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How Psychology Can Keep Its Promises: A Response to Lana

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In my article, “Why Psychology Hasn’t Kept Its Promises” (Schlinger, 2004), I argued that psychology hasn’t become the science its practitioners had hoped because psychologists continue to focus on mentalistic constructs and they adhere to a methodology that emphasizes statistical inference over experimental analysis. I concluded that in order to better keep their promise of a psychological science, psychologists should return to studying the relationship between observed behavior and its context with the type of experimental analysis that characterizes the other experimental sciences. In his reply, Lana (2004, this issue) suggests that there may be aspects of human social and verbal behavior that are so complex that we may not be able to carry out a solid experimental analysis, thus limiting what we can discover about our own nature. Lana concludes that the methodologies needed to understand these more complex social relationships are hermeneutic and historical rather than experimental in nature. I concur with Lana both that an experimental analysis of much of human behavior may not be possible and that psychologists must, therefore, rely on complementary descriptive, interpretive, and historical analyses. I argue, however, that the interpretive language and the historical hindsight must be based on a foundation of basic principles derived from the systematic experimental analysis of behavior.

Keywords: experimental analysis of behavior, historical analysis, scientific interpretation

Recap

In “Why Psychology Hasn’t Kept Its Promises” (2004), I argued that, with some exceptions, psychology hasn’t lived up to its promise to become a natural

science on par with physics, biology, and chemistry. Specifically, again with some exceptions, psychology has generated neither elegant explanations of human behavior nor practical applications for solving behavioral problems. Although there may be multiple reasons for these failures, I singled out two I thought were the primary culprits: psychology's continued emphasis on inferred, mentalistic constructs and the almost exclusive reliance on a formal between-subject (group) research design that relies on hypothesis testing and statistical inference.

The problem with mental or cognitive constructs is just that — they are constructs, not events (see Smith, 1996, pp. 48–68) and, therefore, they are always described in metaphorical terms. Because cognitive processes are always inferred and never directly observed, they can take on any or all of the features and functions psychologists want without the prospect of ever being confirmed or refuted. I concluded somewhat boldly that “mentalism stands in the way of psychology joining the ranks of the other sciences” (Schlinger, 2004, p. 124).

I didn't argue against the possibility of unobserved events in a science of behavior, only that, following in the footsteps of the other natural sciences, it is more profitable to understand observed events before speculating about unobserved ones. I suggested that because the natural science of behavior analysis has already made headway in discovering general principles that describe the relationship between observed behavior and its proximate and ultimate environmental causes, it was perhaps in a better position to explain not only observed behavior but unobserved or private events as well.

I also outlined several problems with the formal research methodology employed by most psychologists, the most important of which is that it does not permit unambiguous experimental control over dependent variables and, thus, cannot allow for the prediction and control of the behavior of individuals. This occurs because variation in the dependent variables (behavior) is not controlled experimentally at the level of the individually behaving organism, but rather statistically. As a result, I stated, “In the absence of experimental control, psychologists are not able to discover quantitative laws and principles” (p. 141).

I concluded that most experiments in psychology do not succeed in isolating the causes of behavior but only in demonstrating certain behavioral phenomena and the circumstances under which they occur on average in sample populations. To illustrate this assertion I provided representative examples from three content areas in psychology — developmental, social, and cognitive.

I called for psychologists to return to a non-mediational, non-representational conceptualization of behavior and to the experimental laboratory approaches of Pavlov, Skinner, and their descendants. At the same time, I agreed with Morris (2003) that, with few exceptions, behavior analysts have

been slow to offer empirical accounts “of the content domains of behavior in individual, social and cultural contexts, for instance, of perceptual and cognitive, emotional and motivated, and verbal and social behavior” (p. 277).

