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A Contingency Interpretation of Place's Contingency Anomaly in Ordinary Conversation

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A verbal phenomenon often reported in the research literature of conversation analysis is reviewed. The phenomenon involves the observation that spoken sentences often receive consequences from listeners, and that the effect of these consequences appears to be variability in sentence emission, whereas the absence of such consequences appears to produce response persistence. If the speaker's sentences function as units of verbal behavior and the listener's responses function as reinforcers, the effect seems to run contrary to reinforcement contingency effects observed in the laboratory, where reinforcement produces response differentiation and extinction produces an increase in response variability and a decrease in the response class previously selected by reinforcement. An interpretation of the conversation phenomenon is presented, employing standard reinforcement contingencies for which the behavioral dynamics involved may be seen when speaker's sequence of sentences is construed as a behavior chain.

As the field of behavior analysis ventures further into the intricacies and complexities of the analysis of human verbal behavior, there are bound to be many challenges. Some of the challenges are likely to be methodological (e.g., Catania, 1998; Hayes, White, & Bissett, 1998; Hutchison, 1998; Leigland, 1998; Palmer, 1998), whereas others may arise from the ways in which verbal behavior expands or otherwise modifies our understanding of the basic technical concepts of behavior-analytic science. For example, the standard view of the concept of reinforcement has been expanded in some ways by the experimental literature of equivalence classes, transfer of function, and derived relational phenomena (e.g., Hayes, Kohlenberg, & Hayes, 1991; Sidman, 1994). Also, Ernst Moerk's painstaking reanalysis of Roger Brown's data on language development (e.g., Moerk, 1999) has indicated a number of complex phenomena regarding consequences and their effects in first-language acquisition. Such phenomena and areas of research in no way invalidate or challenge the concept of reinforcement, but rather indicate that there may be complex properties or dimensions of change involved with the concept that arise in the field of verbal behavior.

Another possible example of such complex effects has been offered from the field of conversation analysis. The late Ullin Place had written several papers describing the field of conversation analysis to the behavior-analytic scientific community (e.g., Place, 1991, 1997b). Arising from the ethnomethodological tradition in sociology, conversation analysis is an empirically based, descriptive study of ordinary conversation as it is observed and recorded in natural settings. Researchers make use of a sophisticated set of transcription protocols and other techniques in looking for regularities and patterns in recorded conversations. Place's purpose in bringing this field to the attention of behavior analysts was to promote the field as a possible source of data to those interested in the

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functional analysis of verbal behavior (e.g., Place, 1997a).

In at least one case, the findings from conversation analysis appeared to challenge standard notions of the effects of reinforcement contingencies (e.g., Place, 1997a, 1997b). This phenomenon is the subject of the present contingency interpretation.

Consequences and Effects in Ordinary Conversation

From a functional-analytic point of view, ordinary conversation is an extraordinarily dynamic and complex verbal phenomenon, and we no doubt have much to learn about the functions of context and consequences in such interactions. Nevertheless, certain regularities have been reported in the literature of conversation analysis which may indicate the role of certain functional relations.

First, although a variety of response forms may serve as functional units of verbal behavior (Salzinger, 1991; Skinner, 1957), the spoken sentence is of special interest to conversation analysts when considering the role of listener-supplied consequences. The relevant phenomenon is described by Place (1997b) as follows:

> If you listen attentively to a tape recording of any naturally occurring verbal interaction between two or more people, or read any professionally prepared transcript of such an interaction, or simply listen to a conversation in which you are not a participant, you cannot avoid observing that virtually every sentence that a speaker completes is reinforced by the listener. (p. 657)

Perhaps in place of "reinforced" we might say that the great majority of sentences receive consequences from the listener through the familiar presentation of brief acknowledgments or "continuers" (as they are called by conversation analysts; e.g., Place, 1991). We may also say that the sentences are reinforced by these events to the extent that it may be shown that the listener's responses, as contingent consequent events, serve to maintain the speaker's verbal behavior until other factors intervene to bring the episode to an end or transition (e.g., Place, 1991, 1997a; Skinner, 1957).

