence of those contingencies.) If the person's religious training is sufficient, control by religious rules will be effective because they usually specify outcomes that are both probable and sizeable, regardless of the delay of those outcomes.

The religious contingency in Fig. 4 is an analogue to a penalty contingency—exclusion from Heaven[1]. It could also be an analogue to a punishment contingency if the alternative to eternity in Heaven were an eternity in Hell and not just an eternity in limbo.

Other Examples of More-Rule Control

The hungry Yanomamo hunter goes into the Brazilian forest and bags a monkey. Does he skin it, cook it, and eat it on the spot? No, he takes it back to the village to share with the others. Why? Because he believes that, if he fails to share, the hunting god will take away his hunting skills. In some cultures, hunters even insist that everyone else get a piece of meat before they do, again avoiding the loss of their hunting skills. The rule is "Share it." The religious performance-management contingency is punishment by the loss of a reinforcer (the hunting skills) if the hunter eats the kill before sharing. The ineffective, natural punishment contingency is that, if the hunter eats his fill before returning to the village, there may not be an optimal distribution of the meat. This contingency may be ineffective because one instance of the hunter's eating more than his share of the meat will usually have only an infinitesimal effect on the community's health, though the hunter's consistent eating rather than sharing might result in community harm that is cumulatively significant, significantly aversive even in the eyes of the hungry hunter. Of course, that natural punishment contingency might be ineffective because the hunter is completely insensitive to the well being of his community members; but, as Skinner has pointed out, we should pity such a community that has not inculcated this level of sensitivity, for it shall not survive; in other words, such complete insensitivity to community needs is probably rare in surviving communities. (Obviously, wherever there is the need for a punishment contingency (either natural or performance-management), this means there is probably an effective, natural competing contingency that is reinforcing the undesirable behavior. In this case, the food reinforcement contingency would normally reinforce the hungry hunters immediate consumption of the monkey.

Closer to home, consider the Ten Commandments, for instance: *Thou shalt not covet thy neighbor's wife.* The implicit performance-management contingency is: *If you commit adultery, you will encounter the wrath of God.* The ineffective natural contingency is that one instance of adultery will only infinitesimally harm the family and community, though an

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[1] The contingencies described in this article are generalized forms of moral and legal control; of course cultures vary in the specifics of moral control. The use of Heaven and Hell in religious rules comes from Judeo-Christian traditions; other traditions have other supernatural outcomes, such as reincarnation.

accumulation of many such instance will cause serious harm. The rule is: *Do not endanger the stability of the community by committing hanky-panky.* The contingency is punishment by the wrath of God.

Legal Vs. Moral Control

Usually, legal control works well, as long as someone is around to observe the behavior and impose the contingency. But often no one is looking—for example, midnight polluters, or solitary hunters, or married people with roving eyes. In such cases, moral or ethical control is crucial. Therefore, society needs to arrange for individuals to observe their own behavior and apply the punishment and avoidance contingencies (perhaps automatically). That way society can cause people to follow the rules for behaving in the best interests of society, even when no one is looking.

As we have seen, sometimes moral control works when legal control fails. But the reverse also applies. Sometimes legal control works when moral control fails:

> "Fellow citizens, you have a moral obligation to your country to preserve our scarce resources during these times of crisis. Therefore, to preserve our oil supplies, I ask that you not exceed 55 mph."
>
> Lots of luck.
>
> "Fellow citizens, we have a new law in this great land of ours. Anyone caught exceeding 55 mph will get a traffic ticket. Collect a few of those tickets, and you'll need to dust off your walking shoes, good buddy."
>
> Another example:
>
> "Fellow citizens, you have a moral obligation to your babies and toddlers under four to secure them in an infant or child restraint seat, when driving."
>
> "Well, I meant to. Be reasonable, I drive carefully. And besides, who are you to tell me what to do; I know what's best for my child, do not I?"
>
> "Here ye, here ye, fellow citizens. It is now a law of the land that all children under the age of four must be buckled into an infant or child restraint seat."

If society cannot observe the behavior or its outcomes, it has no choice but to use moral control. For example, impure thoughts are not illegal, just immoral. If society can observe the behavior and cares about the outcome, it uses legal control. For example, letting your parking meter expire will not cause you to go to confession; but it might cost you a buck or two. If society can sometimes observe the undesirable behavior and sometimes not, it often uses both moral and legal control. For example, stealing may send you both to the confessional and jail.

The Costs and Benefits of Moral Control

Moral control is hard to establish and maintain. For example, to establish and maintain moral control, the Jewish culture needs the Old Testament and the Christian culture needs both the Old and New Testaments. These cultures also need the continuous efforts of the rabbis with their synagogues and the priests and ministers with their churches.

Religion battles eternally with harmful direct-acting contingencies—direct-acting contingencies that will destroy the temple of our bodies—(e.g., drugs of a rapidly increasing variety, from nicotine, through alcohol, and on to cocaine). Religion battles eternally to prevent the powerful from exploiting the powerless (except when a representative of religion has been bought by the powerful, then religion's function reverses).

Moral control is hard and costly to establish, hard and costly to maintain, and often fails. However, when no one else is looking but you and your conscience[2] (or you and your God), moral control earns its keep, even though it is often less than optimally effective. The world would be in an even greater mess if we did not have these moral contingencies.

For moral control to work, society must have established a special, learned aversive condition—the thought of the wrath of one's God or the thought of the wrath of one's parents. And those thoughts must be aversive, even when no one is looking; such an effective aversive condition is hard to establish and hard to maintain.

Getting people to memorize the specific commandments or rules is easy. The hard part is putting teeth in the bite of those commandments. The hard part is arranging learned aversive outcomes for noncompliance with those commandments. "Do not be selfish." That is easy for people to memorize. If you are selfish, you will not be able to enter Heaven. Getting people to accept that rule is the hard part, especially when being selfish generates so many sizable and probable reinforcers.

However, it is sometimes easier to establish legal control, because it is easy to establish the fear of legal outcomes as learned aversive conditions: "Steal this, buster, and we're throwing your rear in jail." Children need not go to Sunday school for six years to establish the possibility of going to jail as an aversive condition. And the parents need not go to church the rest of their lives to maintain that possibility of going to jail as an aversive condition. As long as jail is a highly probable outcome, rules involving it will control behavior well. Of course, it all falls apart when jail is improbable.

Yet, there is a trade off. True, it takes most of the efforts of organized religion to establish and maintain our sensitivity to the reinforcing and aversive values of religious outcomes. But

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[2] I beg for poetic license in my use of "conscience" by which I only mean self-observation, self-evaluation, and rule control.

all it takes is God or our conscience to monitor compliance with those moral rules, once society has established a conscience or a belief in God. And we need not pay taxes to support God or our conscience (though we must financially support religion's efforts to maintain our sensitivity to the reinforcers and aversive conditions associated with religious moral rules).

Furthermore, we do pay heavy taxes to support the police and the judges. Also it may not cost us much to establish the thought of jail as an aversive condition, but the jails and prisons themselves add a heavy tax burden. By contrast, we do not have to pay taxes for the maintenance of Heaven and Hell; we just have to support religion's efforts to establish and maintain our belief in those afterlife possibilities.

The Aversive Basis of Moral and Legal Control

Why Do We Need Hell To Have Moral Control?

Why are not the promises of Heaven enough to produce moral behavior from believers? Why do we need the threat of Hell, as well? Why must aversive control play such a large role in our moral contingencies?

It greatly helps that religion invoke the threat of Hell. Here is the problem with using rule-governed analogs to reinforcement based on the promise of rewards in an afterlife (e.g., entrance into Heaven). We can always postpone that difficult walk on the razor's edge that leads to Heaven. We can always sin today and struggle up the straight, narrow, and steep road to Heaven tomorrow, or maybe the day after tomorrow. But rule-governed analogs to punishment and avoidance often control our behavior more reliably than rule-governed analogs to reinforcement. Why? Because they do not let us procrastinate away our lives in sin.

This rule will not control our behavior very well: *Perform a lifetime of good deeds and you will spend eternity in Heaven.* Why not? Because the statement of that rule does not make any one instance of noncompliance a sufficiently aversive condition. It allows us to cop out and procrastinate. It allows us to say, "I am too busy to perform any good deeds right now, but I will perform them when I get time." This is an ineffective rule-governed analog to reinforcement by the presentation of a reinforcer. The ineffectiveness of this rule is most apparent when we do a molecular analysis, when we look at the implications of this rule for any single instance of doing one good deed, rather than at the molar aggregate of many good deeds. While performing a lifetime of good deeds certainly has a supernatural outcome sizeable enough to function as a powerful reinforcer, performing a single good deed probably will not. (See Fig. 5.)

And what about this rule? *Commit a single mortal sin, and you will spend eternity burning in Hell.* Unlike the previous rule, the statement of that rule does make noncompliance a sufficiently aversive condition (for believers). Therefore, this is an effective rule-governed analog to punishment. (See Fig. 6.)

Figure 5
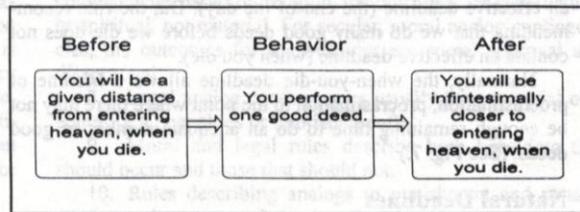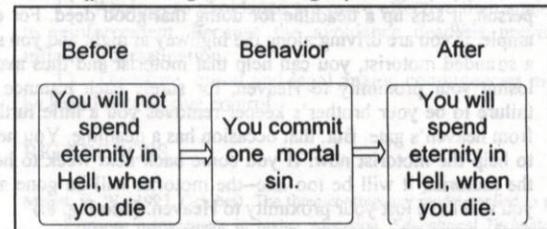*An ineffective, rule-governed analog to reinforcement by the presentation of a reinforcer*

Figure 6
An effective rule-governed analog to punishment

What Is The Role of Heaven in Moral Control?

You might say however, moral control is not all that aversive. People think of Heaven as an afterlife rich with reinforcers. I agree that Heaven, rich with reinforcers, can be crucial to religious moral control but not because Heaven is the end result of procrastination-tolerant reinforcement contingencies.

Then what role does Heaven play in supporting our moral behavior? Heaven gives us something to lose. If you do too many evil deeds (sins of commission), you will not get the reinforcers of Heaven (a rule-governed analog to punishment by the prevention of the presentation of reinforcers). And if you fail to do enough good deeds (sins of omission), you also will not get the reinforcers of Heaven (a rule-governed analog to avoidance of the loss of reinforcers).

With analogues to avoidance, come procrastination battling deadlines. For example, at one time, parents instructed their children to perform the following prayer: "If I should die before I wake, I pray the Lord my soul to take." The parents said or implied something like this: "Say your prayers before you go to bed (deadline), so you will avoid harm to your soul, should you die before you awake."

A similar precautionary rule might be: "Do a good deeds every day to ensure the salvation of your soul, because you never know when you may die." (In this case, the deadline is the end of the day, by which time you should have performed your good deed.) But this is similar to the analogue to rein-

forcement contingency I discussed earlier; so why would this analogue to avoidance contingency control behavior when the simple instruction to perform many good deeds (analogue to reinforcement) would not? Because the daily-deed rule contains an effective deadline (the end of the day). But the rule recommending that we do many good deeds before we die does not contain an effective deadline (when you die).

Normally, the when-you-die deadline allows a lifetime of procrastination, procrastination to the point where there may not be enough remaining time to do an adequate number of good deeds. (See Fig. 7.)

Natural Deadlines

Deadlines that fight procrastination may also be established in other ways. When an occasion for a good deed is presented to a person, it sets up a deadline for doing that good deed. For example, if you are driving along the highway at night and you see a stranded motorist, you can help that motorist and thus avoid losing your proximity to Heaven, for surely each instance of failure to be your brother's keeper removes you a little further from heaven's gate. But, that occasion has a deadline. You need to help the motorist now. If you come back next week to help the motorist, it will be too late--the motorist will be gone and you will have lost your proximity to Heaven. (See Fig. 8.)

Figure 7

An effective, rule-governed analog to avoidance of the loss of the opportunity for a reinforcer. (Note that, only for the moment, are you avoiding the loss of the opportunity to enter Heaven. Performing one good deed does not provide a perpetual guarantee for Heaven's entrance. The later commitment of a sin or the failure to do a good deed on another day can also void your entrance to Heaven. Also, note that the time before the deadline functions as an S^D, a stimulus condition in the presence of which a behavioral contingency is in effect. Although, we need deadlines for avoidance contingencies, for punishment contingencies, a deadline for the occurrence of the behavior is usually not needed.)
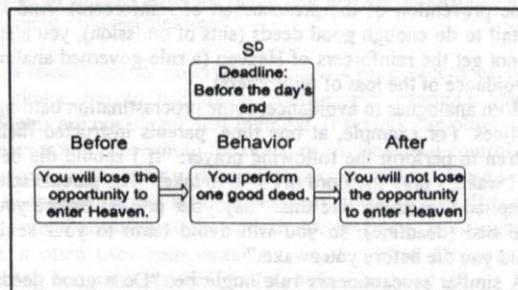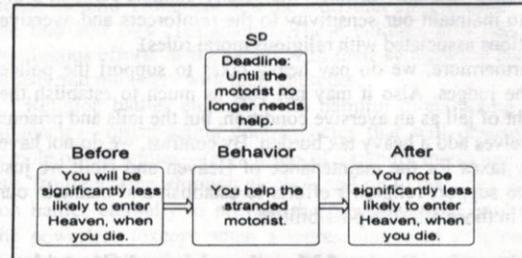
Figure 8

An effective, rule-governed analog to avoidance of the loss of the opportunity for a reinforcer.

In sum, moral rules control sins of commission (committing bad deeds), when they are stated as analogs to punishment. And they control sins of omission (omitting or failing to do good deeds), when they are stated as analogs to avoidance. This suggests that moral control is exclusively, or almost exclusively, aversive control. In the case of religion, that aversive control uses rule-governed analogs to punishment and avoidance. Hell (or something like it) is the aversive condition to be presented, and Heaven (or something like it) is the paradise to be lost.[3]

When Does Moral and Legal Control Fail?

As I said before, if we did not have moral and legal control, our world would be in an even bigger mess than it is now. But

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[3]However, some argue that once you are saved, once you accept Jesus Christ into your heart, you are going to Heaven, automatically. Perhaps, but surely, only if accepting Jesus Christ means that you stop sinning and dedicate yourself to a life of good deeds. In other words, how do we know you have truly accepted Jesus? We know people not simply by their words, but also by their deeds. To accept Jesus Christ into your heart means you walk the walk; you do not just talk the talk. If you claim to accept Jesus but continue in extremely sinful ways, surely Heaven's gates would not open for you. Heaven is so difficult to access that Jesus felt compelled to warn that the burden of a sack of gold across your back will keep you from passing through Heaven's gate more surely than the burden of the hump on the back of a camel will prevent it from passing through a needle. Again, it seems like Heaven is entered only by those who live a righteous life, not by those who merely say they have accepted Jesus Christ. There is also the more predestinationist Christian view that states that Jesus died to save us from our sins, that whether or not we sin, it has been preordained that we either will or will not enter to Heaven. However, if you sin, in spite of what Jesus has done for you, you are a disappointment, even though you may have been predestined to sin and be a disappointment. And it might be that this knowledge that you will be a disappointment also sets up analog avoidance and punishment contingencies that are part of the predestinationist system that prevents you from sinning.

one reason we are now in such a mess is that moral and legal control often fail. Why do these control systems fail? Often, for legal rules, the penalty for each act is too improbable (for example, you probably will not be caught speeding during the next minute). Often, with religious rules, the penalty for each act is too small. For example, "Surely one small sin of commission or omission won't matter that much in the eyes of a forgiving Jesus." Also, we are adept at rationalizing exemptions from religious and moral rules: "It says we're not supposed to kill, but God didn't mean we should do away with the death penalty for hideous crimes."

SUMMARY

1. Immoral behavior and illegal behavior do not differ fundamentally. Both usually harm society.

2. Society must add both moral and legal contingencies to counteract the natural contingencies of reinforcement and punishment that support immoral and illegal behavior.

3. Both moral and legal contingencies are usually indirect-acting analog contingencies; therefore, they control behavior only when described as moral and legal rules.

4. Though immoral and illegal behaviors do not differ fundamentally, in practice, it is harder to observe some behaviors than others.

5. Generally, society adds moral analog contingencies to control behavior that is harder to observe and legal analog contingencies to control behavior that is easier to observe. Therefore, behavior we call immoral is usually harder to observe, and behavior we call illegal is usually easier to observe.

6. We often combine moral and legal contingencies, when we can sometimes observe and sometimes not observe the same behavior.

7. Moral analog contingencies usually have outcomes that do not materially affect the behavior. For moral analog contingencies based on religion, the outcomes are supernatural or spiritual, not material. For secular, moral analog contingencies, the outcomes for the behavior are social approval and disapproval.

8. Legal analog contingencies usually have material outcomes (e.g., penalties or imprisonment).

9. Moral and legal rules describe both behaviors that should occur and those that should not.

10. Rules describing analogs to punishment and penalty contingencies suppress behaviors that should not occur.

11. Rules describing analogs to avoidance support behaviors that should occur.

12. Analogs to avoidance are more effective than analogs to reinforcement, because the avoidance deadline prevents infinite procrastination.

13. Therefore, moral and legal analog contingencies must be based on aversive control.

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Morality as a System of Rule-Governed Behavior and Empathy

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From the present behavior-analytic approach, moral behavior has certain exclusive characteristics that make it different from other social behaviors: (a) behavior is intentional or deliberate; (b) behavior is perceived, named, or thought of as "right" or "good" by the agent and has no obvious or apparent direct beneficial consequences for that person; and (c) behavior is governed by verbal rules. This paper addresses some of the main problems with the traditional cognitive-developmental approaches. The case is made that by identifying and studying the different forms (or structural dimensions) of rules and their varied functions, controlling relations, and the various processes involved in the derivation or transfer of new rules, it is possible effectively to address some paradoxical questions regarding moral actions. One basic question emerges: What maintains behaviors denoting "self-sacrifice" or "altruism," where no obvious direct contingencies for the actor appear to be controlling these kinds of behavior? Empathy is discussed as an establishing operation derived from aversive controlling histories and determined both biologically and contextually.