Lana’s Commentary

In his commentary, Lana (2004, this issue), a social psychologist, essentially agrees with the main points of my article as well as with my assessment that the “Skinnerian program” is one of the more successful systems in psychology because it has “produced a series of generalizations concerning animal behavior that have proved to be consistent and unchanging over a number of environmental circumstances” (p. 273). In fact, admirably in my opinion, Lana is one of the few psychologists who has recognized the value of behavior analysis for a better understanding of social psychology and has attempted to integrate the two areas (e.g., Lana, 1994, 1995).

In the present commentary, Lana continues his attempts at integration by noting that despite the successes of behavior analysis in discovering consistent laws of environment–behavior interactions, employing those laws interpretively to understand complex forms of human behavior, such as language, and applying them to solve problems “within clinical psychology, education and . . . in industrial organizations” is an incomplete system (Lana, 1995, p. 392). Specifically, Lana argues that the experimentally derived principles of behavior analysis are themselves insufficient to explain the more complex human behaviors “studied by personality and social psychologists” (2004, this issue, p. 273), or what he refers to elsewhere as the behavioral repertoire (Lana, 1994, 1995). He further believes that behavior analysis has not been considered relevant by social psychologists because it has stressed the role of environmental consequences on the individual’s behavior while neglecting interactions among the individual’s activities that may include more extensive behavioral repertoires (Lana, 1994). As he points out, “As far reaching as behavior analysis has been, it has not as yet provided answers to many of psychology’s thornier problems” (2004, this issue, p. 273). Although behavior analysts have addressed some of these thorny problems, I would agree that they have yet to fully address others such as consciousness, perception, emotion, and many verbal and social relations.

Another problem cited by Lana (2004, this issue), and not just for behavior analysts but for any psychologist attempting to study complex social behaviors, is that the observer “participates in many of the very processes she seeks to explain and that participation can confound method and epistemology” (p. 274). Since many of these processes are verbal, Lana states that we need to “think about the nature of thinking.” As a behavior analyst, I would slightly rephrase Lana’s statement as follows: we need a scientific understanding of

the behavior we refer to as “thinking.” Interestingly, Skinner recognized this many years ago and addressed it in the last two chapters of his book, *Verbal Behavior* (1957), which were titled “Logical and Scientific Verbal Behavior” and “Thinking.” However, since then, behavior analysts have paid relatively little attention to these issues.

Lana concludes his commentary by suggesting that in addition to the within-subject experimental methodologies of behavior analysts, psychologists and behavior analysts interested in social relations must incorporate methodologies that “are fundamentally hermeneutic in nature” (p. 274). In other words, because of the complexity of human social behavior and its ever-changing social context, understanding such behavior requires a descriptive, interpretive, and historical approach.

My Response to Lana

Let me begin by saying that I agree with most, if not all, of Lana’s points. Therefore, in my brief response to his commentary I don’t counter his critique but, rather, suggest how psychology can keep its promises by integrating the solid experimental foundation of behavior analysis with descriptive, interpretive, and historical analyses. I do this by describing behavior analysis as a type of historical science, then by discussing the role of interpretation in a science of behavior and, finally, by suggesting how a behavior-analytic interpretation of the traditional content domains in psychology, especially social psychology, can further the goals of psychology as a natural science of behavior.

Behavior Analysis as an Historical Science

Because it deals with ultimate ontogenetic causation, the science of behavior analysis is in large part an historical science. According to Diamond (1997), historical sciences (e.g., evolutionary biology, astronomy, ecology, geology, etc.) are “plagued by the impossibility of performing replicated, controlled experimental interventions” because of the “enormous number of variables, the resulting uniqueness of each system, the consequent impossibility of formulating universal laws, and the difficulties of predicting emergent properties and future behavior” (p. 424).

Some of these problems also plague the science of behavior analysis. For example, there is no question that there are an enormous number of variables that determine the behavior of an individual and that they are constantly in flux. The behavior stream of an individual, as Glenn (2004) refers to it, is fluid; and, therefore, it is impossible to identify, much less isolate, all of the controlling variables. Because of this, each individual’s behavior stream is

unique, making it difficult to predict “emergent” behaviors.¹ It is also true, as Lana (1994) suggests, that the behavioral repertoire is greater than the sum of its parts. In other words, social or cultural practices cannot necessarily be reduced to the behavior of individuals, although such practices comprise the behavior of individuals.

