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Considering Contingencies of Gambling Research in Conjunction with the *Behavior Analyst Certification Board Professional and Ethical Compliance Code*

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The issues that are the focus of this paper can be exemplified in two questions relevant to danger and validity in behavioral gambling research: Is there danger of reinforcing problem gambling behavior in experiments where gambling is a dependent variable? And, do reliable laboratory effects represent something key in development or maintenance of gambling problems, or have some other applied pragmatic value? Behavior analytic research is performed in an ethical manner, and the concerns of the above questions are typically minimized. The persistence of the questions is discussed, as well as the value of research in relation to behavioral treatments. These issues are discussed in conjunction with the *Behavior Analyst Certification Board Professional and Ethical Compliance Code*.

Behavior analytic research and practice often involves exposure to particular environmental events and contingencies of reinforcement, and gambling is an area of long-standing and increasing interest within the field of behavior analysis (Costello, Whiting, Hirsh, Deochand, & Spencer, 2016; Witts, 2013). Gambling behavior is conceptualized as addictive, and therefore, research that exposes participants and clients to gambling contingencies of reinforcement, which has the potential to be dangerous, presents possible ethical issues. Concerns from review boards, other academics, and well-meaning commentators over the potential danger and possible cumulative effects of reinforcing gambling can bring scrutiny to behavior analytic research. Experts have called for more studies on treatments for disordered gambling translating such research (Dixon, Whiting, Gunnarsson, Daar, & Rowsey, 2015). The current paper describes a perspective on the danger and value of behavioral gambling research in the context of the Behavior Analyst Certification Board (BACB) Professional and Ethical Compliance Code (2014); this paper does not serve as a thorough translation of the code applied to gambling behavior, but explores the authors' perspective based on common misunderstandings of gambling research.

Professional behavior analysts operate in practice, science, or both. The BACB Professional and Ethical Compliance Code (2014) provides a framework under which behavior analysts are obligated to conduct themselves professionally, regarding both practice and science. The BACB Professional and Ethical Compliance Code (or BACB Code) targets behavior analytic scientist-practitioners (for more on the scientist-

practitioner model see Hayes, Barlow, Nelson-Grey, 1999; Petersen, 2007), yet the enforceable purview of the code is limited to those seeking and maintaining the particular certification of Board Certified Behavior Analyst (for more information on the certification see Carr & Nosik, 2017). While scientists conducting basic and translational research and behavior therapists or educators trained with other credentials (e.g., American Board of Behavioral Psychology) may not seek BACB certification or be consequentially bound to the ethics code of the BACB, they are bound to personal ethics and codes of their institutions, their fields, and perhaps to some philosophy of behaviorism. Arguably, the BACB Code should overlap with some of these sources, and should ideally be the standard for personal ethics of a competent behavior analyst regardless of credential status.

There is not an ethics code particular to the field of gambling research, but there are many ethical discussions within gambling literature (e.g., Blaszczynski & Gainsbury, 2014; Cassidy, Loussouarn, & Pisac, 2014; Kim, Dobson, & Hodgins, 2016; Livingstone & Adams, 2011; McGowan, 1997; Shani, Fong, Leung, Law, Gavriel-Fried, & Chhabra, 2014) that concern researchers across several disciplines. The discussions herein are particularly from working in research with a behavior analytic perspective (i.e., Weatherly & Dixon, 2007) though they may be of interest to all gambling behavior researchers.

The issues that are the focus of this paper can be exemplified in two questions relevant to danger and validity: Is there danger of reinforcing problem gambling behavior in experiments where gambling is the dependent variable? And, do reliable laboratory effects represent something key in development or maintenance of gambling problems, or have some other applied pragmatic value? The questions are of legitimate concern if for no other reason than they persist. However, behavioral research typically already accounts for relevant potential problems, as will be described later. As it will be further noted, the questions may persist because of misunderstandings about the behavior analytic model, and wide influence of other models of gambling. The remaining body of the present paper will unpack the questions and cover a response to such concerns, which will lead into a description of the relation between research and treatment, and an application of the BACB Code toward interpreting gambling treatment.