The Present Behavior-Analytic Approach

Morality involves both reasoning and acting. It refers to the quality of acting in accord with standards of "good" conduct while possessing a system of verbal behavior (rules) about "right" and "wrong" conduct. Paradoxically, both Kant and Hobbes influence the present approach. Like Kant, it is stressed here that moral behavior has certain exclusive characteristics: (a) it is behavior that is marked by intentional or deliberate actions (e.g., saving someone's life by accidentally pushing the person away from a passing car, is not perceived as a moral act), and (b) it is behavior that is perceived, named, or thought of as right or good by the agent and may have no obvious beneficial consequences for the moral agent. To Hobbes on the other hand, definitions of moral concepts such as right and wrong, good and bad, involving justice or injustice, are assigned by their historical and current context.

The present view is in agreement with existing behavior-analytic views (e.g., Gewirtz & Peláez-Nogueras, 1991; Goldiamond, 1968; Hayes, Gifford, & Hayes, 1998; Malott, 1988; Newman, Reinecke, & Kurtz, 1996; Schoenfeld, 1993; Skinner 1953). As Skinner (1953, p. 324) has noted: "The behavior of an individual is usually called good or right insofar as it reinforces other members of the group and bad or wrong insofar as it is aversive." The main emphasis, however, in this paper is the analysis of moral behavior and moral judgments based on verbal behavior and embedded in a system of rule-governed behavior (see also Peláez-Nogueras & Gewirtz, 1995). In this paper, the analysis of forms (or dimensions) of rules (Peláez & Moreno, 1998) receives special attention.

Problems with Cognitive-Developmental Approaches and Hypothetical Moral Dilemmas

Cognitive-developmental theorists like Piaget (1932) and Kohlberg (1969, 1981, 1984; Kohlberg & Diessner, 1991) have stressed that understanding children's moral behavior, requires the understanding of their reasoning about moral dilemmas (e.g., DeVries, Reese-Learned, & Morgan, 1991). Cognitive theories of moral development, however, often fail to adequately consider both moral action per se and the relevant contingencies. For the most part, the cognitivists have concentrated on judgments and expressed reasons about hypothetical dilemmas. This reliance on the moral reasoning and judgment of the child based on hypothetical situations has limited an understanding of the proximal causes and influences of moral action, particularly in cases where verbal judgments and reasoning are neither precursors, nor concomitants, of overt moral action. Unlike cognitive-developmentalists, our behavior-analytic position holds that moral reasoning (as verbal behavior) and moral conduct can result from independent processes, different setting factors, and sets of contingencies. No simple contingent relation or association is taken to exist between saying and doing and, in a given context, any correspondence between stating a rule and following it, must result from training. Knowing or being able to verbalize a rule does not necessarily predict that the subject will behave consistently with that rule (Reese, 1989). Thus, a systematic focus on environmental/controlling variables is essential, and requires the functional analysis of behavior in past and present contexts.

Morality as a System of Rule-Governed Behavior

Moral actions are often governed by self-stated verbal rules, which can preclude the agent from experiencing the direct contingencies. One question central to this paper concerns the relationship between the different types of rules (e.g., implicit, self-generated) and altruistic behaviors. As contextual factors or establishing operations, how do rules affect overt moral actions such as those involved in altruistic or self-sacrificial behaviors (i.e., to give one's life for a cause or to save others)?

If one accepts the notion of morality as a system of rule-governed behavior, then one should identify and study the

different forms of rules in addition to their different functions and controlling relations. The various learning processes involved have special significance. As we have discussed elsewhere (Peláez-Nogueras & Gewirtz, 1995), moral behavior is rule-governed, and can result from diverse developmental learning processes ranging from generalized imitation to derived stimulus relations, the transfer of learning and transformation of rule function. Identifying these different processes in the generation or derivation of new rules, in particular transfer and transformation of function, enables the effective addressing of some paradoxical questions related to moral actions.

Paradoxical behaviors include those of self-sacrifice, martyrdom, and altruism, where no obvious direct-acting contingencies for the agent appear to be controlling his/her moral behavior. Actually, the consequences are rather obvious for the behaving agent. The following excerpts, from a news report in August of this year concerning events in Palestine, shed light on the deep rooted concept of martyrdom (shahada) in Islamic thought and its effect on the "intifada." In this excerpt, one notices the religious devotion of suicide bombers before embarking on their attacks, the joy demonstrated by children who express their will to become martyrs and the customary jubilation of mothers when learning of their son's deaths. The Palestinian press repeatedly exalts the religious status of the martyr (shahid) for the sake of Allah. The rules describing the rewards earned by the *shahid* according to Islamic tradition are as follows:

> From the moment his first drop of blood spills, he feels no pain. He is absolved of all his sins; he sees his seat in heaven; he is spared the tortures of the grave; he is spared the horrors of the Day of Judgment; he is married to a 'black-eyed' [woman]; he can vouch for 70 of his family members to enter Paradise and, he earns the crown of glory whose precious stone is worth all of this world. (Miami Herald, August, 2001)

Experts in religious studies explain that pursuit of martyrdom is virtuous in Islam, but the community and its leaders see not every soul as capable. The individual striving for martyrdom must have a high degree of faith, religious determination, devotion and loyalty to supreme religious and national causes. The religious concept of martyrdom is evident in statements attributed by the media to relatives of shahids, and to the shahids themselves. Al-Hotari, who committed a suicide bombing in Tel-Aviv, left a note that expressed faith in the divine reward that awaited him: "*There is nothing greater than being martyred for the sake of Allah, on the land of Palestine. Cry in joy, my mother, hand out candy, my father and brothers, for your son awaits a wedding with the black-eyed in heaven.*"

The above illustration points to the question of interest: How do rules (whether explicitly or implicitly provided, self-derived or stated by others) acquire control over this type of moral action? I address this issue next.

The Forms and Function of Rules

Rule-governance can accommodate the description of complex behavior determined by a class of antecedent verbal stimuli. This implies a strong relationship between moral behavior and language. Rigorous analysis of rules requires identifying the contingencies involved in terms of stimulus *form* and response *function*. The two sets of contingencies to be analyzed are those described in the rule (SD--R--SR) and those contingencies affecting the listener's moral behavior (Sd--R--SR); the latter contingencies resulting from direct moral acts.

Any change in the components of a contingency, as well as in the contextual variables within which the contingencies operate, could alter the function of the moral rule. Moral behavior, like other complex human behavior, can only be meaningfully understood when analyzed as an *interdependent* unit. Co-dependent relationships exist between the contingencies described in the rule and the moral behavior of the listener. A rule's function can only be identified in terms of how the behavior of the speaker affects the behavior of the listener. In the same way, the behavior of the listener can only be understood with reference to the speaker-provided rule. For a complete analysis of the different types of rules based strictly on the function of rule-governed behavior, it is important to read the classification of rule-governed behavior by Zettle and Hayes (1982). These authors outlined a theory of behavior based on compliance, tracking, and augmenting types of rule-governed behavior. Subsequently, their analysis was extended to moral behavior using the same principles (Hayes, et al., 1998).

The present paper, however, emphasizes the form (structure) of rules based on conventional language meaning and its potential relation to response function. That is, in studying moral action one must analyze *both* the structure (form or morphology) and the function of the rules. This is because the probability of the listener (the moral agent) behaving according to a rule depends upon: (a) the verbal contingencies described in the speaker's rule (form); (b) the context within which the rule is provided; and (c) the listener's history with that or other comparable rules and contingencies. The essence of rule-governed behavior cannot be fully understood by examining the relation between implicit behavior and present contingencies. Instead, the analysis should focus on the relationship between implicit behavior and non-present contingencies, via the analysis of linguistic behavior (Ribes, 1987, p. 326). In other words, linguistic behavior is instrumental in creating and transforming the linguistic contingencies described in the rules as functional or direct-acting events.

A moral rule results from, or is acquired through: (a) diverse developmental learning processes ranging from generalized imitation to derived-stimulus relations, or (b) transfer and transformation of rule function. When rules are followed, listeners may have abstracted or learned the rule from: (a) their direct experience with the contingency arrangements; (b) transfer of learning and rule generalization; or (c) through the formation of stimulus-equivalence or derived-

relational frames. The discussion will now turn to the four dimensions identified in rules and their potential effects on moral behavior.

Originally proposed by Peláez and Moreno (1998), this taxonomy of rules takes into account dimensions of an entire contingency arrangement (the three-term-contingency) verbally described in the rule and considers how such contingencies may relate to behavior. This classification is made according to *four* dimensions of rules: (a) explicitness; (b) accuracy; (c) complexity; and (d) source. Figure 1 shows 16 possible types of rules resulting from combinations among the four different dimensions (i.e., explicit, inaccurate, higher complexity, and self-provided). Deconstructing rules into their constitutive elements and examining each of these dimensions individually allows a more precise moral-developmental approach. Such efficiency could be crucial in future experiments that feature the manipulation of different rules to determine their impact on rule-governed moral behavior and its developmental progression.

Figure 1. A combined taxonomy resulting in 16 types of rules. Each cell in the table represents a case of rules conformed to the basic four dimensions identified.

		Lower	Complexity	Higher	Complexity
		Accurate	Inaccurate	Accurate	Inaccurate
Explicit	Provided by others	a	b	c	d
	Self-provided	e	f	g	h
Implicit	Provided by others	i	j	k	l
	Self-provided	m	n	o	p

Explicit Versus Implicit Moral Rules

In terms of form, moral rules can be classified as *explicit* or *implicit*. Explicit moral rules *verbally describe* the entire three-term contingency arrangement (Sd–R–Sr). In this type of rule, specified consequences necessarily follow specified behavior in the presence of specified discriminative stimuli. Implicit moral rules, on the other hand, are incomplete in that the discriminative stimuli, context, or the consequence for the moral behavior in question are not explicitly stated in the rule; they are only implied. For example, in the rules: "You shall not steal" or "Killing is wrong," the punishing contingency is only implied. The rule may control behavior because the subject has a history of contingencies for obeying a class of "shall not" rules. This implicit rule may operate very explicitly in a particular individual who has an extensive history with commands and contingencies imposed by the rule giver. Hence, in rule-governance analyses, the various sources of control must be identified.

For the most part, correspondence between rule-governed behavior of the listener and the rule provided by the speaker will be determined by the explicitness of the contingencies described in the rule. The more explicit the elements of the

contingency expressed in the rule, the more direct the influence upon the listener's behavior, particularly in novel situations (Martínez, González, Ortíz, & Carrillo, in press; Trigo, 1998). Recent experimental attempts to organize the present taxonomy with children showed that youngsters who have extensive experience with the situation and the operating contingencies responded very poorly when the rule provided was too explicit and burdened with unnecessary information (Herrera, Peláez, Reyes, Figueroa, & Salas, 2001).

The direct influence of explicit rules in novel situations involving moral acts, may be due to the conventional verbal stimuli involved. Contemporary behavior-analytic approaches, such as relational frame, are beginning to appreciate the significance of listener behavior (Hayes et. al., 1998 p. 254). Studying the behavior of the listener and the development of sets of derived stimulus relations that have linguistic *conventional meaning* to speakers and listeners will enhance our behavior-analytical approaches.

Accurate-Versus-False Moral Rules

Another important dimension of rules is the *accuracy* of the rules in terms of their correspondence with the direct-acting contingencies. An accurate rule specifies contingencies that, when followed, match or correspond to certain event-consequence relationships in the environment. An inaccurate (false or incongruent) rule describes contingencies that do not correspond to those encountered in the environment or describes remote (or improbable) contingencies that cannot be falsified or verified (e.g., "if you behave immorally you will go to hell"). The moral agent adjusts well to the rules when the contingencies described correspond to the programmed (direct-acting) contingencies (Degrandpre & Buskist, 1991). But when a lack of correspondence exists between the descriptions and the actual contingencies, following the rules becomes increasingly problematic and unlikely.

Research shows that rule-governed behavior may be sensitive (or adjusted) to the prescribed contingencies only to the extent that these prescriptions are consistent, or correspond, with the programmed contingencies. Following inaccurate rules may desensitize the listener to the effects of direct programmed contingencies (e.g., Buskist & Miller, 1986; Catania, Matthews & Shimoff, 1982). On the other hand, the behavior of the listener, may eventually become insensitive to incongruent or inaccurate rules or instructions, which do not lead to reinforcement (Martinez & Ribes, 1996; Michel & Bernstein, 1991; Martinez & Peláez, 2000).

Lower-Versus-Higher Moral-Rule Complexity

Rule *complexity* refers to the number of dimensions of the antecedent verbal stimuli and their relations (Peláez & Moreno, 2000). A rule's lowest level of complexity specifies no conditionality, or conditions under which there are exceptions to the rule. For example, "I shall not kill another person under any conditions" represents an unequivocal rule with one possible interpretation. However, a moral rule of higher complexity specifies one dimension or condition under which

the rule applies, and another condition under which the rule does not apply. For example, "I shall not kill, except under the condition where my life is threatened." This rule specifies a higher level of conditionality. Furthermore, a rule of an even higher level of complexity might involve a second- or third–higher-order class relation. A rule that specifies a second level of conditionality would be: "It is okay to kill the person who is threatening my life, unless my attempting to kill that person would endanger the life of innocents bystanders." In this case, the higher-order relation includes a second-order stimulus control of rules and associates one relation to multiple dimensions. Thus, language modalities and context or conditions are of significance.

Rule complexity, based on levels of conditionality, could be organized hierarchically. The system is *inclusionary*, which means that each level of complexity constitutes part of the next level. A multiple relation includes several dimensions and a second-order relation includes at least one first-order relation. Potentially unlimited complexity exists in such rules, as it is always possible to add more dimensions and more relations.

Correspondence between levels of rule complexity and verbally-controlled behavior is likely. In other words, less complex rule-governed behavior more often corresponds to simpler rules. In turn, more complex behavior adjusts to higher-level contingency arrangements. For the listener to adjust or respond according to a specified rule, his or her optimal performance should ultimately correspond to the complexity of the verbal stimuli controlling his or her behavior. A concept similar to maximizing may help clarify this point. Provided two or more rules, an individual may follow the rule with higher probability of reinforcement. However, increased behavioral complexity may occur even in those cases characterized by changes solely in response function, but in which response topography remains the same. Therefore, in analyzing behavioral complexity, one should keep in mind the interdependence between the form of stimuli and response *function*. This is because the probability of the listener following a rule would ultimately depend on the context within which the rule is provided, the listener's history with this context, or the listener's history with other similar rules. Furthermore, the listener's history of rule following may explain disparities in behavior among recipients of similar rules in comparable contexts.

Moral Rules Given by Others versus Self-Generated Rules

In cases of rules provided by others, the speaker (other than the listener) specifies, implicitly or explicitly, the criterion for the listener's behavior. In cases of self-provided rules (or self-instructions), the speaker and the listener are the same individual. Self-provided rules can be taught by others, self-generated, or abstracted by the subject from learning experiences. In the first case, although the moral rule is self-provided, it does not originate in the behavior of the subject (e.g., as a result of direct-acting contingencies in problem solving). Instead, the moral rules originate in the behavior of others. Rules taught by others are often learned via imitation

processes, including immediate, delayed and pervasive or generalized imitation (Gewirtz & Peláez-Nogueras, 1991; Peláez-Nogueras & Gewirtz, 1995). Self-generated rules appear to be derived or abstracted from other taught relations (i.e., through transitivity, combinatorial entailment or other processes).

In order to emit rule-corresponding behavior, the listener must acquire a receptive understanding of the contingencies described in the rule and be able to express the rule. When an individual can state or describe to others the orderliness of the environmental relations (the contingencies), we assume he or she "knows" the rule. This self-generated moral rule appears to develop at a later phase of language development, when the individual can verbally describe social interactions, derive the operating contingencies, and transform its functions to other relations.

When rules are provided by others, the speaker specifies the criterion for the listener's behavior, expecting the listener to adjust, conform, or respond according to rule descriptions (e.g., as in the mand). When rules are self-provided, whether taught by others or self-generated (derived), the individual's ability to verbalize the rule seems to interfere with his or her subsequent level of correct responding

Self-generated moral rules can derive from other existing moral rules through generalization, equivalence classes, transitivity, naming, or relational frames. Rules derived through these processes have the potential to be as effective in controlling behavior as verbal rules that have been directly shaped or learned through imitation. However, the processes accounting for the derivation of new rules awaits empirical validation. Thus far, researchers studying moral development have only shown that it is possible to teach young children how to instruct themselves to follow rules and to resist temptations (e.g., Mischel & Patterson, 1976).

The transmission of these "non-present complex contingent relations" can be achieved only through language, through processes such as derived stimulus relations, and transfer of learning. In this way, individuals may behave morally from the outset in accordance with rules that they have never before encountered. In transfer of function, novel classes or rearrangements of the components of an earlier moral rule come effectively to control a behavior, even when the individual has had no previous experience with the rule (Malott, 1989). Regardless of which of these processes is responsible for the emergence of the new self-derived rule and the transfer of its function, the important common feature among these processes is the notion that *linguistic knowledge* is instrumental in substituting and transforming the verbal contingencies into functional acts.

Developmental Sequences in Moral Patterns

Originally, in early moral development, the child's patterns of "moral" or prosocial behaviors appear to be shaped and maintained by avoidance of aversive social consequences (e.g., disapproval, removal of privileges, rejection, reprimand) as well as aversive nonsocial consequences (e.g., removal of material privileges or activities). This would be

equivalent to the punishment and obedience orientation, or the first stage within Kohlberg's preconventional morality level (Kohlberg, 1969).

At a later point in development, moral behaviors are established through prosocial experiences such as sharing, caring, helping, and cooperation. These responses are shaped and maintained by direct positive social reinforcement (e.g., approval, acceptance, praise, affection), and appear to be equivalent to those required in the "good boy" or "bad boy" orientation in the third stage proposed by Kohlberg (the conventional morality level).

The moral behavior of young children with limited verbal skills is originally established by direct shaping, modeling, and imitation processes including immediate, delayed and pervasive or generalized imitation (Peláez-Nogueras & Gewirtz, 1995). As the child's verbal behavioral repertoire becomes more complex, and his or her receptive and expressive language increases, the child's moral actions become more under the control of verbal rules given by adults. These rules describe indirect acting contingencies (or contingencies with delayed outcomes), relative to the control of direct reinforcing or punishing contingencies imposed by the speaker (e.g., when parents begin to lose control over their child's behavior because they are no longer available or present to deliver immediate consequences). Children are verbal before their verbalizations control their behavior, thus addressing the difference between stating a rule and following a rule is important.

First, the child's moral actions come under the control of rules given to him/her. *Second*, with an increase in expressive language repertoire, self-generated rules are derived or abstracted from other learned or derived rules (i.e., through transitivity, combinatorial entailment or other processes). It is my assumption that only after having acquired a receptive understanding of a rule and expressed an explicit rule, can the moral child emit *rule-corresponding* moral behavior. *Third*, when a child can describe to others the orderliness of the environmental relations and specify the ultimate contingencies, we may assume that he or she "knows" the rule. *Fourth*, in later adolescent development, capable of abstract thinking, moral rules come to control behavior for long periods, in different contexts, and without the individual directly experiencing the consequences of their actions.

