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COMMENTARY

ON THE ROLE OF VERBAL BEHAVIOR IN UNDERSTANDING GAMBLING BEHAVIOR

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In their target article, Fantino and Stolarz-Fantino, point to a number of important issues for understanding gambling behavior. Salient amongst these is describing the factors that influence decision-making in gamblers, and the effects these factors have on gambling behavior. Behavior analysis has much to contribute towards the understanding of the disorder labeled pathological gambling (e.g. Dixon, 2007). However, there are quite few basic research studies examining gambling behavior and even fewer detailing behavior analytic treatment. This is the case even though problem gambling is extensive: for example, in Norway the treatment of children with autism is largely based on a behavior analytic approach, yet there are ten times more people who display problem gambling than there are those diagnosed with autism. It seems that treatments for problem gambling using a behavior analytic approach are underrepresented. The reasons for this may reflect that it is difficult to secure funding for behavior analytic projects focusing on gambling behavior, and there may be a resistance to acceptance of a behavior analytic understanding of pathological gambling given that most research on gambling has come from domains outside of behavior analysis.

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Several researchers have pointed out that a step further in understanding problem gambling behavior could be to investigate the role of verbal behavior (Dixon & Delaney, 2006; Dymond & Whelan, 2007; Rehfeldt & Dixon, 2007) and the importance of self-generated rules (Weatherly & Dixon, 2007). One way to evaluate the effects of self-generated rules on behavior is *protocol analysis* (Ericsson & Simon, 1984), a method for analyzing the effects of verbal behavior on other behavior using verbal reports from the participants. However, Cabello and O'Hora (2002) have called attention to some troublesome aspects with the methodology, maintaining that the procedure is time consuming and complex, there are no implementation manuals, and there are significant limitations on the interpretation of data. Hence, there is always a question about the correspondence between saying (or thinking) and what a person actually does (Israel, 1978). For example, in a book from early in the last century Holt (1915) writes about what was behind the thinking, i.e., actually how low the correlation between thinking and doing actually could be. In an example, a man purchased a ticket at the railway station. Instead of asking him to describe his reasons the author observed him further to determine what controlled his behavior; and found, amongst other things, that he was meeting people at different offices in the city etc. The author notes that had he been asked at the station what was behind his action of buying a ticket at the railway station and he might have answered:

> "Thinking?" he may reply, if he condones our guidelines impertinence. "Why, I am thinking that it's a plague hot day, and I wish I had made my morning bath five degrees colder, and drunk less of that hot-wash that my wife calls instant coffee." "Was that all?" "Yes, that was all until I counted my change; and heard the train whistle …" (Holt, 1915, p. 87).

However, Hayes, White, and Bissett (1998) describe 'the silent dog' method, where, in an attempt to increase the validity of verbal self-reports of ongoing behavior, there are three controls introduced to protocol analysis. In Control 1, the talking aloud should not influence the on-task behavior, which means that the on-task behavior should be the same with talk aloud or not. In Control 2, distracters presented, such as reciting letters, counting etc., should not reduce the on-task behavior to the baseline level; it is also important to note that the distracters should not be incompatible with the on-task behavior. In Control 3, self-generated rules recorded in the first condition (Control 1) should be used in training on-task behavior in another participant.

We have done some experiments in our lab to evaluate the role of self-generated rules, participants were told to talk aloud while completing tasks in an experiment similar to that conducted by Zlomke and Dixon (2006). The participants were pretested on responding on two different slot-machines, yellow and blue, followed by a conditional training of arbitrary relations "greater than" and "less than" in the presence of contextual cues (yellow or blue). Then the participants were tested on the slot machines, posttest, to see if the preferences had changed according to the conditional discrimination training. One group of participants was instructed to talk aloud during the experiment. Based on participant's ongoing self-talk we extracted rules which were then presented to another set of participants. There have been some difficulties with the verbal reports and the correspondence to on-task behavior. Thus, we found that participants who were instructed to talk aloud and say, for example, "The blue slot machine is giving the highest yields", may still press the yellow slot machine. Also, in the studies we have conducted we have found difficulties in getting other participants to follow the rules created by others (the third control in the silent dog method).

Relevant to this issue, Pelaez and Moreno (1998) have argued for a useful taxonomy of rules and the effects on the listener; that is, sixteen types of rules derived from four dimensions: (a) explicitness, (b) accuracy, (c) complexity, and (d) source. In the first dimension, explicitness, the rules could be categorized as either explicit or implicit; explicit rules are rules where all contingency components are included, while implicit rules would be rules in which some aspect of the contingency are omitted in the description, for instance, the consequences. The second dimension, accuracy, relates to the specification of the contingencies in the rule and the subsequent matching (or correspondence) to what actually occurs when the rule is followed. The third dimension, complexity, is for example related to number of elements of the antecedent stimuli. The last dimension, source, refers to whether rules are either self-generated or produced by others. In our research (Arntzen, Halstadtro, & Halstadtro, in press) we found that both the explicitness and the source dimensions are important in understanding the differences in the participant's performance (i.e., implicit rules was used and the differences in performance could be related to missing factors because the rules are produced by others). Dixon (2000) has also conducted a study showing that gambling could come under control of rules generated by the experimenter even if the rules are inaccurate.

It is not only different reinforcement schedules alone which control gambling be-

havior, but a number of other factors, as pointed out by Fantino and Stolarz-Fantino (2008), are involved in this complex set of behaviors. One critical factor amongst these is the role of instructions or rules, either experimenter defined or self-generated. The taxonomy offered by Pelaez and Moreno (1998) could prove a useful tool for categorizing such rules, and provide a fruitful avenue for further behavior analytic research into the controlling variables that maintain problem gambling behavior.

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