Danger and validity in laboratory reinforcement contingencies

The influence of behavior analytic research that involves exposure to gambling or reinforcement of gambling can be hindered by critiques that broach the danger of such methods to participants. Laboratory analogues to gambling are useful in that they allow for control over many factors that cannot be manipulated in naturalistic settings; this allows for laboratory research to isolate and present variables to discover their independent or combined effects. The problematic ethical issue is the notion that the more valid the simulation of gambling, the more dangerous the simulation may be with regard to potentially reinforcing problematic gambling.

Dixon and colleagues (2015) reviewed behavior analytic gambling research from 1992 to 2012, and found that college students without an indication of disordered gambling were the most commonly sampled population in empirical studies, whom were often exposed to

experimental gambling tasks and provided compensation based on the outcomes. An expansion of descriptive analyses of observations within behavior analytic gambling research is likely needed, considering that the laboratory environment isolates effects (such as reinforcement) that manifest differently in the actual environment (i.e., a laboratory is a potentially poor substitute for a casino). Dixon and colleagues (2015) echoed earlier literature statements that our understanding or analysis of gambling remains incomplete, particularly when it comes to contingencies of reinforcement (i.e., Weatherly & Dixon, 2007).

Models of disordered gambling and reinforcement contingencies

Addressing the question of whether there is risk or danger in reinforcing gambling in a human operant laboratory, behavior analytic theories generally do not support the notion that exposure to gambling contingencies of reinforcement, alone, leads to disordered gambling (although this may contribute to relapse in certain conditions). Early theorizing on the development of gambling behavior may have led to misunderstandings over time, which in turn, may contribute to held notions that exposure to gambling contingencies may be dangerous. For example, Skinner (1953) discussed reinforcement schedules as being responsible for disordered gambling, but in Skinner's analyses, reinforcement schedules act as explanatory when in effect for an extended time; as a result, cognitive behavior, momentary effects, and other issues important to clinicians are subsumed into schedules of reinforcement, leading to sometimes confusing language in classic texts when read out of context or from a different perspective (see Knapp, 1997 for more on Skinner's analysis). Literature since Skinner has more clearly identified areas in need of more research and attempted to dispel the misunderstanding that exposure to gambling stimuli or interacting with a gambling contingency is enough to create gambling problems (e.g., Dymond & Roche, 2010; Weatherly & Dixon, 2007). Influential psychological models that incorporate conditioning also do not support the notion that short term exposure to contingencies lead to disordered gambling (e.g., Blaszczynski & Nower, 2002). The notion that gambling exposure may be dangerous more likely comes from non-behavioral models of gambling and addiction that are more prevalent in culture.

Traditional models of addiction (see Lyons, 2006a) may contribute to a perspective that regards gambling as being immoral or dangerous. The wide spectrum in presentation and severity of gambling behavior, confounded with incomplete models of gambling, have led to a range of general moral and ethical assumptions. For example, many people are able to gamble without problematic consequences, while others develop persistent gambling behaviors that cause significant personal and societal harm. This discrepancy in the trajectory of gambling behavior across people has led to speculation about disease characteristics that render some people especially susceptible to gambling addiction. This biological susceptibility model is similar to the early moralist medical model of alcohol addiction; Alcoholics Anonymous (AA) still utilizes this model, in which abstinence from drinking does not signify the absence of alcoholism and, even if abstinent for many years, an alcoholic is still in recovery. Thus, this view proposes that something is always simply wrong with regards to the person; this can be discussed as a moralist point or a biological point and support similar conclusions.

Drawing upon this model of individual moral or biological susceptibility, Gamblers Anonymous (GA) views disordered gambling as an incurable disease. Pointing to the prevalence of this traditional model, survey evidence from the United Kingdom has indicated that non-professionals regard gambling as an addiction influenced by moral weakness (Griffiths & Duff, 1993). Like AA, GA offers a 12-step support group that focuses on abstinence as the intervention goal. A common interpretation of this model is that a person's biological characteristics make her or him susceptible to gambling problems from mere exposure, and, perhaps even more so, from the addition of reinforcement contingencies.

Responding to concerns

Potential ethical questions related to the dangers of gambling will always persist while the scientific model of gambling remains incomplete. The appropriate ethical response to these questions is to address those concerns utilizing the logic of a behavioral model that is still consistent with other models in pragmatic ways; the BACB Code states that behavior analytic research must be conducted with approval of independent review (9.02), and that behavior analysts promote the science by disseminating information to the public (6.02). In gambling research, the actual danger to participants is necessarily minimal. The time involved and exposure to contingencies in typical laboratory work is not enough to contribute meaningfully to the development of gambling problems. As laboratory studies become more complex with their exposures and reinforcement, they may give way to less controlled settings that hold more valid and naturalistic combinations of factors that lead to disordered gambling; this could mean that danger of exposure may increase. However, typically in these kinds of settings, studies would involve participants who are already more exposed to gambling, thus minimizing potential harm (see Lyons, 2006b).