In our analysis, we must distinguish between a child *complying* with a moral rule and a child *conforming* to a moral rule. Complying with rules means to follow and behave according to the rules within one's society or culture, or which form part of the child's repertoire of rules. Conforming to rules, on the other hand, means to behave consistently with the rule in the environment, but not being able to state or verbalize the rule (Verplanck, 1992).

As the child's verbal-behavioral repertoire increases, and repertoires of social referencing and perspective taking develop, he or she is able to discriminate between the immediate and the delayed, remote or long-term consequences of moral or immoral actions. The child begins to understand the feelings and emotions of others (as in the case of empathy). This is because he or she has learned to verbalize and predict the consequences of a given action; that is, *which* consequences pre-

vail in a particular setting, and *how*, *when* and by *whom* these aversive or reinforcing consequences would be applied, and has also learned perspective taking.

Empathy

Many mainstream developmental psychologists have treated empathy as an "intersubjective" experience (Thompson, 1994). Although empathy entails the affective, the cognitive, and the behavioral components, theorists vary in the emphasis they place on each. For example, the ethologists see empathy as a primitive experience of *affective* sharing that has its early origins in the playful exchanges shared by mother and offspring. The cognitivists conceive of empathy as revealing a child's capacity to interpret and respond to another's emotional expressions, as in social referencing (Gewirtz & Peláez-Nogueras, 1992; Thomson, 1994). It develops with the child's cognitive grasp of another's emotional perspective, and emerges much later in development when the child has already developed social referencing and role-taking skills.

From a behavior-analytic perspective, empathy may work as a setting event or establishing operation. It refers to a vicarious emotional response signaled by another's emotional cue and responses. Therefore, showing altruistic behavior, self-sacrifice behavior, or helping in the presence of another person's distress, often times is facilitated by empathy working as an establishing operation. For example, feeling empathy, which works like feeling hungry or feeling thirst, or feeling emotionally aroused, may enhance the value of reinforcers associated with behaving. Empathy is not only manifested in sympathetic behavior, but also may be manifested with behaviors denoting anger or behaviors denoting guilt in the presence of a distressed individual who is responding emotionally. In other words, empathy may increase the probabilities of altruistic behavior, but, on other occasions, may induce aggression. For example, it may appear as aggression towards an attacker, as when someone fights to defend another's rights. It may also appear as aggressive behavior towards a victim--as in the case of euthanasia. At other times, empathy may trigger self-deprecation or withdrawal from a given situation, as when a candidate for food in a prison or concentration camp may withdraw his opportunity to eat for the sake of another hungry or ill person.

The development of empathy is multifaceted and relates to the interpretation of the emotional signals of others (i.e., social referencing). It develops with the increasing understanding, through learning experiences, that the emotional cues of others are relevant and contextually determined. Due to the difficulty in distinguishing empathy from other emotions, its role as a motivational or setting factor has been neglected in behavior analysis. It is crucial that empathy is understood in terms of its emotional aspect and not become equivalent to the prosocial or moral responses it is presumed to motivate, that is, to serve as a setting factor. For example, pressing the lever faster is not equivalent or the same as the rat being hungry.

Empathy may have various functions for human motivation and behavior: it can provide the basis for care giving of offspring, marital fidelity, group cohesion, and moral compliance as well as for helping, sharing, cooperative, and altruistic behavior. Each of these functions, as an establishing operation, has different biological inclusive fitness. The capacity for empathy may be a deeply rooted, biologically based, feature of human motivation (Hoffman, 1981a, 1981b). Even so, a biologically based empathic capacity might be specific to particular individuals, in particular contexts of specific relationships, in different cultures, and at different stages of our lives. The role of empathy, as an establishing operation, could derive from aversive controlling histories. In this way, empathy is both biologically and contextually determined.

CONCLUSION

Morality results from a system of rule-governed behavior, which conforms to the moral practices and values of the family and the culture. The effectiveness of moral rules in controlling moral behavior is based on how explicitly the rule describes the moral situation, the efficacy of contingencies and contextual variables involved, and how such a rule relates to other currently controlling moral rules. For future behavior-analytic research in moral development, it is important to focus on the different types of rules, the contextual motivational variables such as empathy, and the various learning processes mentioned here.

We have started a program of research focusing on investigating the taxonomy of rules from a developmental perspective. Its purpose is to determine their hierarchical organization in learning. Our assumption is that the taxonomy of rules offered here, ranging from explicit to implicit, lower level to higher level of complexity, accurate to inaccurate, imposed by others to self-generated, can organize moral behavior by increased level of difficulty, compliance, and adjustment to the contingencies they describe.

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The Intellectual Dismissal of John B. Watson

Notes on a Dark Cloud in the History of the Psychological Sciences

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John B. Watson's substantial interest in development, his theoretical views about it, and his extensive research into developmental phenomena have been ignored much to the loss of the discipline. This paper briefly indicates the extent of the body that work and suggests that despite changes in developmental methods and theory in the intervening decades, Watson's contributions retain their significance for and relevance to contemporary literature on development.

"Psychology is that division of natural science which takes human activity and conduct as its subject matter." So wrote John B. Watson in the opening sentence of his much discussed and seldom read book, *Psychology from the Standpoint of a Behaviorist* (1919a, p.1). It is of greater interest to the readership of this publication, specializing in the study of human development, that he concluded the book with the following paragraph.

> Our personality is thus the result of what we start with and what we have lived through. It is the 'reaction mass' as a whole. The largest component of the mass if we are normal consists of clean-cut and definite habit systems, instincts which have yielded to social control and emotions which have been tempered and modified by the hard knocks received in the school of reality. (1919a, p.420).

Since the time the concluding paragraph was published, the meanings of many words in the language have shifted in part, through the ubiquitous practice of "operational definitions" in psychology, and in part through the natural dynamic processes of language. For that reason, the paragraph may require some translation. "Reaction mass" was a characteristic phrase of Watson, meaning the way the whole integrated individual responds to environmental events; "habit system" is any established pattern of behavior in a given context; and "instinct" is unlearned disposition to respond in a given way in a given context.

To many readers of these lines, this concluding statement will seem self-evident; however, it was by no means so at the time it was written. It does not propose an original insight because others, mostly philosophers, had previously noted it, but it was important in its introduction into psychology, which had been floundering as a fledgling science.

Psychology had been floundering, unable to move beyond its established practices to find its place amongst the sciences.

So far, it had been unable to find the sound foundation to claim its place amongst the natural sciences. It is this foundation that John B. Watson provided for psychology, and it is to this legacy that all who read these lines are indebted.

Watson, in harmony with the prevailing intellectual climate of the times, believed in the supremacy of science, and trusted the prospect of curing our social and individual ills by the use of scientific knowledge. Indeed, he thought *only* scientific knowledge could deliver us from our sufferings. He wrote:

> ...behaviorism ought to be a science that prepares men and women for understanding the principles of their own behavior.... I wish I could picture for you what a rich and wonderful individual we should make of every healthy child if only we could let it shape itself properly, and then provide for it a universe in which it could exercise that organization. (1925, p. 303)

Now we can, of course, question the feasibility of this ambition regarding, for example, how we would provide the universe for the individual so that he or she could exercise his or her 'organization', that is, the sum of all habit systems. Nevertheless, with this belief, Watson set about to discover as much as he could so as to help to build this science of behavior. His main scientific interest was in infant behavior and development because, as he saw it, this is the stage where an individual would be 'shaped.' The much cited, and much distorted 'little Albert' research needs no description here. Unfortunately, not only that research, but also Watson's view on development and how it can be planned and influenced has been distorted. In fact, in the latter case, the argument against Watson was bolstered by a fraudulent–yes, fraudulent– quotation. His position was ridiculed by quoting the by now infamous sentence:

> Give me a dozen healthy infants, well-formed, and my own specified world to bring them up in and I'll guarantee to take any one at random and train him to become any type of specialist I might select–doctor, lawyer, artist, merchant-chief, and yes, even beggar man and thief regardless of his talents, penchants, tendencies, abilities, and race of his ancestors. (1925, p. 104)

But the very next sentence is "I am going beyond my facts and I admit it, but so have the advocates of the contrary and they have been doing it for many thousands of years." (1925, p. 104). To take a quotation from its context and distorting its meaning is disgraceful practice, unacceptable in any respect-

able scholarship; writer after writer repeating the same misleading quotation in publication after publication--obviously without going to the original--is abhorrent to good scholarship. It is, moreover, sad comment that Watson's extensive research into developmental phenomena, both during his academic life and, even less recognized, after his departure from the academy, has remained almost unknown. This short paper is not the place to give a full description of that forgotten work. So, let a few examples suffice.

Mary Cover Jones (1974) has described Watson's supervision of her research, which was later published in Jones (1924) and Jones and Jones (1928). Concerning Watson's work with her there is an aside which should, I think, serve as an admirable object lesson to all senior readers of these lines: "He would not co-author my papers because, as he said, his name was well known, and I still had my reputation to make. He wanted me to have all the recognition. In his book *Behaviorism*, he wrote: 'While I spent considerable time as consultant and helped plan her work, Mrs. Mary Cover Jones conducted all of the experiments and wrote up all of the results [Watson, 1924, p.132].' " (1974, p. 583). It should be noted that this work was conducted several years after Watson's departure from academic life. Few other examples, listed here only by their titles, will serve to indicate Watson's uninterrupted involvement in the study of development: "Emotional reactions and psychological experimentation" (1917, with J. J. B. Morgan), "A schematic outline of the emotions" (1919),"What the nursery has to say about instincts" (1925a), "Experimental studies in the growth of the emotions" (1925b), and, of course, the book, "Psychological care of infant and child" (1928, with R. R. Rayner). This is by no means an exhaustive list.

Concerning the book (1928) cited above the following is, perhaps, worth noting. It seems that almost the only point remembered about its contents is Watson's advice to parents that they should "never hug or kiss [their children] never let them sit on your lap." (1928, p. 81) It seems not known, however, that Watson changed his position about that. In 1936 he wrote, "*Psychological Care of Infant and Child* was another book [the other was *Behaviorism*] I feel sorry about...because I did not know enough to write the book I wanted to write." (1928, p. 280, with R. R. Rayner)

One question, amongst many others, that should be asked is why Watson's work was so shabbily treated by the psychological community. The answers to this are many, and they must await a longer treatise to examine the issues. There are, however, two amongst them that can briefly be stated. First, as Watson himself readily noted, the roots of behaviorism go further back than the time he wrote about it. Lloyd Morgan's book, *Introduction to Comparative Psychology* (1894) set the beginning of 'animal psychology' which necessarily required research into behavior.

In addition, Pavlov's discoveries of conditioning, Darwin's theory of evolution indicating continuity across species, and Thorndike's theory of learning based on research into animal behavior, gave rise to the Zeitgeist for the emergence of behaviorism. Watson, in advocating behaviorism, took a further step and argued that to be a natural science psychology must adhere to the principles that are basic to all sciences, including the

principle that what is studied must be public, in other words observable by more than one person. It followed from this that the science of psychology should study behavior *and nothing else*. It was this exclusionary edict that alienated many established psychologists of the time because it clearly implied that the enormous volumes of the work of many decades, based on reports of introspection, could not be included in such a science; it would have to be discarded or, at best, ignored. This implication was at the root of the ground swell of attacks on Watson's views. The second reason is less commendatory. Watson's departure from the academy apparently left the field free to take his ideas, research propositions, etc. and use them without citing Watson. As a result his more promising ideas came to be known as other writers' and Watson's work became consigned to history books as if they had no contemporary relevance in the decades immediately following his departure and, in some instances, continuing to the present.

Some of the assertions in this short article will seem strong to the reader who will, quite justifiably, wish to see persuasive evidence supporting them. I ask not that the reader take as given the undocumented statements, but only that she or he suspend judgment until a comprehensive account of the tragedy of the life and works of John B. Watson, this harshly treated genius of 20th century becomes–I hope in the reasonably near future–available.

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Watson's Social Philosophy and Activism

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Many critics of John B. Watson have seen him as a sycophant of the industrial-military-political power complex, or even an evil would-be dictator. Actually, however, his recommendations regarding the uses of psychology--perhaps especially in the area of behavioral development--were well-intentioned, reasonable, and socially sound. He sought to better the human condition by implementing empirical facts and theoretical speculations in such specific areas as child rearing and penology, and he opposed social beliefs in the genetic inheritance of, for example, social-class rights and racial inferiority and superiority. His stand on these specific issues is described and evaluated in this paper.

My aim in this paper is to correct some misinterpretations of John B. Watson's behaviorism and social recommendations, which dealt mostly with behavioral development. Watson had strong opinions on implications of behaviorism for social practices, but relatively little research evidence was available when he was writing and therefore his recommendations were based more on his social philosophy and theoretical speculation than on the scientific aspect of behaviorism. Many of the recommendations were controversial at the time and remained controversial (Horowitz, 1992). However, contrary to the critics, Watson's social philosophy was attractive in many ways. His social philosophy and some of the recommendations it led to are discussed in the next four sections, followed by discussion of the extent to which he was a social activist.

Watson's Social Philosophy

Many of Watson's critics have seen him as an evil would-be dictator or, more often, a sycophant of the capitalistic industrial-military-political power complex. In support of the latter allegation, some critics have said that Watson abandoned behaviorism for business. For example, Matson (1964) said that Watson saw the purpose of behaviorism as manipulating and controlling persons for the benefit of the business system. Matson added parenthetically, "Significantly, Watson himself retired from academic life a few years after founding his movement, in order to embark upon a highly successful career as an advertising executive" (p. 56). McConnell (1985) echoed the latter point, saying that Watson "deserted psychology for advertising" (p. 684). The truth is that Watson did not leave academic life *in order to* enter advertising and did not desert psychology; he tried to bring his psychology into advertising, which he entered because he could not get a full-time job in academia after he was forced to resign from Johns Hopkins

University in 1920, as a consequence of his love affair with his graduate student, Rosalie Rayner.

Another example comes from Cohen, who said "one of the least attractive arguments" in Watson's *Psychology from the Standpoint of a Behaviorist* was that "society and business could make use of psychology to become more efficient and to control people more effectively" (Cohen, 1979, p. 169). Cohen did not cite a page, however page eight in the 1919 edition is relevant. There, Watson implied that scientific psychology could help people in business, the military, politics, and religion "understand and control" other people's behavior, but he also said that behaviorism could help keep people "honest and sane," "out of crime," and "on a high and well-regulated plane" of "social and ethical life." Watson made the same points in a longer discussion in the revised editions (Watson, 1924, 1929, pp. 3-9). For example, he said that one application of psychology should be to bring up children so they "can live, move and have their being in society, and not have their own individuality swamped and flattened out by society". (p. 3)

Actually, neither Watson nor any other psychologist at that time had enough research evidence to provide much scientific help for the efforts of society, business, and so on, to become more efficient or to control people more effectively. Watson admitted the scarcity of research evidence available when he wrote his most applied book *Psychological Care of Infant and Child* (Watson, 1928b, e.g., pp. 4, 12) and his more scholarly book *Behaviorism* (Watson, 1924-1925, 1925a, 1930, passim; see also Watson, 1936). In light of this scarcity, his specific recommendations seem to have been based largely on his social philosophy, yet the recommendations were well intentioned, reasonable, and socially sound. His social philosophy included opposition to beliefs in the genetic inheritance of social-class rights, racial inferiority and superiority, and so on, and it also included a desire to improve the human condition by means of improvements in such areas as child-rearing and penology (e.g., Watson, 1928b, e.g., pp. 9-10, 63; 1930, chap. 5, pp. 185-186). His views in these specific areas are discussed in the next three sections.

Watson's Views on Environment and Heredity

Extreme Environmentalism

Behaviorism was, from the beginning, an optimistic and humane position, attributing psychological development primarily to environmental forces rather than hereditary potentials. Relevant to this point, Watson said:

Give me a dozen healthy infants, well-formed, and my own speci-
fied world to bring them up in and I'll guarantee to take anyone at
random and train him to become any type of specialist I might se-
lect--into a doctor, lawyer, artist, merchant-chief and, yes, even
into beggar-man and thief, regardless of his talents, penchants,
tendencies, abilities, vocations and race of his ancestors. (1924-
1925, p. 76)

This is one of his best-known statements, as Logue (1994, p.
118) mentioned, and it has often been quoted (Heidbreder,
1933/1961, p. 248; Schoenfeld, 1983/1999, p. 193); in fact,
Watson himself often repeated it, with minor variations
(1925a, p. 82; 1925b, p. 302; 1926, p. 10; 1930, p. 104).

In another paper, I characterized the statement as "glori-
ously optimistic" because it held hope for everyone regardless
of genetic inheritance (Reese, 1986, p. 164). In this respect, it
was more humane then the opposite view, which attributes
disordered development entirely to heredity. However, some
critics have called it "infamous" ("Developmental Psychol-
ogy," 1999; Morris, Todd, & Midgley, 1993, p. 114; Rosales-
Ruiz & Baer, 1996, p. 160), "notorious" (Hirsch, 1992, p. 42),
a "hyperbole" (Jones, 1975, p. 184), and a "crowning exam-
ple" of Watson's "frequent, outrageous, and controversial in-
terpretations of behaviorism" (Logue, 1994, p. 118).

Even if these epithets were somehow justified, the state-
ment was evidently not a "careless remark," as Skinner (1974,
p. 221) called it, unless Watson was monumentally careless. In
his autobiography, Watson (1936) criticized the book he made
the statement in, but he criticized the book because he wrote it
hastily and because insufficient scientific evidence was avail-
able. He did not see any flaw in the extreme environmental-
ism. Also, he evidently did not include the "dozen infants"
statement in this self-criticism, given that he often repeated it
and given the following paraphrase he gave (Watson, 1928c):

The cry of the behaviorist is, "Give me the baby and my world to
bring it up in and I'll make it crawl and walk; I'll make it climb
and use its hands in constructing buildings of stone or wood; I'll
make it a thief, a gunman, or a dope fiend. The possibility of
shaping in any direction is almost endless." (pp. 35-36)

Watson also made the point in popular works (e.g., Wat-
son, 1927a, 1927b, 1928b) and elsewhere (Watson & Watson,
1921). What he was saying is that people do not inherit much
genetically, and they do not need to because of the powerful
influence of learning.

Not Extreme Enough?