What seems to be an unusual or perhaps anomalous effect of reinforcement contingencies under such conditions is seen when one regards the spoken sentences as functional units of verbal behavior (although perhaps not the only such units) and the accompanying verbal consequences (supplied by the listener) as reinforcers. Place (1997b) has summarized the general effects in conversation as follows:

> Unlike the bar presses and key pecks that secure reinforcement in the Skinner box, sentences are not repeated as a consequence of the reinforcement they produce. At the level of the sentence, verbal behavior is subject to what has been called . . . a "win-shift/fail-stay contingency." If your sentence is reinforced by an appropriate expression of surprise or agreement or an acknowledgment of comprehension from the listener, you don't repeat it at the time or later. You move on to the next sentence. You repeat yourself only if the first attempt has failed. Even then you seldom repeat yourself word for word. You construct *another* sentence which puts the gist or point of your previous sentence in another way. (pp. 654–655)

When we think of repeatable responses in standard nonhuman operant laboratory preparations, the effect of reinforcement is an increase in the frequency of members of the operant response class (although in keeping with Place's remarks about sentences, the responses are never repeated exactly; e.g., Catania, 1998; Skinner, 1938), whereas the effects of extinction are an increase in response variability and an eventual decrease in the frequency of the operant response class (e.g., Catania, 1998). According to Place (1997a, 1997b), when looking at conversation with spoken sentences as response units and listener-supplied consequences as reinforcers, the contingency dynamics appear to work in reverse. Reinforcement seems to produce response variability rather than the stable repeatability traditionally associated with differentiation. In extinction, on the other hand, if the listener withholds

consequences or provides a different type of consequence that would be inconsistent with reinforcement (e.g., "What?" or "I don't understand," etc.), we observe the repeating of the sentence in varying forms.

Comparing the basic research operant laboratory context with naturally occurring human conversation is a complex business, but the basics of the comparison seem plausible. Although a variety of complex functional response units and contingency variables are undoubtedly at work in conversation, a case may nevertheless be made for sentences as response units and listener responses as reinforcers. Two issues need to be considered in examining the two contingency situations and their effects on behavior.

First, although sentences may be described roughly in terms of the "win-shift/fail-stay" pattern, conversation analysts have also reported that the discourse type typically follows a "win-stay/fail-shift" pattern. This means that a distinguishable type of conversation on the part of the speaker (e.g., "news telling") tends to continue as a function of contingent consequences supplied by the listener (Place, 1997a; cf. Leigland, 1996a).

Second, reinforcement contingencies may occur or be programmed with respect to many different dimensions of behavior (e.g., Catania, 1998), with response variability itself a reinforceable dimension of behavior (e.g., Page & Neuringer, 1985). Thus, the functional response classes produced through differentiation may show widely differing degrees of topographical stability or instability under conditions of selection and maintenance. Accordingly, any assessment of an apparent anomaly found in behavioral phenomena means only that the functional contingencies remain to be identified, but that unusual properties may be seen given certain initial observations and assumptions regarding functional units, reinforcers, and so on.

Given these conditions, how is the apparent reinforcement effect with respect to the spoken sentence in conversation to be interpreted? One way to approach the situation is to examine additional properties of the behavior and reinforcement contingencies involved in order to determine whether standard reinforcement contingencies can plausibly produce the behavioral effects observed. Although special effects of reinforcement contingencies that may arise in the context of verbal interactions have been proposed (e.g., Barnes-Holmes & Barnes-Holmes, 2000; Hayes, 1994; Sidman, 1994; Skinner, 1957), the present interpretation represents a first approximation employing known contingency effects from standard experimental analyses.