I disagree with Diamond, however, that it is impossible to formulate universal laws of behavior. Because it deals with lives in progress and its subject matter is readily available for observation, behavior analysis is perhaps unique among the historical sciences in that it is also an experimental science. As a result, behavior analysts have performed replicated, controlled experiments that have resulted in the formulation of general principles or universal laws. Nevertheless, Lana is correct that it may not be possible to perform experimental analyses of most human behaviors, especially complex verbal and social behaviors (see also Palmer, 1991, 2003.). Therefore, it is necessary to interpret these behaviors using principles induced from an experimental analysis.

The Role of Interpretation in a Science of Behavior

Most of the time, for a variety of reasons, including the complexity of the phenomenon, it is not possible for scientists to carry out an experimental analysis. Neither do they simply engage in speculation. In such instances scientists interpret phenomena based on empirically established principles. Psychology is no exception. Because human behavior is typically complex and, more importantly, a function of past learning experiences (or as Lana [1994, p. 317] puts it, “the behavioral determiners may no longer be available for examination”), the best psychologists can do is to try to understand complex behavior according to known principles derived from a rigorous basic science. As Palmer (2003) has noted:

Only a handful of natural phenomena has been submitted, or is ever likely to be submitted, to controlled experimentation. Experimental analysis has an exalted status among scientists, and deservedly so, for it underlies our mastery of nature; but perhaps its most important service is that it provides a necessary foundation for effective scientific interpretation. It is not our laboratory demonstrations but our interpretations of nature that are all encompassing, or nearly so, and it is they that stir the blood.

We distinguish, then, between the experimental analysis of nature and the interpretation of nature. Experimental analysis underlies our mastery of nature and requires the observation, measurement, and control of all relevant variables. Our discovery and understanding of general principles of nature arise entirely from experimental analyses. Interpretation is the extension of these principles to domains where observation and

¹However, under controlled laboratory conditions, for example, of certain schedules of reinforcement, emergent rates and patterns of nonhuman behavior and, to a lesser extent, human behavior, can be predicted fairly accurately.

experimental control of all important variables is impossible or impractical but where incomplete data are available. (p. 175)

Although behavior analysts have been slow to offer empirical accounts of many of the content domains in psychology, they have not been completely silent in suggesting interpretive accounts. The most prominent example is Skinner's interpretation of language in *Verbal Behavior*. Other behavior analysts have offered interpretations of such content domains as memory (Palmer, 1991), cognition (Palmer, 2003), social knowledge (Guerin, 1992), and behavioral development (Schlinger, 1992, 1995). Such accounts attempt to reconstruct the natural history of the behavior in question, and together with a strong foundation of general principles based on decades of careful experimental analysis, these interpretations carry more weight than many alternative interpretations.

Nevertheless, much remains to be interpreted. Behavior analysts have the advantage of a set of conceptual tools derived from a rigorous experimental analysis of behavior. And although they may not always get it right, the accuracy of actual interpretation is not as important as the adequacy of the analytical tools (Palmer, 2003). Moreover, behavior analytic interpretations supplant mentalistic accounts, just as "scientific interpretations from the fields of geology, cosmology, evolutionary biology, and meteorology" displace "occult theories by showing that established scientific principles are sufficient to account for puzzling phenomena" (Palmer, 2003, p. 175). As Altus and Morris (2004) recently put it, behavior analysis accounts "for the mind without being mentalistic" (p. 268).

For Lana (1995) the behaviors ripe for interpretation, that is, those that have "critical non-experimentally examinable histories," are "verbal and other forms of social behaviors" (p. 401). Lana believes that the histories of such behaviors need to be described and in so doing behavior analysts will shift their observations from the process of behavioral acquisition and maintenance (i.e., operant learning) to "the content of the specific historical behavior in the verbal-social community" (p. 401). The interpretation of complex behavior points to processes, but because the process of learning affects only the behavior of the individual, the problem of content remains to be dealt with.