In the 1920s, Kuo Zing-Yang criticized Watson for not being
more of an environmentalist. Kuo said, "There are only one
and a half true behaviorists in this world; Watson is the half. I
am the only true behaviorist" (quoted in Chin & Chin, 1969, p.
8). His objection was that Watson gave heredity a role. Kuo
(1921) gave it none at the time, but he eventually rejected both
sides of the nature-nurture dichotomy (1967/1976, p. 108,
chap. 5) and gave heredity a role in determining what he
called "behavioral potentials" (Kuo, 1967/1976, p. 125).

Kuo's objection about Watson was exaggerated because al-
though Watson did give heredity a role, he did not gave it
enough of a role to make him a hereditarian. For example, in
Psychology from the Standpoint of a Behaviorist, he gave he-
redity a role only for people "whose heredity is questionable"
(1919, p. 7). For people with presumably "unquestionable"
heredity, the smallness of the role is indicated by, for example,
Watson's limiting instincts to relatively simple reflexes, or
unconditioned responses (e.g., Watson, 1925a & 1930, chap.
5; 1927a, 1927b), his saying that the human infant "is born a
squirming mass without instincts, without patterned behavior.
...We are environmental products" (Watson, 1928a, p. 967),
his "dozen infants" statement, and his "cry of the behaviorist."

Nevertheless, Watson usually did not attribute omnipo-
tence to the environment, as implied in his "dozen infants"
statement when he specified that the infants must be *healthy*
and *well-formed* and in his "cry of the behaviorist", when he
said they can be shaped in *almost* endless directions. He im-
plied the same point elsewhere, in saying that *almost* nothing
is given genetically and that *practically* all of development
reflects the environment (Watson, 1927a), but elsewhere he
did not limit the shaping to *almost* any direction (1927b;
1928b, p. 15).

Conclusion

In another paper, I called Watson's position "overly optimis-
tic" because heredity has more influence than he recognized
(Reese, 1986, p. 164). However, although genetic effects of
various kinds have been conclusively demonstrated, heredi-
tarian research has not produced conclusive demonstrations of
genetic inheritance of complex behaviors such as language or
complex mental phenomena such as reasoning and problem
solving. The claims of hereditarians are exaggerated because
the theoretical equations they use to estimate heritability coef-
ficients are based on some assumptions that are known to be
false for human populations (e.g., Hirsch, 1997; Joseph,
2000). For example, humans are assumed to mate at random,
even though random mating would yield incestuous and ho-
mosexual couplings, as well as more productive couplings.
Another example is that error of measurement is assumed to
be negligible and equal across generations, the sexes, age
groups, racial groups, twins versus nontwins, and so forth; this
assumption is known to be false. The behaviorists' approach
therefore should be--and generally is--to accept a genetic basis
only if research designed to identify effects of social or other
environmental variables does not reveal any effects (e.g.,
Stemmer, 1990).

Watson's Views of Child-Rearing

Watson's basic view of child-rearing was consistent with the
view of later behavior analysts such as Risley and Baer
(1973), who said that *develop* is an active rather than passive
verb. In others words, parents, teachers, and others must ac-
tively shape the child's behaviors rather than wait and see what
develops from within (Watson, 1927b). Despite the reason-
ableness of this basic premise, some of Watson's child-rearing

recommendations seemed outrageous to many parents and critics at the time (Cohen, 1979, p. 213; see Watson, 1928b, pp. 69-70), and they are still outrageous--or, better, *outré*--according to modern Western norms and normatives (respectively the *is* and *ought* rules). For example, Watson theorized that if parents are effusively affectionate with their children, the children will be "spoiled" (e.g., 1927a, p. 44; 1928b, chap. 3). A recommendation that followed from this position was that when children come in for breakfast, their parents might shake hands with them but must not kiss or hug them. Also, parents should not allow their children to learn to use crying as a controlling mechanism. They should not respond to the late-night crying of even young infants, because responding will only teach an infant to expect the late-night feeding. They should not respond to their infant's apparently unmotivated crying at other times, but if they want to make sure that the infant is not in physical danger such as being bitten by a pet or a rat, they should use a periscope to peek around the door to reassure themselves.

These recommendations, and Watson's less controversial ones, followed from the scant research evidence available at the time, from theoretical principles in his behaviorism, and, very importantly, from his social philosophy. These sources were not outrageous. First, evidence is evidence, and although moralists and politicians often find some of it outrageous, no scientist should consider it outrageous. Second, his theory was evidently not outrageous, given that the basic principles are still accepted in modern behaviorism and even in cognitive psychology. Finally, his social philosophy was based on an optimistic view of the potential of the environment to improve human nature, personality, and abilities, and, despite the unattractiveness of some of his recommendations, his underlying philosophy was attractive. Even when disordered development has a biogenetic origin, an optimal environment can produce full development up to any biogenetically determined limit (Baer, 1970).

Watson's Views on Penology

Joravsky (1989) said that Watson "preached manipulative values to justify society's winners, and corrective labor institutions and 'etherization' to certify the criminal and hopelessly insane losers" (p. 149). He also said that Watson advocated "'etherization' for the 'hopelessly insane' and...forced labor for other defectives" (pp. 494-495). Joravsky exaggerated the case. Watson indeed made some recommendations that were extreme by standards in his own era as well as modern standards, but he made other recommendations that were quite reasonable then and now. Examples are given in the following paragraphs.

On the positive side, Watson recommended eliminating from child-rearing and "criminology" the use of punishment, "in the old biblical sense" of beating, retaliation, and expiation (Watson, 1928b, p. 63). He also believed that criminal behavior results from bad child-rearing--criminals are either mentally sick or socially untrained--and he recommended that these two types of criminals be treated differently. The goals for mentally sick criminals should be:

Seeing that the insane or psychopathic individuals are made well if possible, and if not, placed in well run (non-political) institutions where no harm can come to them and where they can do no harm to other members of the group. In other words, the fate of those individuals should be in medical (psychiatric) hands. (1925a, p. 146; 1930, p. 185; footnote index omitted).

On the negative side, he added that the only reasons "hopelessly insane" people should not be "etherized" are "exaggerated sentiment and medieval religious mandates."

Again on the positive side, he recommended that the goal for socially untrained criminals should be to provide the needed training, which should be "kept in the hands of the behaviorists" (1925a, p. 147; 1930, p. 186). The goal, based on his environmentalism, was:

Seeing that the socially untrained individuals, not insane or psychopathological, are placed where they can be trained, sent to school, made to learn, regardless of their age, a trade, made to put on culture [i.e., learn culture], and made to become social. Furthermore, during this period they should be placed where they cannot harm other members of the group. Such education and training may take ten to fifteen years or even longer. (1925a, p. 146; 1930, p. 185)

On the negative side, his recommendation for cases, where the education and training were unsuccessful, was immoral by modern standards. He said:

Failing to put on the training necessary to fit them to enter society again, they should be restrained always, and made to earn their daily bread, in vast manufacturing and agricultural institutions, from which escape is impossible.

One problem with this recommendation is that Watson did not specify how many years the education and training should continue before the attempt was given up and the criminal was consigned to permanent institutionalization and forced labor. Another problem is that he recommended *hard* labor: He initially said that the forced labor should consist of "strenuous work sixteen hours per day" (1924-1925, p. 137) and although he later said "strenuous work twelve hours per day" (1925a, p. 146; 1930, p. 186), even 12 hours a day was excessive at that time. According to the Labor Research Department (1928), the normal work day for United States labor in 1924-1926 was about 8.3 hours long (my computation from p. 68), 6 days a week (p. 72). On the positive side, though, Watson said:

Naturally, no human being--criminal or otherwise--should be deprived of air, sunshine, food, exercise and other physiological factors necessary to optimum living conditions. (1925a, p. 146; 1930, p. 186)

Watson said that the alternative to these recommendations is continuation of "the present retaliation or punishment theory (a religious theory) of handling the deviant" (1924-1925, p. 137; 1925a, p. 147; 1930, p. 186). The modern theory of penology includes schooling and training, but not the rest of

Watson's social philosophy, and in principle it rejects the re-taliation and punishment theories--although media reports indicate that retaliation and punishment are widely used in penal practice and that their use is widely approved in the Western world. And of course, capital punishment is a version of etherisation. Even so, capital punishment is in effect retalia-tive or punitive and therefore is not consistent with Watson's recommendation, which was practical. Also, Watson recom-mended etherization only for the hopelessly insane; but in the modern principle, the hopelessly insane are excluded from capital punishment.

Watson's Social Activism

Two kinds of people are called "activists"--those who fight at the barricades and those who only recommend this action. In the realm of social reform, Watson was the second kind of activist, but he is rumored to have been an activist of the first kind on a small, personal scale. Two of the rumors--about child-rearing and free love--are discussed herein.

Rumors about Child-Rearing

The authors of both book-length biographies of Watson (Buckley, 1989; Cohen, 1979) mentioned rumors that he and his second wife, Rosalie Rayner, implemented some of his recommendations in raising their own children.

Watson (1930, pp. 226-230) indeed described an unsuc-cessful attempt to use conditioning principles to teach lan-guage to Billy, who was the first-born child of his second mar-riage, but he reported more observational data about Billy--and the second-born child, Jimmie--than about interventions (pp. 189-193, 226-230).

Some of the rumors included sexual innuendoes, but no hard evidence exists because, according to rumor, Watson burned all of the correspondence, notes, and manuscripts in his possession when he was about 80-years-old (Buckley, p. 182; Cohen did not mention this rumor). However, Watson (1930) himself dropped a hint regarding Billy and Jimmie. He said that Billy "had always been allowed to be present and even welcomed into the family love-making," but, at about two years of age, he began to exhibit jealous behavior whenever he saw Watson and Rayner smooch (p. 189). After a month-long separation from his parents at three years of age, Billy exhib-ited no jealousy when Watson and Rayner "made love in front of him," even though "this test was repeated for four days" (p. 190). Watson said that when Jimmie was 11-months-old, he also exhibited no jealousy when he saw Watson and Rayner embracing or making love, even though the latter test was repeated "again and again" (pp. 190-191).

Rumors about Free Love

Watson has been rumored to have been an activist of the first kind in implementing his views on free love. His adulterous affair with Rosalie Rayner directly supports this rumor, and it is less directly supported by rumors that he rather dispassion-ately made physiological recordings during sex acts with her,

that he attended "fairly wild" parties with his friend Sheperd Franz, and that he engaged in sexual misconduct at the New School for Social Research, where he taught part-time for a while after his forced resignation from Johns Hopkins Univer-sity.

Views on free love. The truth about Watson's views on free love is that he explicitly rejected not only "free love" but also, as he said, "free anything" (Watson, 1930, p. 303).

Physiological recordings. The truth about the alleged physiological recordings is that although Watson did have an adulterous affair with Rosalie Rayner, no evidence exists to support the rumor about physiological sex recordings involv-ing her or anybody else. McConnell (1985) discussed the al-leged recordings, based on "my own quite fallible memory of what Deke Coleman [a former friend and colleague of Wat-son's in the advertising business] had told me" in 1958 (p. 686). McConnell's comments contain some evidence that his memory was indeed quite fallible. One example mentioned earlier is his saying that Watson "deserted psychology for ad-vertising" (p. 684). McConnell said that Coleman's story was supported by a report (Magoun, 1981) about some of the in-struments that Watson allegedly used; however, the chain of evidence connecting Watson to the instruments was haphazard and had too many missing links to be taken seriously. Fur-thermore, the claim that the instruments were intended for use in sex research seems to be a guess; in any case, the claim is not clearly supported by a photograph of the instruments that Magoun published (1981, Fig. 1., p. 372). Finally, even if the instruments were Watson's and were intended for use in sex research, no evidence exists that he actually used them that way.

Wild parties. McConnell (1985) attributed the story about wild parties to a letter written by Boring to Broadhurst in 1962, but McConnell did not specify what actually hap-pened at these parties. McConnell said:

> According to Boring, Franz and Watson were friends and used to have parties together, some of them apparently of a fairly wild nature. Boring writes that, "Franz was doing his work on localization of tactual sensations on undraped artist's models at this time, and there was the story of an outdoor picnic at which undraped artist's models were present and scattered through the woods." Just what the models were doing in the woods Boring does not specify, but he does comment that the party..."sounds like something I once read in *Quo Vadis*." (McConnell, pp. 686-687)

Note that, in spite of the reference to *Quo Vadis*, Boring did not actually say that any sexual activity occurred at the picnic and he did not even say that Watson was at the picnic.

Sexual misconduct at the New School. Coon (1994, p. 63) said that Watson taught part-time at The New School for Social Research until "he was dismissed for 'sexual mis-

conduct'" in 1926. For documentation, she cited Buckley (1989, pp. 154-160), who said:

> Although the circumstances remain a mystery, Charles Beard's daughter recounted that in 1926 Watson's appointment was terminated at The New School because of "sexual misconduct." The charges were never specified or made public, but they were sufficiently serious to make Watson the first faculty member to be terminated since the founding of the New School. (Buckley, p. 160)

Comments by Charles Beard's daughter were presumably considered to be relevant because Charles Beard was a co-founder of The New School in 1917 (Buckley, p. 154) or 1918 (Kraus, 1999).

As documentation, Buckley cited the following statement by Rutkoff and Scott (1986):

> In 1926 the school terminated the appointment of psychologist John Watson for what Beard's daughter later described as "sexual misconduct." Watson seems to have left with few regrets, and the charge of misconduct was never specified or made public. (p. 23)

For documentation, Rutkoff and Scott (p. 260) cited a 1978 interview with Beard's daughter, Meriam Beard Vagts. She was 77-years-old at the time of the interview, which casts some doubt on her memory for an event alleged to have happened more than 50 years earlier.

SUMMARY

Watson strongly advocated social reform but was not a hands-on activist in any reform movement. The principles he advocated were based largely on his social philosophy, which was admirable in many ways, and on his behavioral theory, which was coherent and reasonable. Also, the principles were supported by the scant amount of relevant research evidence that was available at the time. Thus, his views were neither absurd nor evil, even though some of his recommendations were extreme by then-current as well as modern standards. Genetic variables undoubtedly have a greater influence on many behaviors than Watson believed; but nevertheless, environmental interventions can modify or even block the expression of a genotype, whether the phenotype that would be expressed without the intervention is socially desirable or undesirable.

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J. B. Watson's Approach to Learning:

Why Pavlov? Why Not Thorndike?

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Throughout his writing career, John B. Watson showed a continuing partiality for Pavlov's stimulus-substitution and avoidance/escape paradigm. For his diverse conceptual and practical goals, including his infant training conception ("...give me a dozen healthy infants... "), Thorndike's response learning-by-consequences paradigm seemed to fit Watson's variegated needs far better. In this analysis, the attempt is made to propose solutions to the mystery of why Thorndike's learning model was ignored so completely, while Pavlov's model was favored so consistently, by Watson.

In his early writings, John Broadus Watson (1914, 1919) gave to *instincts* a key role. As in the writings of his contemporaries (e.g., McDougall, 1908), instincts accounted for much behavior termed unlearned. In his subsequent writing, Watson (1919) conceived that instincts/reflexes are present early in life, but that they are soon displaced by learned habits. Subsequently, Watson (1924, 1925) concluded that what theretofore had been called instincts were the products of learning. Watson wrote of this conclusion at around the time that influential authors, like the sociologist L. L. Bernard (1924), concluded that what were theretofore termed instinctive behaviors were the direct outcomes of learning processes.

When dealing with, or explaining, diverse learning phenomena, Watson followed existing conventions. For learning, he emphasized particularly the functionalist principles of contiguity, frequency, and recency. Perhaps because it emphasized the contiguity and frequency principles to which he was partial in his approach to learning, and was clearly scientific, Watson had seemed to show some continuing partiality for the *learning* model that he often emphasized during the same years as he presented an early version of his dramatically-new orientation to the psychology of the period, that he termed *behaviorism*: it was the Pavlovian (1928) reflex-based paradigm termed *respondent (classical)* conditioning. Indeed, following the Yerkes and Morgulis (1909) *Psychological Bulletin* article that introduced Pavlovian learning into the American psychological literature, Watson's 1915 presidential address to the American Psychological Association (published in the 1916 *Psychological Review*) was influential in establishing the Pavlovian learning paradigm in American psychology. Moreover, Watson continued his emphasis on the Pavlovian conditioning paradigm to the end: In the last versions of his book *Behaviorism* (1924, 1925, 1930), Watson devotes Chapter
II, How to Study Human Behavior, almost entirely to the utility

of Pavlov's stimulus-substitution conditioning paradigm in the study of human behavior. He did not emphasize the learning paradigms of functionalism to which he was earlier exposed as a graduate student at Chicago.

Given that Watson's approach increasingly involved environmental causation, in contrast to an early emphasis on instinctive behavior (1914), it is not surprising that he singled-out *learning qua training* as *the* environmental-behavior interaction process underlying the critical behavior changes required by, and validating, the extreme environmentalism as a central tenet of his behaviorism at its peak (Watson & Watson, 1928). What is surprising in retrospect is that Watson often appeared to have based his central behavior-change engine upon such a limited learning model as Pavlov's, that is superimposed on a short litany of sometimes-atypical reflexes, and that emphasizes at its foundation only stimulus substitution (the CS for the US). While Pavlov (1928) had credited Thorndike with being the first to show a bold accurate approach to the immense task of objective research on animal learning, Watson's emphasis nearly-always appeared to be on the Pavlovian learning paradigm that necessarily ignores the important and wide-ranging role of behavior change, in which it is the consequences associated with the training instances that comprise the bulk of the learning resulting from the systematic interaction of the individual's behavior with features of the environment.

One well-known example from his later writings, but one that only very-generally (and perhaps incorrectly) is taken to imply an instrumental-learning model comes from one of Watson's (1924 - 1925) later writings in which his, by then extreme, environmentalism peaked:

...give me a dozen healthy infants, well-formed, and my own specified world to bring them up in and I'll guarantee to take any one at random and train him to become any type of specialist I might select: doctor, lawyer, artist, merchant-chief and, yes, even beggar- man and thief, regardless of his talents, penchants, tendencies, abilities, vocations, and the race of his ancestors. I am going beyond my facts and I admit it, but so have the advocates of the contrary...Please note that when this experiment is made I am to be allowed to specify the way the children are to be brought up and the type of world they have to live in. (p. 10)

In the frame outlined, the focus of the present analysis is to speculate about why Watson consistently placed so much of his emphasis upon Pavlovian stimulus-substitution, avoidance, and

escape learning when, in hindsight, the Thorndikian-learning model based on the consequences of behavior has seemed more appropriate for much of Watson's later emphasis on training, as exemplified in the paragraph quoted above. The Thorndikian-learning conception had been available in the literature for two decades when Watson had begun his long-term emphasis on the generic use of the Pavlovian-conditioning model.