With regard to concerns about validity of gambling research, most laboratory work is tightly controlled in order to examine a particular event or series of events. A common discrepancy between the natural gambling environment and an analogue setting involves the issue that, outside of the laboratory, gamblers run the risk of financial loss and net consequences such as debt, while this is not likely to be captured in a laboratory analogue (see Weatherly & Phelps, 2006). Additionally, simulating wealth in laboratory settings has particular effects on risk responding (Brandt & Martin, 2015; Weatherly & Brandt, 2004; Weatherly, McDougall, & Gillis, 2006). Regardless of such discrepancies, it is important to note that the purpose of laboratory work is not to mimic the setting outside of the laboratory, but to isolate one portion of it that is of particular importance or interest to the researchers and to understand the individual and carefully combined effects of multiple contingencies. Such findings can then inform studies in less-controlled settings or contribute to descriptive analyses toward a more comprehensive model of gambling behavior. Through empirical data and interpretation, like all behavior analytic models, a comprehensive model of gambling will improve understanding of, and therefore prevention and treatment of, gambling problems. Nonetheless, a challenge continues to be that despite the benefits of behavioral science in application, concerns over empiricist methods are likely to persist as long as the science remains incomplete. The application of behavioral sciences in treatments for gambling problems is likely to continue and improve

with continued research. An important note about experimental and clinical research in behavioral psychology is that they are necessarily related (Ullmann & Krasner, 1975). A behavioral model necessarily involves experimental research that is basic and applied.

Research, treatment, and the BACB Code

The wide awareness and acceptance of potentially incomplete models of gambling have likely impacted professional treatment and research via influence over personal morals and perspectives. Philosophical treatments on the ethics of gambling have been serious but sparse compared to loose moralist discussion (see Black & Ramsay, 2003). To illustrate how this may have affected professional treatment and research, consider that while abstinence is often the goal of professionally-delivered gambling treatment, some researchers have suggested controlled gambling may be a desirable and attainable goal for at least some disordered gamblers (see Ladouceur, Lachance, & Fournier, 2009; Stea, Hodgins, & Fung, 2014) and brief interventions may have appeal to the non-treatment-seeking gamblers who participate in self-directed treatments such as GA. Both brief and harm-reduction treatments have been shown to be effective at reducing gambling behavior and negative effects from gambling (Costello & Fuqua, 2012; Ladouceur, Lachance, & Fournier, 2009; Petry, Weinstock, Ledgerwood, & Morasco, 2008; Stea, Hodgins, & Fung, 2014). Much more research is needed, particularly on identifying gamblers for which these treatments may be more effective or attractive. Such harm-reduction approaches are perhaps inconsistent with some traditional gambling models, potentially leading to this kind of work being undervalued. This is only one possible example of why a more complete model of gambling would be beneficial, so that theory could inform how and when to use such treatments. Interventions targeting a variety of outcomes and behavioral processes exist, but without a parsimonious behavioral model, assessing what option is the most effective for a client is not likely to be a reliable procedure.

As discussed earlier, the BACB Code (2014) should be able to serve as an ethical guide for behavior analysts with a variety of professional credentials and priorities. For behavior analysts interested in gambling, the BACB Code applies to both research and practice. Research into gambling should inform treatments for disordered gambling, ideally information should inform in both directions. According to the BACB Code (2014), scientific knowledge (based on general science and behavior analysis) is relied upon for all professional judgments relating to service (1.01). The available gambling research supports many techniques based in operant and respondent conditioning such as establishment of stimulus control, in vivo exposure with response prevention (Echeburua, Baez, Fernandez-Montalvo, 1996), cue-exposure with in vivo and imaginal desensitization, relaxation training (McConaghy, Armstrong, Blaszczynski, & Allcock, 1988; McConaghy, Blaszczynski, & Allcock, 1991), antecedent identification and reinforcing alternative behaviors (Dowling, Jackson, & Thomas, 2008; Guercio, Johnson, & Dixon, 2012), differential reinforcement of incompatible and alternative behaviors (Arntzen & Stensvold, 2007), and skills training (Costello & Fuqua, 2012).