Process Versus Content

When it comes to social behaviors, we may distinguish, as Lana (1995) does, between process and content (see also Glenn, 2004). The processes responsible for the learning of social behaviors are the contingencies of operant selection in the social environment operating on the behavior of the

individual or, in other words, *how* the behavior is learned. The content is what is learned.

According to Glenn (2004),

All learning is individual learning . . . that is, the locus of learning comprises the events in the behavior stream of an individual organism as they relate to environmental events. The social character of some or all environmental events in behavior contingencies distinguishes the content of the environment, not the process by which that environment affects behavior. The behavioral processes are the same, whether the environment that functions to select the behavior is social or nonsocial, and those processes are a biological given. (p. 138)

As Lana (1995) put it, “an analysis of what social behavior is reinforced under what circumstances will be more useful than discovering the process of reinforcement themselves” (p. 403). If we acknowledge that an understanding of both the content of behavior and the processes responsible for that content is a necessary goal of psychology, then the next step is to consider the methodologies required to accomplish this and the disciplines responsible for carrying them out. If we grant that the experimental analysis of behavior can adequately account for the processes of individual learning, then we can turn to the domains or sub-disciplines in psychology for descriptions of the content. In fact, the so-called demonstration experiments I described in my article comprise an important step in this direction.

Lana (1994, 2004, this issue) stresses the importance of considering the history of the behavioral repertoire. These behavioral repertoires constitute the content of their respective domains. In my article, the representative examples I cited from social psychology were the foot-in-the-door phenomenon, in which people are more likely to comply with a larger request after first complying with a small request, and the related door-in-the-face phenomenon, in which people are more likely to comply with a smaller request after first complying with a large request. The tendency of people in our culture to comply with a larger request after first complying with a smaller one or vice versa illustrates what Lana refers to as a behavioral repertoire, or what Glenn (2004) calls a *cultural practice*, that is, “similar patterns of behavioral content, usually resulting from similarities in environments” (p. 140).

It is important to understand, as Glenn (2004) points out, that one cannot discern the ontogeny of the individual behaviors that make up a cultural practice because they may comprise behaviors that are independently generated or socially transmitted. In other words, similarity of content doesn't mean similarity of origin. The processes of cultural transmission necessarily involve the interacting behavior of two or more people and occur either directly through operant selection at that level or by way of higher-level

function-altering processes of observational learning (i.e., imitation) or rules (Schlinger and Blakely, 1994).

Cultural practices, including complying with (large and small) requests, can only be discerned, as Lana (1995) suggests, by examining the “social-historical content of the behavioral repertoire” (p. 403). This can be accomplished in a number of different ways including between-subject experiments by social psychologists. Such experiments reveal what social behaviors are reinforced (compliance with small or large requests) and under what circumstances (whether a small or large request has already been made). But as I indicated in my article, such experiments do not answer the question of ultimate causation. Once social psychologists demonstrate a cultural practice or behavioral repertoire, such as the foot-in-the-door phenomenon, it is up to others (e.g., behavior analysts) to offer an analysis or interpretation of the social contingencies that might produce such behavior in an individual. But, as I also pointed out in my article, not every individual will comply with a large request after having first complied with a small request. So we need an analysis or interpretation that can account for these individual differences as well. Only an experimental analysis or an interpretation of the behavior of the individual based on such an analysis can explain such variations.

To conclude this brief response, psychology can keep its promise of a natural science of complex human social behavior first by focusing on behavior, whether it is overt behavior or the private “verbal referents of an acquired content” of interest to many social psychologists (Lana, 2004, this issue, p. 274). That would be followed by the experimental analysis of individual behavior complemented with historical description by social psychologists. Finally, behavior analysts and perhaps other psychologists can employ the principles derived from the experimental analyses to interpret the complex content of the social behavior that comprises cultural practices.

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