Thorndike's Learning Model: The Importance of the Consequence Produced by Behavior

In 1898, in the *Psychological Review Monograph Series*, E. L. Thorndike published a report of his doctoral work, which he had carried out at Columbia University under the mentorship of J. M. Cattell, after having taken his Masters degree at Harvard under William James. The monograph was titled *Animal Intelligence: An Experimental Study of the Associative Processes in Animals*. In that monograph, Thorndike was the first experimental researcher to report how nonreflexive, nonspecies-specific, trial-controlled animal-behavior latency could be modified by its consequences. Small hungry domestic animals (cats for the most part) were individually placed in barred chambers (puzzle boxes). If the animal exhibited the behavior leading to escape (pulling a string, stepping on a platform, and/or reaching through the bars and turning a latch on the door front), the puzzle box's door would open and the animal could exit and have access to and/or eat the food placed outside the door as well as to what the freedom implied. Thorndike's conclusion was that, in the course of its exploration of the puzzle box, the animal exhibited the first instance of an appropriate behavior unit by chance and that, across trials, escape latencies would decrease systematically.

Thorndike attributed this performance-improvement pattern to the strengthening of an S-R connection between events in the box: i.e., the stimulus, and the gross behavior that opened the door permitting exit; i.e., the response. In a later work titled *Animal Intelligence*, Thorndike (1911) developed further his 1898 notions and emphasized, in detail, his conception of the *Law of Effect*. Thus, the systematic strengthening of the S-R resulted from the *Law of Effect*, which held that the greater the contingent (satisfaction) the greater the strengthening, and the greater the contingent (dissatisfaction, discomfort), the greater the weakening, of the bond. Satisfaction is denoted by a state the organism does nothing to avoid and often to attain or preserve (e.g., escape, food for the hungry animal), while dissatisfaction / annoyance is denoted by a state that the organism typically avoids or escapes (e.g., electric shock). From his early work, Thorndike concluded that learning was gradual, did not involve consciousness or mental processes like thought, and involved the same processes across mammalian species. Early on, Thorndike's conception of the basis of learning emphasized both exercise (frequency of learning occasions such as pairings) and effect (positive or negative consequences); in the late 1920s, Thorndike came to emphasize primarily consequences. (Within Skinner's conception of the *Empirical Law of Effect*, reinforcers and punishers came to displace satisfaction and dissatisfaction as the engine of change in responses, i.e., learning,

resulting from consequences.)

Thorndike's functionalism, his controlled research on animal behavior, his emphasis on the homogeneity of learning processes across mammalian species (including the human), and the absence in Thorndike's research of an emphasis on consciousness, are all factors that should have made much of Thorndike's work, and the results of that work, of interest and of importance to Watson. After all, Watson did emerge from a context of functionalism at Chicago, and Thorndike was a functionalist who worked, not on introspectively-derived human consciousness, but on animal behavior that denoted learning. Furthermore, Thorndike had written a positive and sympathetic review of Watson's Manifesto of Behaviorism (1913). In addition, Dr. Peter Harzem (personal communication, May 27, 1999), who is preparing a biography of J. B. Watson, has informed me that, in the Watson Archive at the Johns Hopkins University, he had located a friendly letter that Watson wrote in 1919, inviting Thorndike to collaborate in an important research project. In this context, it appears unlikely that Watson would have ignored Thorndike's learning-by-consequences paradigm out of pettiness or pique and our search for bases of Watson ignoring Thorndike's seemingly more-appropriate learning model for Pavlov's must continue.

Some Possible Bases for Watson's Ignoring the Thorndikian-Learning Paradigm

There are a number of plausible speculative *negative* reasons why, singly or in some combination, Thorndike's learning paradigm might not have appealed to Watson. *First*, there is a hedonistic mentalism implicit in Thorndike's Law of Effect. *Second*, the "satisfying" and "dissatisfying" states of affairs of Thorndike's Law of Effect were unparsimonius (especially so for a contiguity theorist like Watson), if not also teleological in the special sense of the future influence of current behavior consequences. *Finally*, for Watson, the proper level of analysis for psychological science was "molecular" rather than "molar", as the terms, first advanced by Broad, were applied by E. C. Tolman (1928) in connection with his molar "purposive behavior." The term molecular implied smaller units of analysis, with behaviors being parts of reflexes or small movements like those of muscles or glands, and being explained by under-the skin factors. The term molar implied larger units of analysis and larger behavior units like actions that were organized in functional contexts with environmental objects and events.

For Watson, molecular (rather than molar) units were requisites for proper scientific description and explanation. With Watson's strong molecular bias, the clearly-molar units of the Thorndike paradigm could have been seen by Watson as unscientific. For the very same reason, the proper molecular units of Pavlov's paradigm, the absence in Pavlov's work of hedonism, mentalism, or teleology, and the presence there of parsimony and an emphasis on contiguity and frequency, all would have recommended Pavlov's learning paradigm to Watson as proper science. These criteria may have trumped the likely utility of Thorndike's response learning-by-consequences paradigm for Watson's radical purpose of ignoring genotype while manipu-

lating environmental factors through training-qua-learning processes. In this frame, it is interesting to note that the post-Watson waves of behavioristic theories, primarily of learning processes, have emphasized molar, rather than molecular, units of analysis. These include the approaches of Tolman, Hull, and Skinner.

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John B. Watson's Advice on Child Rearing

Some Historical Context

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John B. Watson (1878-1958) wrote for the popular press on a number of topics during the 1920s, often in the area of child rearing. His facts about child development were not disputed, but his advice was often criticized. This paper examines the validity of the criticism by reviewing what Watson advised in the context of his day. We found that, although most of his advice was consistent with child rearing practices then and now (e.g., about child misbehavior, positive supports, prevention), some of it was not (e.g., about love and affection), although this latter advice was not unique to his day. We then comment on several sources of variance in this advice.

During the 1920s, John B. Watson (1878-1958), the founder of behaviorism, wrote for both the academic and the popular press, and gave public lectures on a variety of topics. Among the topics he addressed in the popular press was child rearing, where he provided advice about raising happy, well-adjusted children, equipped to function in modern society. Although his popular writings and lectures were generally acclaimed for making the new science of behavior accessible to the public, his child-rearing advice has often been criticized. The criticism, though, is problematic on two accounts. First, it is often based on selected aspects of his advice. Second, it is usually predicated on the norms of a more modern era, not those of Watson's day. In order to assess the validity of this criticism, we undertook a review of what Watson actually advised, the criticisms of his advice at the time, and how his advice compared and contrasted with other advice of the day. We speculate, as well, on some sources of the discrepancies in the advice found in that era.

Historical Context

Watson left academic psychology in 1920 and began a second career as an advertising executive, in which he was highly successful. However, he continued to make important contributions to psychology as a science and a discipline, and he began writing for the popular press. Indeed, as a contributor to *Harper's*, *McCall's*, and *Cosmopolitan* magazines, he became America's first "pop" psychologist. Some of these articles addressed psychology proper, while others addressed social issues of the day, for instance, the role of women in then-modern

society (Watson, 1927d), the institution of marriage (Watson, 1929b), and of course child rearing.

Watson's first article on child rearing appeared in 1922 (Watson, 1922), his last one in 1929 (Watson, 1929a). In between, he published a series of six articles in *McCall's* (Watson, 1927a, 1927b, 1927c, 1928a, 1928b, 1928c) that -- with the assistance of his wife, Rosalie Rayner Watson – was expanded and published as their book, *Psychological Care of the Infant and Child* (Watson & Watson, 1928; on Watson's career, see Buckley, 1989; Cohen, 1979; Morris & Todd, 1999; Todd & Morris, 1994).

In the 1920s, Americans were looking to the new science of psychology and to studies in child development for advice about child rearing (Child Study Association, 1926; see Frank, 1962; Lomax, Kagan, & Rosenkrantz, 1978; Senn, 1975). Parenthood was increasingly viewed as a vocation that should be based on firm knowledge. Rather than relying on practices that came to them "naturally," parents began placing more emphasis on the application of scientific principles. They looked to science for innovative child-rearing methods, different from the previous generation's old-fashioned techniques (Stendler, 1950). Watson provided some of this advice for producing "children who would be able to cope with the realities of modern life" (Watson & Watson, 1928, p. 10). His primary message was that, within normal biological limits, children were made, not born, and that the responsibility for raising happy children fell squarely on their parents' shoulders. He was concerned with teaching parents how to produce a child "who finally enters manhood so bulwarked with stable work and emotional habits that no adversity can quite overwhelm him" (Watson & Watson, 1928, p. 10).

Watson's Child Rearing Advice

In *Psychological Care of the Infant and Child*, Watson and Watson (1928) described child rearing as a science, a science based in part on Watson's research on infant development at Johns Hopkins University (e.g., Watson, 1925a, 1925b, 1925c; Watson & Rayner, 1920); albeit not a science yet fully developed. Nonetheless, on the basis of this science, Watson offered child rearing advice on several topics, among them negative emotional reactions, misbehavior, love and affection, and daily routines.

Negative emotional reactions. Watson's advice about negative emotional reactions was that they be kept to a minimum by maintaining a positive, non-threatening home environment. As for children's fears, parents should, for example, protect their children from sudden, loud sounds and objects that could hurt them, but at the same time, they should not shelter children from normal noises. More proactively, he recommended establishing some common sense negative reactions to undesirable activity, such as reaching toward forbidden objects, but the number of these reactions was to be kept to a minimum. As for temper tantrums, Watson also emphasized prevention, advising parents to promote their children's independence at completing tasks that might otherwise cause tantrums, for instance, tasks related to bathing and dressing. Even then, Watson warned, children would still occasionally have tantrums, for no parent can control all the factors that produce them.

Misbehavior. On the topic of misbehavior, Watson again emphasized prevention. In particular, he advised parents to keep their children busy throughout the day, engaged in appropriate activities. Only when prevention was ineffective should punishment be used. But even then, punishment should be no more aversive than smartly rapping the child's fingers or hands with a pencil. Punishment was not generally advised.

Love and affection. In discussing love and affection, Watson made two points. First, love was not a broadly generalized instinctive pattern of behavior. In infants, it was a reaction that could only be brought about by one stimulus -- stroking the skin; later in development, associated stimuli would come to elicit this reaction. Second, love was a reaction that, if evoked too much or too often, would lead to overcoddling, which would later be manifest in adults who needed coddling. In addition, the excessive emotional attachment that overcoddling might engender could interfere with later marital adjustment. To guard against these outcomes, Watson and Watson (1928) advised the following:

> Let your behavior always be objective and kindly firm. Never hug and kiss them, never let them sit in your lap. If you must, kiss them once on the forehead when they say good night. Shake hands with them in the morning. Give them a pat on the head if they have made an extraordinarily good job of a difficult task. (pp. 81-82)

Also, to insure that children would be independent of any one adult's love and affection, parents should bring different nurses into their homes on a weekly basis. Comparable positive effects on children's independence might also be achieved by putting them in a fenced yard for large parts of the day. If parents wished to watch over their children on these latter occasions, they should do so inconspicuously. Children should be left to cope with and solve their own problems.

Daily routines. Watson especially emphasized the importance of establishing a daily routine. He acknowledged that no hard and fast rules were applicable to every family, but he did advise that a formal routine of daily activities could engender desirable habits, especially at bedtime, mealtime, and playtime (e.g., a half hour of quiet bedtime play). The importance of daily exercise and social contacts was also addressed. In general, Watson and Watson (1928) noted that daily routines provided children with the "nice habits, conventions, and customs" demanded by "polite society" (p. 113).

Criticisms of Watson's Advice

Although Watson's child-rearing advice was, in general, well received, his specific advice about love and affection often met with strong criticism, both then and now (Lomax et al., 1978, p. 131). In his own time, for instance, the Housewives' League was outraged. Its president, Mrs. Julian Heath, said that "Watson must be a very unhappy man to offer such ideas" (Cohen, 1979, p. 212). A woman attending one of Watson's public lectures said she was happy she had not heard of Watson's advice before raising her own children because she was then able to enjoy them (Cohen, 1979, p. 210). Pediatricians blamed Watson for an apparent increase in infant sleeping problems (Senn, 1975). Newspaper editorials referred to him as "subnormal" and "subhuman" (Cohen, 1979, p. 209). One columnist wrote that "the theorist should be 'backed against the wall and let him have it full force from the shoulder in plain speech that he is plainly wrong'" (quoted in Cohen, 1979, p. 212). When asked to assess Watson's influence on the study of children, the noted developmental psychologist, William Kessen, stated that "his impact on the field has been almost completely deleterious. His attitude toward children, his attitude toward parents in the psychological care of the child is, it seems to me, pathological" (Senn, 1975, p. 29).

In his critique of the mechanization of Western culture, Dell (1930) argued that Watson's child-rearing advice was factually in error, citing studies demonstrating that withholding parental affection can result in children's failure to grow and thrive. Moreover, according to Dell, Watson's advice was simply beside the point. Pychologically healthy and mature mothers did not engage in the neurotic, silly "love-tricks" Watson described. Mothers who were emotionally and sexually fulfilled did not misplace their affections on their children. They could love their children as children, not "as a substitute lover," without at all harming them. Conversely, Dell said, neurotic mothers who engaged in "pseudo-maternal" behavior could follow Watson's advice, yet still victimize their children. According to Dell, Watson failed to see the possibility of these differential outcomes.

Dell's (1930) criticisms notwithstanding, he generally praised Watson and Watson's (1928) book, noting that "there are so many fine things in [it] that one regrets the necessity of exposing its follies" (p. 137). More than six decades later, Salzinger (1994) offered a similar assessment. He noted that although the Watsons' book contained some "poor advice and advice beyond data" (p. 154), it also made recommendations that form the foundation of many present child-rearing practices (e.g., the role of daily routines).

Comparisons and Contrasts

Although these criticisms of Watson's advice concerning love and affection are apt by North American standards, the question remains about whether his advice was or was not consistent with the standards of his day. Our review of the child-rearing literature of the 1920s suggests that it was the norm of the day, except on one point, but even here opinion was divided.

Comparisons. As for Watson's advice about establishing routines for sleeping, eating, playing, socializing, and exercising, this was also broadly recommended by most experts at the time (e.g., Jessup, 1923; Kerley, 1923). Watson's advice about punishment was also generally agreed upon – punishment was to be discouraged (i.e., Weill, 1930, cited in Lomax et al., 1978, p. 134). For example, in a widely-read monthly column for *Good Housekeeping*, Kenyon (1926) described strategies for raising well-disciplined children without using corporal punishment. Other experts concurred: Although a "sharp smack on the hands" might serve a useful purpose during the preschool years, "corporal punishment could be entirely eliminated as a disciplinary measure without great loss" (Thom, 1927, p. 127). In general, parents were advised to minimize punishment in order to prevent children from becoming "permanently sulky or hostile," as well as from becoming less likely to tell the truth (Groves & Groves, 1924, p. 95).

With respect to Watson's advice about love and affection, some child-rearing guides of his day supported his recommendations, but not always for the same reasons. *Infant Care* was one such publication (West, 1914). Printed in 1914 by the U.S. Department of Labor Children's Bureau, about 3 million copies had been distributed nationally by 1925. This child-rearing guide emphasized the importance of initiating training, discipline, and routines as early as possible. Parents were also warned against kissing babies on the mouth, but here for medical, not for psychological, reasons, because in the early part of the 20th century, an infant's health was often at risk (Lomax et al., 1978, p. 131). In order to prevent the spread of infections, parents were advised not only to avoid kissing their infants, but also not to hold or pet them beyond what was needed to assure their physical care and nutrition. Similar advice was offered in Holt's (1894/1932) *The Care and Feeding of Children* (as cited in Lomax et al., 1978), which offered a compendium of information on infant and child physical growth, nutrition, and health, and made recommendations concerning their physical care.

The medical advice against kissing and petting infants notwithstanding, these and other sources also advised against some demonstrations of love and affection for reasons closer to Watson's. *Infant Care* (1914), for instance, warned parents not to play with infants, so as to avoid upsetting their regular habits or inducing a "nervous disturbance" (cited in Lomax et al., 1978, p. 130). Holt (1894/1932) likewise recommended that parents not play with infants under six months of age, and play with older infants but minimally, for in addition to making them sleep poorly, suffer from indigestion, and cease gaining weight, it could make them nervous and irritable. Holt's text was widely influential. In 1946, the Grolier Club – a book club – selected it

as one of the one hundred books published before 1900 that most "influenced the life and culture of the American people" (Park & Mason, 1957; cited in Lomax et al., 1978, p. 148).

Other authorities commented on both the value and the danger of parental love and affection. For instance, according to Blatz and Bott (1929), affectionate behavior can promote important emotional bonds, but at the same time make children overly dependent on their parents and engender the premature development of sexual impulses. Thom (1927) likewise noted that, although parents should create an "atmosphere of affection, kindly consideration, and fair play" (p. 38), oversolicitous parents may arouse unreasonable fears and anxieties. Indeed, oversolicitousness "often produces the selfish, self-centered, clinging vine type of child" (p. 34).

Contrasts. In contrast to this advice regarding the deleterious effects of love and affection, our review of the child-rearing literature of the 1920s suggests that it was not the norm. At the very least, the advice was more balanced. Goodspeed and Johnson (1929), for instance, advised that it was unwise to:

…allow a child to display excessive affection for any one member of the family, nor should he be allowed to look toward any one of the family for an excessive show of affection. A wholesome display of affection based upon a true spirit of kindliness and courtesy will establish the proper 'give and take' in family relations. (p. 206)

In general, though, most of the advice simply noted that affection between parents and children was highly appropriate. Fenton's (1925) *Practical Psychology of Babyhood*, for example, recommended that parents should freely accept the spontaneous affections of their infants. Also, given that babies learn to be affectionate through imitation, she encouraged parents to behave affectionately toward them. Likewise, Groves and Groves (1924) advised parents that "The little baby cannot be loved too much. He needs love and thrives on it as a plant thrives on sunlight" (p. 12). Older children, age six to 10, also need affection: "He craves affection and stability. No amount of material luxury can make up to him for lack of affection. Affection must not be spasmodic. A moderate love that flows gently on, uninterrupted by outbursts of emotion, is surely best for the child." (p. 142).

Discrepancies in the Child Rearing Advice

In summary, Watson's advice about love and affection was consistent with that offered by some "experts" of his day, but was contradicted by most others. The basis of this discrepancy is difficult to determine, however, in order to encourage further research, we speculate briefly about some possible sources.

1. The child-rearing advice differed depending on its reasons. Some "experts" recommended that parents offer love and affection for psychological reasons, both mental and emotional, while others recommended against such

displays – especially, kissing – but only for medical reasons (Lomax et al., 1978).

2. Child-rearing advice that downplayed coddling and affection may have reflected a generational change – a shift from a romantic sentimentality toward children to the new generation's turn toward science and technology (Stendler, 1950).