In addition to their duty to adhere to scientific knowledge, The BACB Code mandates that behavior analysts are also committed to effective treatment (2.09) and should advocate

for and educate their clients about the state of, and evidence for, behavioral and cognitive-behavioral interventions. Cognitive-behavioral therapy (CBT) packages have been shown to be effective in treating gambling problems (see Rash & Petry, 2014 for a review), and exposure-based behavior therapy has been found to be as effective or more than other empirically supported therapies (Echeburua, Baez, & Fernandez-Montalvo, 1996; Smith, Battersby, Harvey, Pols, & Ladouceur, 2015). Behavior therapy (BT) or CBT packages such as Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 1999) for disordered gambling (Dixon & Wilson, 2014) should also be of interest to behavior analysts. These packages are of note among BT/CBT packages additionally for their conceptual consistency being behavior analytic (Costello, 2015); the BACB Code requires behavior-change programs to be conceptually consistent (4.01). However, the package, itself, needs validation in research (see Dixon, Whiting, Gunnarsson, Daar, & Rowsey, 2015; Dixon, Wilson, & Habib, 2016). Gambling is considered an addictive behavior (American Psychiatric Association, 2013); with respect to other addictions, behavior analytic research has favored contingency management as a treatment counted among the best for substance abuse (see Dutra, Stathopoulou, Basden, Leyro, Powers, & Otto, 2008). While a number of the techniques used with gambling interventions described above are based in operant conditioning, contingency management technology has been largely unexamined with relation to gambling disorder (Christensen, 2013; 2015). The BACB Code's commitment to effective treatment should lead behavior analysts to devote energy and research to evaluating which therapies work when matched to the individual's problem in a functional assessment.

Another relevant area in the BACB Code is the necessity of behavioral interventions to be linked to an assessment and tailored to individuals (3.0; 4.3). While there is a vibrant research line on and involving gambling functional assessment tools (Dixon & Johnson, 2007; Weatherly, 2013; Weatherly, Miller, Terrell, 2011; Weatherly, Miller, Montes, & Rost, 2012; Weatherly & Terrell, 2014), research is lacking on the interaction of these assessments and treatment. This is particularly noteworthy, as an effective functional assessment should lead behavior analysts to the details of their treatment. A comprehensive model of disordered gambling has not been achieved, as the development and maintenance of disordered gambling can hardly be reliably predicted. A functional analysis would improve prevention, treatment, and perhaps the experience of recreational gambling.

A final note is that the concern about danger and validity of exposure to contingencies of reinforcement in human operant research may often be misguided, but immersion in an environment of such contingencies being not only selected but also continually retained may indeed lead to disordered gambling. Thus, if strong experimental control and continually repeated and prolonged exposures to gambling are necessary for examining problem gambling development, non-human research is likely the most practical solution for modeling the entire process. Non-humans should be able to gamble with generalized conditioned reinforcers and can be observed for longer periods of time in controlled closed economies manipulated by researchers that include gambling options (Madden, Ewan, & Lagorio, 2007; Potenza, 2009; Tan & Hackenberg, 2015). Non-human models bring up other validity concerns, but have been useful in behavioral science in ultimately leading to many applications.

CONCLUSION

The act of gambling, in itself, may seem amoral, in that right and wrong are not inherently involved in influencing the behavior or the outcome. However, the potential for problems that can arise has led to gambling being described as dangerous. Ethics are related to moral values. To make a value judgment is to potentially clarify something as falling somewhere on the spectrum between "good" and "bad" based on reinforcing effects in terms of a person or culture (Skinner, 1971; cf., Ruiz & Roche, 2007). A person's personal values can be acquired through interactions with the environment involving contingencies of reinforcement, stimulus class formation, and rule following. With experience, one's values may become stimuli under verbal control that motivate behavior consistent with those values (Plumb, Stewart, Dahl, & Lundgren, 2009). Ethical concerns about behavioral research on gambling are likely based on misunderstandings of the behavioral model rather than any direct experience with harm from such situations. Part of the duty of behavior analysts interested in gambling is to explain the behavior analytic model and methods to concerned parties, continue to conduct research that contributes to the behavioral model, and apply those findings to help disordered gamblers.

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