A Contingency Interpretation

The following interpretation rests upon the notion of the sentence as a functional unit of verbal behavior (although perhaps not the only such functional unit in the larger verbal context), and the role of each successive sentence or unit in the sequence of spoken sentences that constitute the speaker's verbal behavior in the conversational episode. In the conversational episode, the sequence of sentences that constitutes the speaker's contribution may be viewed as a behavior chain (e.g., Martin & Pear, 1999). The sequence may seem to differ from the standard conception of a behavior chain in that the sentences are "novel productions," but any sort of operant chain, whether verbal or nonverbal, may involve novel responses during acquisition. *Production* and *novelty* are terms descriptive of phenomena associated with operant behavior generally (e.g., Skinner, 1953, 1974).

The sequence may be regarded as a chain in the sense that (a) some sort of orderly sequence of such sentences must occur in order for the entire sequence, as a whole (e.g., as a "story" when "completed"), to have the characteristic effect upon the listener; and (b) part of the socially mediated function of the listener is in the mainte-

nance of the sequence as it plays out by the delivery of conditioned reinforcers at the completion of certain component units. The units, in this case, are sentences, and the conditioned reinforcers are the continuers noted above. As in any behavior chain, the continuers presumably serve the dual function of conditioned reinforcer with respect to the preceding component and discriminative stimulus in the occasioning of the following component (although the latter function would presumably be rather generic, in the sense of a thematic probe; e.g., Skinner, 1957).

This part of the interpretation accounts for the fact that what appears to be a reinforcer is ensuring the nonrepeatability of a response, so to speak. In this case, variability in responding is produced by the functional and topographical variation that occurs across the successive components of the verbal behavior chain, and when the sequence is supported by reinforcement provided by the listener.

Another aspect of the phenomenon in question is the observation that extinction appears to produce repetition of the response (with varying form) rather than the usually observed increase in response variability. If the sequence of sentences is functioning as a behavior chain, the omission of a conditioned reinforcer at the completion of one of the components could be expected to produce an extinction burst (e.g., Pierce & Epling, 1999), which would provide the observed (if transient) increase in that particular response class, seemingly in the face of extinction.

Summary and Conclusions

The two effects may be combined and observed in an experimental situation in the following way. Consider a pigeon in a five-key pigeon chamber. A five-component chained schedule of reinforcement is programmed with one component on each of the five keys (we will not be presently concerned with specifying the schedule components; e.g., Ferster & Skinner, 1957), each component schedule with its own distinctive color continuously illuminated throughout the chain, with the position of each changing on the five keys randomly after the completion of each chain. The conditioned reinforcer at the end of each component is a 3-s flicker of the houselight, and contingent 5-s access to food is presented at the completion of the fifth and final component of the chain.

After sufficient training of the pigeon under these conditions, an observer unfamiliar with the circumstances and contingencies of the experiment who focuses on the houselight flicker as a reinforcer might find the behavioral effects unusual, in that the reinforcer seems to produce changes in the response location rather than an increase in responding at the location where responding produced the reinforcer. Further, if we now *omit* one of the scheduled reinforcers, the observer would likely observe an increase in responding at that location, completing the apparent anomaly.

As with any of the complex phenomena to be observed in verbal behavior, an interpretation is no substitute for a direct analysis of controlling variables, but an interpretation can, of course, provide a first step and suggest candidates for controlling variables and contingencies (e.g., Leigland, 1996b; Skinner, 1957). In the present case, the phenomenon itself is of particular interest, in that (a) it is empirically based and relatively easily observed, (b) was identified and described by researchers outside of behavior analysis, and (c) appears to provide a challenge to standard reinforcement contingency interpretations. It is in the latter spirit that Place (e.g., 1997a, 1997b) offered the phenomenon to the behavior-analytic community. The phenomenon serves as an illustration of the sorts of effects that may be found in the field of conversation analysis and related empirically based fields, and also serves as

an invitation to pursue these fields and their findings in greater depth.

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