3. Sociological change was also occurring, in particular, in women's desire for more independence (Frank, 1962; Harris, 1984). In a longitudinal analysis of women's magazines, for instance, Stendler (1950) found an increase, in 1920, in the proportion of the articles on child rearing that advocated a firmer attitude toward infant discipline (e.g., tight scheduling, letting infants "cry it out"). This was, perhaps, a means for bringing more predictability and control into the lives of women.

4. Child rearing advice may also vary with gender of those who provide it. Watson's advice regarding love and affection was written by a "man's man," while the countervailing advice was often written or co-authored by women (e.g., Fenton, 1925; Goodspeed & Johnson, 1929; Groves & Groves, 1924).

5. Although Watson's advice was based, in part, on his research in child development, personal experience may also have played a role. His emotional attachment to his father was devastatingly broken when his father deserted the family without warning (Morris & Todd, 1999). Watson's conditioned negative reactions to this event may have influenced his advice regarding love and affection.

CONCLUSION

In summary, the child-rearing advice of the 1920s cannot be characterized as agreeing on any one set of methods for raising children. The advice often varied across and within those who provided it, and across particular domains of development. In this context, Watson's advice on misbehavior and daily routines was consistent with that of his day, while his advice about love and affection was at variance, albeit not unique. Four conclusions follow from this and the preceding analyses.

First, Watson's child-rearing advice varied from domain to domain and, by today's standards, was informed in some domains, but not in others. Although he had adopted the assumption that, within normal biological limits, children were made, not born, he had no overarching theory about the outcome of development per se. Second, again by today's standards, Watson was not alone in being uninformed about love and affection. Advice such as his was prescribed by behaviorists and nonbehaviorists alike, and thus was not unique to his behaviorism. Third, although Watson's advice is today seen as insensitive to the putative inborn social-emotional needs of infants and children, this was not intentional on his part. He simply did not presume any such needs in the first place. Fourth, much of Watson's advice was prescient of current best practices in child rearing, especially those concerning punishment, positive environmental supports, and prevention through the teaching of alternative repertoires.

In the end, Watson (1936) regretted some of the advice he offered in *Psychological Care of Infant and Child*. It was hasty and insufficiently informed. Had he been able to conduct further basic and applied research, his advice might have been different. Perhaps that is the lesson to be drawn from this episode in the history of developmental psychology. We should never cease analyzing behavior. Wherever behavioral development is historically dependent, not an inevitable outcome, child rearing advice should be continuously and empirically informed.

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Temperament, Early Experiences, and the Behavior of

Mothers Vs. Strangers as Influences on Infant Crying

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To address questions about the relationship of both environmental and biological variables to individual differences in infants' reactions to strangers and mother, this study compared extended interactions between strangers versus mothers with the same 2- and 5-month old infants. Two visits were made to the infant's home, once to observe the infant with the mother and once with the stranger. Infants fussed and cried significantly more often with strangers and positively vocalized more with their mothers. The infants' frequency of crying with strangers was not found to be related to the stranger's immediately preceding behavior. Other variables, such as those having to do with problematic events surrounding the infant's birth and with infant temperament, were also not related to individual differences in infant crying when with strangers. One thing that might account for differences in how much infants cry with strangers was that strangers had more difficulty in consoling infants.

When infants of about eight months of age are approached by a stranger, they will exhibit many behaviors. Some of these may be considered positive, such as smiling and vocalizing to the stranger. Others, such as looking away, turning away, or crying, may be considered negative. These negative behaviors have been called "stranger anxiety" (see Clarke-Stewart, 1978 for a review). Following Clarke-Stewart's review, there were few additional studies of stranger anxiety. Perhaps the review convinced researchers that there were few interesting issues left to study. Perhaps equally influential was the work of Kagan (1976). He used a number of different data sets, from different cultures, to show similar growth functions and a characteristic peak of stranger anxiety at around eight months of age. Based on these data, he declared that fear of strangers was a universal developmental phenomena, which could best be explained by maturation of the brain. This again might have suggested to researchers that there was no reason for further study.

There are some important reasons, however, why further study is warranted. Earlier work focused on normative trends, averaging across infants. Why some infants, in some situations, may have had either a more or a less intense reaction was never examined. While reactions to strangers may have a biological basis, from a dynamical systems perspective (e.g. Novak, 1996) it would be expected that differences in individual infants' reactions to strangers could result from a number of interrelated factors, both environmental and biological. This paper will examine the influence of both environmental and biological factors on infants' reactions to strangers.

The first factor that may be important is that in a situation in which two people are interacting with each other, there may be an influence of the one person's behavior on the other's. This is a purely environmental stimulus variable. So, for example, the infant may either respond differently to similar behaviors depending on whether a stranger or a mother performed the behavior, or perhaps the stranger's behavior is somehow different from the mother's and this causes a reaction in the infant.

The second factor that may be important is that different kinds of history and experiences of infants over time may affect their reactions to strangers. Variables based on these experiences measure aspects of the infant's reinforcement history. Two aspects of the infant's history will be studied here. The first, is whether there were any problems surrounding the infants' birth. Such problems can best be seen as being a combination of biological and environmental factors. For example, the development of infants born before their due dates may show adverse consequences due to the fact of their premature birth (a biological fact). It has been shown, however, that parents of such infants also interact with them differently, and this may have short and long term effects as well (see, for example, Kopp, 1983). The sample for the current study consisted of infants who were chosen for as much normality as possible. Families were middle class, and infants who were premature or had other major difficulties were excluded. Nevertheless, there may be some effects of differences in experiences surrounding the birth, such as type of delivery, length of labor or use of anaesthesia (e.g. Brackbill, McManus & Woodward, 1985). Such experiences may have the general effect of increasing infant irritability, at least in the short run, and may also be stressful for the mother, which may change the kinds of interactions that take place between mother and infant.

Another aspect of the infant's history is their previous exposure to caregivers other than the mother. One study (Lamb & Malkin, 1986) showed that at least initially, changing caregivers can disrupt infant behavior. For example, very young infants cried more after a change in care-

givers. However, it would be expected that if infants had extended interactions with a variety of caregivers, they might learn new behaviors that make it less upsetting to interact with a new caregiver. In support of this, it has been shown that after extended interactions with nonmaternal caregivers, infants can develop attachment relationships with them (Howes, 1999)

The third factor that may be important is the infant's temperament (as perceived by the mother). This may be an important biologically-based influence on how infants react to an unfamiliar person or situation (e.g., Goldsmith & Campos, 1990). In particular, an infant's tendency to approach or withdraw from novelty, to adapt easily to new situations, to have a low or a high threshold of reactivity, to react with high or low intensity to experiences, and to be generally in a good mood or not, may all affect how they would react to a stranger.

The Current Study

The majority of past studies of infants and strangers focused on infants six months or older. Eight months was apparently established as the peak of stranger anxiety, and studies were planned around that "fact". Investigating stranger reactions in younger infants can begin to elucidate some of the origins of stranger anxiety in earlier infancy. This study, then, will focus on infants younger than six months of age.

In planning a study of infants' interactions with strangers, it is important to note that the majority of such subjects examined very brief encounters in relatively "strange" situations, and so may not have that much applicability for infants in the real world (Clarke-Stewart, 1978). They were, in effect, examining the behavior of unfamiliar individuals, engaging in generally strange behavior, in unfamiliar situations (to slightly paraphrase Bronfenbrenner,1979). Although some of the situations in which infants encounter strangers are of this kind, it is probably equally common for infants to encounter strangers who come to their homes, perhaps as babysitters or friends of their parents.

The current study examines extended interactions between strangers and young infants (two and five months of age) and compares these to similar interactions between these infants and their mothers. These extended interactions with strangers were designed to be similar to an initial babysitting situation. The current situation differs from the situations in traditional "stranger anxiety" studies the following respects: it is much longer in length, it attempts to be naturalistic rather than artificial, and the stranger enters the situation with the instruction that they are to behave as a caregiver to that infant during the interaction. The mother was never available during these interactions to rescue either the stranger or the infant. Will there be any evidence that even young infants differentiate in their behavior between strangers and mother? If this differentiation is present, what environmental and biological variables are related to it?

METHOD

Participants

The participants in this study were 24 two- and 24 five-month-old first-born infants; half at each age were boys and half were girls. Only infants whose mothers had chosen to stay at home (at least during these early months of life) were chosen for the sample.

Procedure

Two visits were made to the infant's home. During one visit the infant was observed in interaction with his or her mother; during the other visit they were observed in interaction with the stranger. Whether the mother or the stranger was observed first, was counterbalanced. Eight different strangers, all female, worked in the study. They were selected because they all had previous experience caring for infants. Four were mothers themselves, and the other four had extensive babysitting experience, and had responded to an ad that said, "Do you like babies?" and then explained the study.

Each visit consisted of three trials. The first 15-minute trial consisted of unstructured play or interaction. Mothers and strangers were simply told to interact with the baby the way that they would if "they had nothing else to do." The second trial, which lasted approximately five minutes, consisted of a diaper change (whether the baby 'needed' one or not). The third trial, called the stressor trial, was variable in length. During this trial, three mildly stressful events (e.g. washing infant's face, or putting the infant down by itself on a quilt on the floor) were administered by the observer. After a predetermined amount of time, the caregiver (whether stranger or mother) was asked to pick the baby up. If the baby was crying, they were to try and console them.

A single observer recorded infant and caregiver behaviors on a MORE micro-processor event recorder. The 57 caregiver and 45 infant behaviors were collapsed into 12 caregiver behavior categories and 11 infant behavior categories (Table 1). These categories, originally developed for an observational study done with the Gusii in Kenya (LeVine et al., 1994), have also been used in studies of Boston mothers and infants and Mexican mothers and infants (LeVine, Miller & Richman, 1996; Richman et al., 1988; Richman, Miller & LeVine, 1992)

Table 1
Collapsed Behavioral Coding Categories

INFANT	CAREGIVER
Fuss/cry	Vocalize
Positive vocalize	Imitate/laugh
Smile	Smile/playface
Negative expressiveness	Gesture/games
Self-console	Caretaking
Look	Look
Physical	Soothing physical contact
Object mediated	Jazzing up/exercising
Next to	Pick up
Noninteractive	Next to
Miscellaneous	Object mediated
	Non-interactive
	Miscellaneous

Additional data about both the infant and his or her early environment were also collected via questionnaires. One questionnaire asked simple questions about the infant's birth and about the care environment since birth. For example, mothers were asked about the infant's birthweight and length, who delivered the infant, what problems, if any, did the mother experience, what problems, if any, did the infant experience, the length of labor, what type of delivery and what type of anesthesia was used. With respect to the care environment, mothers were asked a variety of questions, including who helped the mother immediately after the birth, who had helped take care of the infant since that time, and how many people had helped the mother with childcare. One month after the observations were completed, the mothers also filled out the Revised Infant Temperament Questionnaire (Carey & McDevitt, 1978).

RESULTS

Did the infants behave differently with the mothers and the strangers? This needs to be established here before any possible bases for such differentiation could be examined. Differences between the mean proportions of seven infant behaviors (fuss/cry, vocalize, smile, look, physical, object mediated and noninteractive) when two- and five-month-old infants were either with the mother or with the stranger were tested using a three-way ANOVA. Trial type (play, diaper change or stressor) was the third factor. The mean proportions for the infant behaviors with each caregiver are presented in Table 2. Results shown here will not include age differences or differences in behavior across trials because there were no significant interactions of caregiver with either age or trial type.

Table 2

Proportions of selected behaviors by infants (irrespective of age) when being cared for by mothers versus strangers

|	Mother	Stranger
Fuss/cry	.184	.242 **
Positive vocalize	.173	.122 ***
Smile	.038	.030 +
Look	.198	.193
Physical	.019	.018
Object Mediated	.097	.117 +
Noninteractive	.193	.178

+ Statistical trend
** p < .01
*** p < .0001

Table 2 shows that infants fussed and cried significantly more often when with strangers, F(1,273) = 6.59, p < .01, and positively vocalized more when with their mothers, F(1, 273) = 23.14, p < .0001). Smiling occurred more frequently when infants were with their mothers, and object mediated behavior occurred more frequently when infants were with strangers, but these were only statistical trends.

The analysis will now focus on the possible reasons for the finding that infants cried more when being cared for by strangers than when being cared for by their mothers. The first hypothesis is that it is possible that the stranger was engaging in behaviors that lead to increased crying (and perhaps decreased positive vocalizing) in infants. This hypothesis may be tested by using sequential analysis. Sequential analysis is a way of examining what is the effect of the immediately preceding stranger or mother behavior (at time 1) on infant behaviors that follow it (at time 2). The relationships are expressed in terms of conditional probabilities that tell us *how often* an infant behavior occurred after a particular caregiver behavior, compared to how often that behavior occurred overall. A z-score is used to express the significance of the difference between the conditional probability and the baseline probability (Faraone & Dorfman, 1987; Sackett, 1979). Significant findings reported here involve z-scores of at least +/-1.96 (p < .05).

Figure 1 shows that following each of the following three behaviors by either caregiver-soothing physical, holding and caregiving-the probability of infant crying is significantly higher than baseline, particularly for two-month-old infants. Although the change from baseline is especially high following soothing physical by the strangers, it is also somewhat higher for mothers following both holding and caregiving actions. After other types of behavior, there is little evidence that infant crying is higher following the same behavior of strangers and of mothers.

Figure 1.

Extent to which infant crying was more or less frequent following seven caregiver behaviors for two-month olds (top panels) and five-month olds (bottom panels).
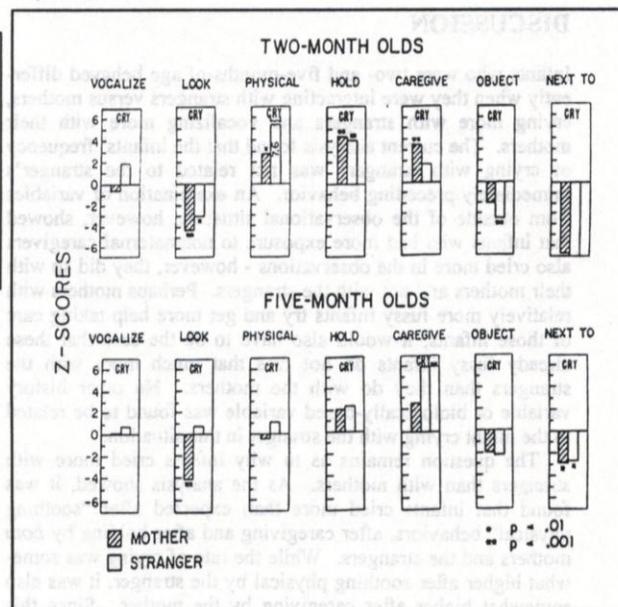
Perhaps other aspects of the infants' environment, particularly the infant's history, were more influential on their behavior. The first set of "history" variables had to do with whether or not the mother used alternative caregivers during the infants first few months of life. Although all of these mothers had chosen to stay home with their infants, they nevertheless differed in the degree to which they had enlisted help from caregivers outside of the family. Perhaps infants with more experience with nonmaternal caregivers would react differently to strangers.

In fact, different measures of infants' experience with strangers did show some relationships with the simple proportions of crying with both mother and stranger. Here, the alpha level of .05 required for significance was adjusted using the Bonferroni procedure to reflect the fact that three comparisons are being made. The adjusted alpha level was $p < .017$. A $p < .03$ was equivalent to .09, being at the level of a statistical trend. Using this more conservative criterion, it was found that the more people who had helped the mother care for the infant since the infant's birth, the more fussy the infant was likely to be with the mother during both play, $r(47) = .34$, $p < .03$ (a trend), and during the stressor trial, $r(47) = .39$, $p < .007$, which was significant. Infants who were cared for by more outside caregivers since birth were not found to be fussier with the strangers.

Nine variables having to do with the potential effect of problematic events surrounding the infant's birth (things such as use of anesthesia, type of delivery, length of labor, and so forth) were not related to infant crying with either the mother or the stranger. Measures of temperament, a more biologically-based variable, were also not found to be related to infant crying.

DISCUSSION

Infants who were two- and five-months-of age behaved differently when they were interacting with strangers versus mothers, crying more with strangers and vocalizing more with their mothers. The current analysis found that the infants' frequency of crying with strangers was not related to the stranger's immediately preceding behavior. An examination of variables from outside of the observational situation, however, showed that infants who had more exposure to nonmaternal caregivers also cried more in the observations - however, they did so with their mothers and not with the strangers. Perhaps mothers with relatively more fussy infants try and get more help taking care of those infants; it would also have to be the case that these already fussy infants do not fuss that much more with the strangers than they do with the mothers. No other history variable or biologically-based variable was found to be related to the infant crying with the stranger in this situation.

The question remains as to why infants cried more with strangers than with mothers. As the analysis showed, it was found that infants cried more than expected after "soothing physical" behaviors, after caregiving and after holding by *both* mothers and the strangers. While the rate of crying was somewhat higher after soothing physical by the stranger, it was also somewhat higher after caregiving by the mother. Since this sequential analysis does not distinguish between the first, second, third, fourth, or nth behavior in a sequence of behavior,

one interpretation of these findings is that mothers and strangers were engaging in behaviors such as holding, soothing physical, and caregiving, during extended cry bouts by infants (see Gewirtz & Peláez-Nogueras, 1992). It appears as if the mother or stranger behavior might be causing the crying, when all that is happening is that the crying is ongoing. In work not reported on here, Miller (1993) found that infants being taken care of by strangers did not actually *start* crying more often. Instead, once they started, they cried for longer periods of time. This suggests that the strangers may have had more difficulty consoling the infants than the mothers did; as the result of this, the strangers may have to engage in more soothing physical as part of their consoling efforts. This might be an effect that would only been seen in the first one or two encounters between an infant and a new caregiver, and if one observed these interactions over time with the same caregiver, increased crying to the nonmaternal caregiver might disappear. In other words, infants and caregivers need interactional experience to learn about each other.

Clearly, while there may be a normative developmental reaction to strangers that peaks around 8 months of age (Kagan, 1976), the behavior of younger infants suggests that who is taking care of them makes a difference. The behavioral differences seen here are also confirmed by a variety of studies that show that even very young infants prefer their mother's voice, prefer breast pads worn by their mother to those of a stranger, and show other related preferences. These early reactions to strangers do not, most likely, constitute "stranger anxiety." Nevertheless, they are a precursor to the later development of such stranger reactions. It is also clear that different infants, whether younger or older, react differently to strangers. These differences may be related to both biologically-based characteristics of the infant and to characteristics of the environment. In a study with a more diverse sample, the effect of some of these characteristics may have been more clear.

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The "Oppositional Defiant" and "Conduct Disorder" Child:

A Brief Review of Etiology, Assessment, and Treatment

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Two of the most researched disorders in child development are oppositional defiant disorder (ODD) and conduct disorder (CD). With a prevalence rate of two to 16% for ODD, and having been found to be a precursor to CD, it becomes evident that early diagnosis and proper behavioral treatment are imperative. This article provides a brief review of the literature on ODD and CD in relation to etiology, assessment, and behavior-analytic treatment. Characteristics of ODD and CD are discussed as well as problems with diagnoses and labeling. Behavior rating scales, behavioral observation, and functional assessment are recommended in assessing these disorders. General intervention strategies, such as contingency management, rule-governance, and classroom management are suggested for working effectively with disruptive youngsters' behavior. Problems with stimulant or psychotropic medications are addressed. The importance of early diagnosis and proper behavioral intervention are critical for helping these children, their families, and school personnel.

The Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV; American Psychiatric Association [APA], 1994), outlines the diagnostic criteria for many disorders, including those occurring during childhood. Two of the most researched disorders in child development are oppositional defiant disorder (ODD) and conduct disorder (CD). ODD alone represents a prevalence rate of two to 16 %, and up to 52% of children with ODD still have the disorder three years after the original diagnosis. Approximately 25% of children who exhibit defiant behaviors or who have a diagnosis of ODD are at a greater risk for developing CD (Barkley, 1997). Many researchers believe that ODD is a precursor to CD when viewed along the developmental trajectory of behavior disorders (Kann & Hanna, 2000). These children are also at-risk for delinquency, criminality and antisocial personality disorder (Lilienfeld & Waldman, 1990; Mash & Barkley, 1998). The earlier the onset of initial symptoms, the poorer prognosis for the child with ODD and thus, early diagnosis and treatment are critical. This paper will briefly review the literature on ODD and CD in reference to the etiology, assessment, and some behavior-analytic treatment. The emphasis on early

diagnosis and proper treatment is imperative in working with these children, their families, and school staff.

Characteristics of ODD and CD

The essential features of the ODD disorder are that the child is disobedient, defiant, negative and behaves with hostility towards authority figures. Developmentally, this pattern of behavior must occur for 6 months, within which the child must present at least four of the following eight behaviors: (a) losing temper; (b) arguing with grown-ups; (c) defying or not complying with adult's instructions and requests; (d) deliberately behaving to annoy others; (e) blames others for his or her misbehavior; (f) easily annoyed by others; (g) exhibiting anger and resentment; and (h) showing vindictiveness (APA, 1994).

In addition, these behaviors must present more frequently than they would in other children of the same age and developmental level, causing a significant impairment in the child's social, academic, or occupational functioning (Mash & Barkley, 1998). Barkley (1997) states that only children who meet the criteria in the DSM-IV (APA, 1994) or score above the 93rd percentile on a standard rating scale meet the criteria for diagnosis. In addition, the behaviors cannot occur during the course of a mood or psychotic disorder. If the criteria are met for a diagnosis of antisocial personality disorder after the child is 18-years-old or if the criteria for CD are met, the diagnosis of ODD cannot be given (APA, 1994).

Although children with the CD diagnosis may exhibit patterns of behavior such as noncompliance and stubbornness that are consistent with ODD, there are some important differences between them. In contrast to ODD, CD is marked by the child's violation of the rights of others and societal norms and rules that are considered appropriate for the child's developmental age (Mash & Barkley, 1998). Furthermore, children with CD, compared to those with ODD, exhibit more serious behavioral violations such as property violations, aggression, truancy, and substance abuse. Therefore, children with ODD cannot receive a comorbid diagnosis of CD due to the more aggressive symptoms that compose this disorder (Mash & Barkley, 1998). Therefore, CD and ODD should be differentiated through the DSM-IV (APA, 1994) and other assessment

measures. Unfortunately, all too often in the literature, both are referred to interchangeably without distinction.

Problems with Diagnoses and Labeling

Developmental processes may influence comorbidity diagnosis in children and adolescents (Achenbach, 1998; Nottleman & Jensen, 1995). Symptomatology and behavior manifestations may appear differently at various developmental progressions. Also, ethnicity and cultural factors may impact the assessment, diagnosis, and consequences of labeling (Prinz & Miller, 1994). Another important factor is the child's gender as evidenced by the ratings and perceptions of parents, teachers, and peers (Webster-Stratton, 1996). For example, adults' tolerance level for behaviors was found to be higher for the same respective sex. Also, peer expectations may present difficulties with diagnosis as girls with behavior disorders may exhibit covert behaviors and their peers may not perceive even a potential problem (Kann & Hanna, 2000).

Etiology

According to Mash and Barkley (1998), genetic factors, family interactions, peer groups, and environmental factors/broad ecologies influence the development and maintenance of ODD and CD. These factors develop and influence each other across time and situations and cannot be separated from one another (Mash & Barkley, 1998). For instance, an infant who is temperamentally "difficult" and exhibits such characteristics as irritability, hyperactivity, and impulsivity may have a predisposition to showing behavior problems (Bates, Bayles, Bennet, Ridge, & Brown, 1991; Caspi, Henry, McGee, Moffitt, & Silva, 1995), which may lead to future behavior problems as well as inhibiting parent-child interactions. Such interactions can adversely affect the quality of parent-child relations (Barkley, 1997). Consequently, it is highly common for children to present with comorbid ADHD and ODD or CD.

Many researchers have linked difficulty in parenting or inappropriate parenting practices to children with ODD and CD (e.g., Bates et al., 1991; Forehand & Scarboro, 1975; Kazdin, 1995; Mash & Barkley, 1998). Forehand and Scarboro (1975) examined oppositional behavior and found that as the number of maternal commands increased so did the amount of oppositional behavior. Moreover, this oppositional behavior was more profound immediately following the command. Patterson (1982) and Snyder (1995) further elaborated on the pattern of coercive parent-child interactions, which tends to escalate prior to the elementary school years. The coercive cycle begins because of ineffective parental management practices and the contingencies embedded within those practices. The cycle continues and increases in intensity, and family members are reinforced for aggressive behaviors (e.g., avoidance). Barkley (1997) stated that defiance becomes an effective way for the child to escape tasks or situations that he finds effortful, boring or unpleasant. The defiant behavior can also enable the child to better predict the consequences of his/her environment, even if they are negative. Moreover, these behaviors are

modeled for the child by his/her own parent(s) (Patterson, 1982).

Consequently, inconsistent parenting practices and contingencies lead to family interactions which may contribute to the to development of parent-child difficulties. McCord (1988) found that a child was adequately supervised in an intact home 70% of the time; 50% of the time in a home in which the parents were in conflict; and 20% of the time in a single-parent home with an unaffectionate mother. Monitoring is influenced positively by maternal affection and negatively by parental conflict, and it is the parent's ability to monitor behavior that was most closely associated with a child's misconduct (Patterson & Loeber, 1984). Furthermore, disruptions within the home and the family may correlate positively with the development of dissident behavior in adolescents. For instance, marital conflict ultimately interferes with the parents' ability to engage in appropriate parenting practices (i.e., monitoring the child's behavior) (Mash & Barkley, 1998).

Parental antisocial personality disorder (APD) has received support as having a direct and indirect influence on the development of ODD in children (Frick & Lahey, 1992; Mash & Barkley, 1998). Frick and Lahey (1992) investigated the association of conduct problems in children (e.g., ODD and CD) with parental adjustment and family functioning. Families in this study demonstrated a high correlation between parental APD and substance abuse and children with conduct problems (e.g., ODD & CD). In addition, the poor parenting practices were once again positively correlated with the child's oppositional behavior. The authors also compared the risk factors of having a biological parent with APD to maternal parenting practices. The results indicated that parental APD was associated with childhood conduct problems independent of parenting practices, but the reverse did not hold true (Frick & Lahey, 1992). Yet, it is still undetermined whether this correlation is due more to the parents reinforcing the misbehavior of the child and/or modeling the behavior, or if it is due more to the genetic link between the parents and the child (Frick & Lahey, 1992).

Mainstream Assessments

A number of methods are available to aid in the assessment of ODD in children. Multiple methods of assessment should be used concurrently so that biases and discrepancies in measurement are noted and an accurate diagnosis made. If only one method of assessment is used, the accuracy of the diagnosis may be profoundly limited, especially when behavioral observations and functional assessment of behavior are not included.

Behavior Rating Scales

Behavior rating scales are one form of assessment commonly used to assess children, and are administered to the child, parents, and teachers (Mash & Barkley, 1998). Diagnosis of comorbid conditions can be aided by the use of these instruments as well, and behavior rating scales are often used to measure and justify the validity of treatment outcomes (Mash &

Barkley, 1998). Scales commonly used include the: 1) Child Behavior Checklist (CBCL; Achenbach, 1993) family of instruments; 2) the Child Behavior Inventory (CBI; Eyberg, 1992); 3) the Stutter-Eyberg Student Inventory (Eyberg, 1992); and 4) the Conners Teacher Rating Scale (Miller, Klein, Piacenti, Abikoff, Shah, Samoilov, & Guardino, 1995).

Behavior Observation

Behavioral observation is considered a critical component of the multiple methods of assessment of ODD (Mash & Barkley, 1998). This useful method makes it simple to compare the data gained from observation with the data gained from other types of assessments (e.g., the clinical interview and the behavior rating scales) (Mash & Barkley, 1998). Behavioral observations and functional assessment enable the clinician or behavior analyst to obtain a realistic picture of the child's behavioral functioning in his or her natural environment. However, they are not often used in the home setting due to their intrusive nature (Mash & Barkley, 1998). In addition, behavioral observation systems are not used as often as they could be, due to the amount of time it takes to train observers to use these methods properly (Mash & Barkley, 1998). Examples of commonly used observation systems include the Behavioral Coding System (Forehand & McMahon, 1981), the Dyadic Parent-child Interaction Coding System II (Eyberg, Bessemer, Newcomb, Edwards, & Robinson, 1994), and the Interpersonal Process Code (Rusby, Estes, & Dishion, 1991 as cited in Mash & Barkley, 1998).

Children's' behaviors should also be observed with their peers, as these interactions may be a useful source of information. Observation of children interacting with their peer group in the natural environment provides supplemental material that can be used to validate information from other sources (Trad 1992; Kann & Hanna, 2000). Multiple methods of behavior assessment also allow for accurate diagnoses, which lead to proper behavioral interventions for these children, their families, and their schools.

Functional Assessment

Functional assessment is used to identify specific variables that predict and maintain disruptive behavior. The variables comprise the consequences, which may be termed as the "function" of the behavior, antecedents or discriminative stimuli, and setting events (Horner & Carr, 1997).

In conducting a functional assessment, it is imperative to note that environmental events should be of primary focus. From this perspective, the behavior analyst views the disruptive behavior as a result of difficult social circumstances in which the maladaptive behavior represents the child's attempted solution to his or her challenging environment (Kerr & Nelson, 1998). As a result of the functional assessment, the behavior analyst is able to focus on improving the child's overall level of functioning through several interventions, such as efficiently redesigning the child's environment to elicit and maintain adaptive behavior (Schloss & Smith, 1998).

Parent-Training and Family Systems Interventions

The majority of interventions have been designed to treat overt behavior exhibited by children with ODD and CD and are directed toward the context of the entire family since that is where most of the behaviors are believed to begin (Mash & Barkley, 1998). The family-based interventions typically consist of parent training approaches in which the parents are taught new skills to amend their previously ineffective practices. The core elements, which have been explicated by a number of researchers include the following: (1) the intervention is primarily with the parents as opposed to the child; (2) there is an emphasis on the prosocial behaviors of the child versus the oppositional behaviors; (3) social learning theory is emphasized as part of the parenting techniques (e.g., tracking the child's behavior, positive reinforcement, and response cost); and (4) there is use of didactic instruction, role playing, modeling, rehearsal and homework exercises (Kazdin, 1995; Miller & Prinz, 1990 as cited in Mash and Barkley, 1998; Webster-Stratton, 1993). Parent training has been successfully used and it is short-term efficacy has been confirmed (Brestan, 1998; Danforth, 1998; Webster-Stratton & Hammond, 1997). Yet, its generalization and social validity varies depending on the particular research cited (Mash & Barkley, 1998). As a result of these differing findings and awareness of multiple causes and maintenance factors for ODD and CD, the parent training model has been broadened to the "behavioral family therapy" model of intervention (Mash & Barkley, 1998). This expansion was done in an attempt to better encompass the large number of family contextual variables that can influence ODD (Kazdin, 1997; Mash & Barkley, 1998; Prinz & Miller, 1994; Webster-Stratton & Hammond, 1997).

Webster-Stratton and Hammond (1997) found that child training concurrent with parent training produced more clinically significant results still present at a one-year follow-up. Yet, these results did not generalize to the school environment as reported by the teacher. The efficacy of the treatment is dependent upon the context of the defiant behaviors. Often, defiant behaviors are setting specific in younger children (Egeland, Kalkoske, Gottesman, & Erickson, 1990; Webster-Stratton & Hammond, 1997). Thus, the treatment method employed should be applicable to the specific situation and the type of behaviors present (e.g., parent training when the oppositional behaviors are evident only in the home).

General Intervention Strategies

Functional analysis. Functional analysis uses the systematic manipulation of identified variables to determine their influence on problem behavior. More specifically, functional analysis comprises a formal experiment in which the antecedent and consequent events linked with the disruptive behavior associated with ODD and CD are manipulated, therefore it is not a passive direct observation as in functional assessment (Worsdell, Iwata, Conners, Kahng, & Thompson, 2000). It is not only a useful assessment tool, but also the primary method by which researchers demonstrate basic behavior principles

(Horner & Carr, 1997). Sometimes the interview and/or direct observation results are unclear. Then, a formal functional analysis can supply reliable identifying the critical controlling variables. A practical issue related to functional analysis is the time required by the analyst. However, in approximately 66% of the cases, assessment information obtained from brief analysis yields clear patterns used to design effective interventions (Kahng & Iwata, 1999; Wallace & Iwata, 1999).

Contingency management strategies for parents. Contingency management is based on the assumption that conduct problems develop as a result of the child's failure to regulate his or her own behavior. The literature states this lack of "self-regulation" as the result of poor parenting, in which the parents fail to provide consistent and appropriate consequences for the child's behavior (Johnston, 1996; Patterson, 1982; Patterson & Loeber, 1984). However, contingency management utilizes operant conditioning to shape behavior through the systematic structuring of consequences. It establishes clear behavioral goals that include increasing positive behaviors and decreasing negative behaviors through consistent consequences. For example, positive behaviors are increased through the use of reinforcement and include prosocial interactions with peers, respectful comments to adults, and appropriate expression of anger. Negative behaviors such as aggression, noncompliance, and rule breaking are decreased through punishment and other "negative" aversive consequences (Adesso & Lipson, 1981; Frick, 1998).

Contingency management is flexible and can be used in a number of settings (e.g., residential settings, parent management training, classrooms, and peer mediated contingency programs) (Danforth, 1998; Reid, Eddy, Fetrow, & Stoolmiller, 1999). Examples of such intervention include the following: contingent attention from parent/teacher, token economies, home-school note systems (i.e., child is rewarded at home for school behavior), and time-out. If contingency management is to be effective it must be planned carefully, systematically monitored, and the contingencies must be administered consistently.

Often, contingency management programs fail because they seem deceptively simple, as they only manipulate the consequences (Frick, 1998). In such cases where contingency management programs are unsuccessful, rule-governed behavior can be implemented by manipulating antecedents, consequences, or both (Gewirtz & Peláez-Nogueras, 1991). Working from a behavior-analytical perspective, a rule comprises the three-term contingency and places importance on the interdependence of the antecedent, behavior, and consequence (Peláez-Nogueras & Gewirtz, 1995). Therefore, in particular circumstances, the use of rule-governed behavior may result in promoting and maintaining adaptive behaviors for this specific population.

Strategies for classroom management. Studies show that teachers' normal rate of praise for prosocial behavior is too low or insufficient to maintain prosocial behaviors for children with moderate conduct problems. Thus, the rate of praise, especially for noncompliant and oppositional children,

should be increased while ignoring inappropriate behaviors. Other effective elements of classroom management for children with ODD include: 1) establishing clear rules and directions and following them consistently; 2) pacing a student's progress at his or her own rate; 3) positive and corrective feedback; 4) token economies; 5) response-cost programs (i.e., for excessive behaviors that cannot be ignored); and 6) time out (i.e., for excessive behaviors that cannot be ignored). Some teachers do not believe that their behavior relates to a child's oppositional and defiant behavior. However, changing the teacher's behavior can help to alleviate the ODD symptoms, especially with children who exhibit mild ODD behaviors. Furthermore, combining contingency management strategies with classroom behavioral intervention is imperative in order to decrease the behavior for children with extremely disruptive behaviors (e.g., a token economy combined with group contingencies) (Mash & Barkley, 1998).

Problems with stimulant or psychotropic medications. Medication trials have been unsuccessful, for the most part, in altering neurobiological factors associated with ODD or CD. Lithium is one exception to this finding, as it has been shown to reduce aggression in severe emotional aggressive children who show episodic emotional outbursts (Frick, 1998). However, there are limitations to the applicability of lithium as a treatment modality. Specifically, lithium has a number of serious side effects and the subgroup of children in the research studies was ill defined (Frick, 1998).

Many children with disruptive behavior disorders have comorbid ADHD, making the treatment of ADHD critical. An effective stimulant medication for ADHD, Methylphenidate, has been found to reduce the rate of disruptive classroom behaviors, reduce aggressive interactions with peers, increase positive interactions with peers, and enhance the quality of interactions between the child and adults (Conners, Barkley & Davis, 2000). Researchers have found stimulant medication beneficial when treating children with conduct problems (e.g., ODD) and ADHD (Frick, 1998). Yet, the effects of stimulant medications on motivation and affective self-control has not been well researched (Barkley, 1997). Adverse affects of such medication include the following: sadness, irritability, clinging behaviors, insomnia and anorexia. Furthermore, several effects related to growth such as heart rate and blood pressure changes have been found to correlate highly with stimulant medication (Bezchlibnyk-Butler & Jeffries, 1998).

Advantages of Behavior-Analytic Interventions

In general, behavior-analytic interventions consist of adding adaptive behaviors to a child's repertoire or expanding upon already existing adaptive behaviors with the goal of replacing or reducing the exhibition of maladaptive behaviors. These interventions, which are based on positive parenting models, foster healthy parent-child interactions (Ducharme, Atkinson, & Poulton, 2000). Often, as a result, the child learns that oppositional behaviors are no longer functional for engaging in parent-child interactions (Ducharme & Van Houter, 1994). Furthermore, parental responses to their child tend to change

from reactive to proactive, thus, further reducing parent-child conflict.

CONCLUSION

Considering a prevalence rate of two to 16% for ODD, and that is has been shown to be a precursor to CD, it becomes evident that early diagnosis and proper behavioral treatment are imperative for these children, their families, and teachers. The increased knowledge about the developmental pathway of these children has advanced the risk factors as well as the protective factors. Timely behavioral interventions provided to these youngsters can lead to the development of prosocial interactions with peers, parents and teachers. Also, these children can learn to regulate their own behavior, resulting in better impulse control and positive prosocial behaviors. Thus, early attention from parents and professionals can lead to an improved prognosis for this special group of children during development.

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The Development of Self and Perspective -Taking:

A Relational Frame Analysis

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From a relational frame perspective, a child learns to discriminate her own behavior and the behavior of others through a history of exemplar training in arbitrarily applicable relational responding. The current paper argues that the emergence of deictic relations such as "I and you", "here and there", and "now and then" is critical to the development of perspective-taking. The paper also suggests that behavior analysis may have an important contribution to make to the study of perspective-taking, and may provide a functional-analytic account of what is sometimes referred to as "theory of mind."

The Traditional Behavioral Approach to Self

Contrary to popular belief, behavior analysis emphasizes the important role played by self-knowledge in complex human behavior, particularly social and verbal behavior (Dymond & Barnes, 1997). According to Skinner (1974), self-awareness, or self-discrimination is shaped through verbal interactions with others, thereby allowing for greater prediction and influence over an individual's own behavior. It is only when a person's private world becomes important to others that it becomes important to him. By asking questions such as "How are you feeling", for example, other members of the verbal community are, in effect, shaping an individual's ability to respond discriminatively towards his/her own behavior. The person is "made aware of himself" by such questions and is thus in a better position to predict and control his own behavior (Skinner, 1974, p. 31).

Skinner, therefore, accounted for the development of human self-awareness in terms of complex social contingencies. One prominent research strategy that emerged from this interpretation involved determining whether self-discrimination was a uniquely human phenomenon, or whether non-humans could also discriminate their own behavior. A number of studies have answered this question by demonstrating that the behavior of pigeons, for example, may be brought under the control of the pigeons' own previous response patterns (Lattal, 1975; Pliskoff & Goldiamond, 1966; Reynolds, 1966; Reynolds & Catania, 1962; and Shimp, 1982). Although such finding have provided

support for Skinner's interpretation of self-awareness, other behavioral researchers have argued that self-discrimination cannot be accounted for entirely with the traditional concept of discriminative control. More specifically, the modern behavior-analytic approach to human language and cognition, known as Relational Frame Theory (RFT), suggests that human self-discrimination may involve verbal processes that distinguish it functionally from the nonverbal self-discrimination observed with nonhumans.

A Modern Behavioral Approach to Self

According to RFT, bidirectionality, derived stimulus relations, and the transformation of stimulus functions are core processes of verbal behavior (see Hayes, Barnes-Holmes, & Roche, 2001). From this perspective, a stimulus or response is defined as *verbal* when it participates in an equivalence or other type of derived relation, involving these three properties. This definition of verbal behavior is critical to the RFT account of human self-discrimination.

A study reported by Dymond and Barnes (1994) provides a very basic example. Adult humans were first trained and tested for the formation of three, three-member equivalence classes (i.e., A1-B1-C1, A2-B2-C2, A3-B3-C3), and were then trained to emit two self-discrimination responses on two time-based schedules of reinforcement. If subjects did not emit a response, choosing one stimulus (B1) was reinforced, and if they did emit one or more responses choosing another stimulus (B2) was reinforced. Finally, subjects were tested for a transfer of these self-discrimination response functions in accordance with equivalence relations (i.e., no response = choose C1, and one or more responses = choose C2). All four subjects demonstrated the derived transfer of self-discrimination response functions via equivalence relations.

Subsequent studies demonstrated similar effects in accordance with the relational frames of more-than/less-than and opposite (Dymond & Barnes,1995; 1996). These studies point to an essential aspect of self-knowledge from an RFT perspective (Dymond & Barnes, 1997).

The RFT view of human self-awareness is that the person is "not simply behaving with regard to his behavior, but is also behaving *verbally* with regard to his behavior" (Hayes & Wilson, 1993, p. 297 [emphasis added]). A non-human, when it has learned to respond to responding, is merely performing a discrimination in which the original response (e.g., pecking according to a DRO or DRL schedule) was discriminative for the second response (e.g., choosing between red and green keys; see Hineline & Wanchisen, 1989). The derived self-discrimination performance shown by Dymond and Barnes (1994) is not of that kind. Rather it is an instance of *verbally* discriminating one's own behavior, because the performances necessarily involved the three defining properties of relational framing. The difference between verbal and nonverbal self-knowledge thus becomes a functional one.

A Modern Behavioral Approach to Perspective Taking

In suggesting this clear functional distinction between verbal and nonverbal self-discrimination we have only scratched the surface. A more complete RFT analysis of self requires that we consider perspective-taking frames that appear to be essential in the verbal construction of self. In the language of RFT, deictic relations, that specify a relation in terms of the perspective of the speaker, are a family of relational frames that appear to be critical for the development of perspective-taking skills. The three frames that appear to be most important in this regard are the frames of I and YOU, HERE and THERE, and NOW and THEN. Unlike other relational frames, these do not appear to have formal or nonarbitrary counterparts, and cannot be traced to formal dimensions in the environment. It is the relationship between the individual and other events that serves as the constant variable upon which these frames are based. Responding to, and asking, many questions contained within our common verbal interactions with others (e.g., "What am *I* doing *now* ?"or "What are *you* doing *there* ?") appear to be critical in establishing these perspective-taking frames.

Each time questions such as these are asked or answered, the physical environment is different. What remains constant across these and many similar questions, however, are the relational properties of I versus You, Here versus There, and Now versus Then. Furthermore, according to RFT, these properties themselves are abstracted through learning to talk about one's own perspective in relation to the perspective of others. *I*, for instance, is always from this perspective *here*, but not from the perspective of another person *there*. Abstraction of an individual's perspective on the world, and that of others, requires a combination of a sufficiently well developed relational repertoire and an extensive history of exemplars that take advantage of that repertoire.

According to RFT, the three perspective-taking frames described above can generate a range of relational networks, including: I-HERE-NOW; YOU-HERE-NOW; I-HERE-THEN; YOU-HERE-THEN; I-THERE-NOW; YOU-

THERE-NOW; I-THERE-THEN; and YOU-THERE-THEN. Many phrases common to our daily discourse are derived from these eight relational networks. Consider, for example, the phrases; "I am here now, but you were here then"; "You were there then, but I am here now"; and "You and I are both here now, but I was here then". Of course, when used in actual dialog, these phrases would often include or substitute words coordinated with particular individuals, places, and times. For illustrative purposes, consider the following, "It is six o'clock and I am at work [HERE and NOW], but Mary [YOU] is still at home" [THERE and NOW]. What makes perspective-taking frames particularly complex and useful is that they cannot be defined in terms of particular words, even the words, "I", "you", "here", "there", "now", and "then". According to RFT, words such as these (used to describe the perspective of the self and others) are merely examples of the relational cues that control the perspective-taking frames, and a range of other words and contextual features may serve the same function. As is the case for all relational frames, what is important is the generalized relational activity, not the actual words themselves.

Perspective-Taking and Theory of Mind

The RFT approach to perspective-taking is relatively new, but there are more established approaches in mainstream psychology. In the latter half of this article, we will use RFT to provide a behavioral interpretation of perhaps the most prominent theory of perspective-taking currently found in the psychological literature.

Although this constitutes a purely interpretive exercise, it is our hope that it will also serve to stimulate relevant empirical research within the behavioral tradition.

Perspective-taking has traditionally been interpreted within the broader context of 'Theory of Mind' (Baron-Cohen, Tager-Flusberg, & Cohen, 2000). According to a typical approach in this area, there are five levels in the development of knowledge about informational states of the self and others (Howlin, Baron-Cohen, & Hadwin, 1999). We will now look briefly at the cognitive or perspective-taking tasks traditionally addressed within each of these levels.

Level 1 involves simple visual perspective-taking, and is based on the principle that different people can see different things. For example, if a two-sided card is held up between two people, each individual can see only what is on one side. Level 2 involves complex visual perspective-taking, and is based on the principle that people can see things differently. For example, two individuals seated opposite one another across a table will have different perspectives on the same picture placed between them. One will see the picture the right way up, whereas to the other individual, the picture will appear upside down. Tasks such as these are often conducted as part of training programs for establishing or facilitating theory of mind skills in young children, such as those diagnosed as autistic (Reed & Peterson, 1990). According to RFT, tasks of this kind establish contextual con-

trol of the relational frame of I-YOU, in that correct responses to questions such as "What can you/I see?" are determined by the cues "I" and "you," which are contained in the tasks.

Level 3 of the traditional theory of mind approach to perspective-taking is 'seeing leads to knowing', and is based on the principle that people only know things that they have seen (Taylor, 1988). In one such task, an object is placed inside a box when a child has his or her eyes closed, and the child is then asked "What is inside the box?" A verbally sophisticated child is likely to admit that s/he cannot know because s/he did not see. If the child is then allowed to see inside the box, and is asked "Now, how do you know what is inside the box?" s/he is likely to correctly reply "I saw what was inside". The basic correct conclusions in this scenario are "I know because I have seen, and I do not know when I have not seen". A similar scenario is then presented to the child in order to demonstrate the perspective of another (e.g., a doll), and the same questions are posed with regard to the doll's perspective. In the language of RFT, training of this kind increases the contextual control of I-YOU and indirectly establishes control by the relational frame of NOW-THEN. Consider these relational frames in the correct answers to the above scenario: "I didn't see THEN so I don't know NOW" and "YOU saw THEN so YOU know NOW".

Level 4 of this traditional model of perspective-taking involves the principle that you can predict actions on the basis of knowledge (i.e., true belief). Consider a traditional training task involving toys, in which two similar scenes are portrayed. In one scene, a car is placed beside a boat, and in the other scene, an identical car is placed beside a plane. A child is then provided with the following true belief story. "This morning, you saw the car next to the boat but you did not see the car next to the plane". The child is then asked, "Where do you think the car is? Why do you think it is near the boat? Where will you go to get the car? Why will you go to the boat?" The correct conclusions from this scenario involve the knowledge that one will only know what one has seen, and will act on this basis. According to RFT, contextual control of the relational frames of I-YOU, HERE-THERE, and NOW-THEN is being established at this level (although again the frames have not been targeted directly). Consider the role of the relational frames in the correct answer as follows: "I saw the car next to the boat (THERE) this morning (THEN) and so I think the car is THERE NOW".

Level 5 of this model involves the principle that you can predict actions on the basis of false belief. In traditional training tasks, this level might be established as follows. A child is shown a biscuit tin, for example, and asked, "What do you think is inside the tin?" Unbeknownst to the child, the biscuit tin does not contain biscuits, but does in fact contain a toy. The child is then shown inside the tin, and asked, "Before we opened the tin, what did you think was inside? And what is really inside?" A similar scenario is then presented from the perspective of another (e.g., a doll), and the same questions are presented with regard to this alternative perspective. In the language of RFT, these tasks indirectly establish contextual control of the three perspective-taking frames I-YOU, HERE-THERE, and NOW-THEN (these tasks also add relational flexibility by requiring control by the relational frame of *logical*.

Consider the relational frames in the correct answer as follows: "I did NOT see inside THERE and THEN, but I do see inside HERE and NOW."

In outlining the traditional approach to perspective-taking, we suggested that the tasks commonly used to establish theory of mind indirectly involve training in relational perspective-taking (i.e., I-YOU, HERE-THERE, and NOW-THEN). According to RFT, however, a more effective means of establishing these repertoires would be to target the relational frames directly, thereby focusing the training on the largely verbal nature of the behavior involved. In line with the current thesis, we are developing RFT-based training and testing tasks that might be used to establish and analyze perspective-taking. The research also aims to demonstrate that perspective-taking might be usefully considered a form of generalized relational operant behavior. In short, our goal is to lay the procedural and empirical groundwork for further RFT analyses of perspective-taking behaviors in young children.

CONCLUSION

Although the current thesis is clearly driven by a modern behavioral approach to perspective-taking, it may be of some interest to non-behavioral psychologists. For example, Benson (2001), a cultural psychologist, has argued recently that a very important aspect of the development of a sense of self is the verbal location of oneself in a time and place relative to others. In a sense, therefore, perhaps behavioral psychology and cultural psychology are closing in on a treatment of self that is similar in function, if not in form. That is, both psychologies see the "self" as largely verbally constructed, but adopt different approaches to the study and definition of what it means to *verbally construct oneself*. Indeed, the fact that two different psychological traditions are drawing similar conclusions would seem to suggest that the current approach to perspective-taking may well have significant value.
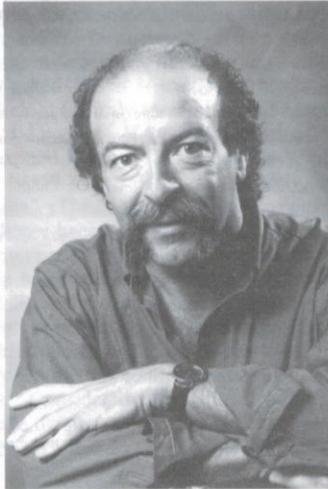
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Ross Vasta (1948 – 2000)

Ross F. Vasta, distinguished Teaching Professor at the State University of New York at Brockport, died on July 23, 2000 at the age of 52. Ross presented at several ABA conferences, although in recent years, he was more likely to be spotted at SRCD, APA or APS. While he taught behavioral courses at Brockport, he was primarily a developmental psychologist, and that is where most of his research was focused. Throughout his career he maintained a fundamentally scientific approach to the analysis of development that made him a champion for the role of learning in child development and a friend of behavior analysis.

Ross was born April 5, 1948. He grew up in the small town of Chester, New York. After graduating early from a high school class of only 26 students, Ross went to Dartmouth where he majored in psychology. Always precocious, his first two publications were from work done at Dartmouth.

Ross arrived as a graduate student at SUNY Stony Brook in the fall, 1989. This was a time of student activism, and Ross was instrumental in shaping the new developmental psychology program at Stony Brook. There, his most significant influence was Grover Whitehurst, who was Sidney Bijou's last graduate assistant at the University of Illinois. Whitehurst had just arrived as a new faculty member and was not much older than Ross. The two shared a common focus on child development as a science, and collaborated on several projects over the years, including research on modeling and language development and a 1977 textbook entitled *Child Behavior*. This became the standard text used by behavior analysts teaching child development in the late '70s and early '80s.

While a student at Stony Brook, Ross met his wife, Linda Hazel, a student in the Clinical Psychology Program Ross stayed an extra year at Stony Brook so that he could graduate with a joint Ph.D. in Developmental and Clinical Psychology with a strong background in behavior therapy and behavior analysis.

At Stony Brook, Ross had several opportunities to teach developmental courses and loved it. Upon graduation he accepted a position as Assistant Professor at Brockport where he remained for 26 years. His passion for teaching and working with students made him one of the most popular and inspirational professors on campus and was recognized by the Regents with the title of "Distinguished Teaching Professor". At Brockport, Ross taught courses in applied behavior analysis as well as developmental psychology.

A product of the '60's, Ross wore his hair long, and although it became increasingly thinner, it didn't vary in length. The long dark hair and Fu Manchu moustache gave a somewhat ominous impression to strangers that was soon overcome by his glowing dark eyes and radiant smile. Ross was gregarious and talked to everyone and made them feel that he was truly interested in them, whether they were day laborers or deans, close friends or strangers. Among his wide range of interests was fine wine, and he may be remembered by some for the informal wine tastings he held in his room at conferences.

Among Ross' many characteristics were ingenuity and wit. He used these to good advantage, privately and professionally. Ross once informed his friends that he was "on the cover of Time Magazine with Susan Sarandon and Gena Davis." Of course, we were incredulous and had to check. He wasn't kidding, but what he didn't bother to tell us was it was the *back* cover, not the front with *Thelma & Louise*. There was an ad for Toyota's homely new mini-van, and among the owner quotes was Ross': "My wife and I fight over who gets to drive the Previa...and our other car is a Mercedes." What he didn't tell the readers (and the ad agency) is that their other car was an 11-year old Mercedes whose body, ravaged by the cruel New York winters, looked like a lace doily.

Sometimes (rarely), Ross was too clever for his own good, such as once while we were publishing some research that we did at graduate school. In the study we were trying to determine if preschoolers could learn to label an arbitrary abstract concept through modeling alone, or if they needed imitation training (it turned out that modeling worked for comprehension, but training was necessary for motor and verbal production). Ross thought we should call the two concepts that we invented, a "Vas" and a "Nov" from the beginning of each of our names. Of course, the Vas was listed first. However, when two concepts proved to difficult for the children to learn, we reduced it to one, for which Ross suggested the name "VAK", a combination of Vasta and Novak. I agreed realizing that the publication would list not only a "Vak" condition, but a "No Vak" condition as well. It was the one time I was able to outwit Ross!

Ross used these skills as a very effective editor. His personal charm and persuasiveness enabled him to recruit many of the biggest names to contribute to his edited books. One, based upon a symposium he arranged at a Society for Research in Child Development conference was an important updating of developmental theories by the original theorists. Ross made sure to include Donald Baer and Sidney Bijou so that the behavioral viewpoint was not left out, a decision that would have not been made by many other developmental psychologists. Without Ross' personality it would have been impossible to gather such an impressive group of scholars and, even more so, to nurture their symposium into a completed book. Similarly, *Strategies and Techniques of Child Study* assembled the works of leading researchers. Ross was able to use his skills through his long tenure as editor of the *Annals of Child Development* series, identifying and then convincing top researchers to commit to a review of their area.

At Brockport, Ross did not have the luxury of a lab of doctoral students continually pursuing research. This certainly limited the number of empirical studies he conducted, but not the quality. His work on physical child abuse, intrinsic motivation, and, Piaget's water level task, are wonderful examples of how to study complex topics with experimental rigor. His studies always focused the role of learning and environmental effects, often putting him at odds with the worldview of his developmental colleagues, but in harmony with his behavioral ones. Likewise, his first developmental methods book *Studying Children* included a chapter on single subject design and his current book, *Developmental Psychology*: The Modern Science, treats behavior analysis in a more favorable light that most of mainstream developmental texts.

His obituary in the Rochester newspaper concluded with the remarks that in addition to his love for his wife Linda, and his daughter Jamie and son Jeremy, Ross loved wine, golf, the Yankees, and a good cigar. They left out two other things he loved: people and science.

Gary Novak