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Jeffrey N. Weatherly
University of North Dakota

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COMMENTARY

GAMBLING: NOT WHAT IT MAY SEEM TO BE

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Fantino and Stolarz-Fantino (this issue) undertake a very worthy effort; attempting to characterize gambling from a behavioral perspective and outlining some of the complex issues in the study of gambling behavior, as well as offering some future directions for research. As others before them (e.g., Madden, Ewan, & Lagorio, 2006; Petry, 2005; Weatherly & Dixon, 2007), Fantino and Stolarz-Fantino identify connections between research on basic behavioral phenomena and the behavior of gambling. They also note several places where such connections are, well, perplexing.

For instance, Fantino and Stolarz-Fantino point out that gambling may be facilitated by the illusion of control (Langer, 1975; Ladouceur & Sévigny, 2005). This idea has support in the literature. For instance, research in laboratory situations has demonstrated that roulette players may sometimes pay "extra" for the opportunity of picking their own numbers (Dixon, Hayes, & Ebbs, 1998). In contrast, however, Dannewitz and Weatherly (2007) found that participants ultimately risked more money when playing video poker when they had no control over which cards were played than when they had complete control. In short, the variable of "control" has not lead to uniform effects on gambling.

Address Correspondence to:
Jeffrey N. Weatherly, Ph.D.
Department of Psychology
University of North Dakota
Grand Forks, ND 58202-8380
Phone: (701) 777-3470
Fax: (701) 777-3454
Email: jeffrey_weatherly@und.nodak.edu

Fantino and Stolarz-Fantino also note that the salience of contingencies controls choice behavior and that the lack of transparency of the contingencies can lead to non-optimal responding. This assertion is reasonable enough. Unfortunately, our research has repeatedly shown that participants have extreme difficulty discerning the contingencies when gambling, at least when playing slot machine (simulations). Weatherly and Brandt (2004, Experiment 1) found that participants' gambling behavior was similar when playing a slot-machine simulation programmed at a 75%, 83%, or 95% payback percentage. Because this experiment employed a between-groups design, we surmised that the similar play might well have occurred because individual participants were afforded limited experience with different payback percentages. Thus, in Experiment 2, we used a within-subject design that had each participant play the simulation three times at each of the three payback percentages. Gambling behavior still did not differ across the different contingencies. Weatherly, Thompson, Hodny, and Meier (submitted) proposed that the results of Weatherly and Brandt (2004) were the result of participants not having concurrent access to slot machines paying back at different rates. We gave participants, across repeated sessions, free access to two slot machines programmed to pay back at different rates. Preference for the higher-paying slot did not emerge. In fact, the only evidence that participants' gambling behavior can be controlled by the programmed contingencies comes from Gillis, McDonald, and Weatherly (2008). In

this study, participants played a slot-machine simulation in three different sessions in which the percentages were programmed at 85%, 95%, and 105% payback. Consistently with previous finding, no differences in gambling were observed between the 85% and 95% conditions. However, significantly more gambling occurred in the 105% condition than in the other two. The take-home message seems to be that people can discern winning from losing, but not between losing and losing more.

The reason for this lack of discrimination is not immediately clear. It could be that the contingencies are very difficult to discriminate when conditions are suboptimal. It could be that games of chance, such as slot machines, actually program multiple contingencies simultaneously (e.g., bars vs. cherries vs. sevens, etc. on a slot machine) and that behavior is controlled differently by the different contingencies. As with the illusion of control, however, whatever the answer, it promises to be less than simplistic and straightforward.

Fantino and Stolarz-Fantino also draw our attention to discounting functions and their potential relationship to gambling. This connection is a popular one and has been highlighted as important in a bevy of recent papers (e.g., Madden et al., 2006; Petry, 2005; Weatherly & Dixon, 2007). Unlike many, Fantino and Stolarz-Fantino correctly identify that this connection itself is not a straightforward one (e.g., the "domain effect"; Baker, Johnson, & Bickel, 2003). What remains amiss, however, is the process that leads to changes in discounting in the first place. That is, although a relationship between discounting and gambling has been proposed (e.g., Dixon, Marley, & Jacobs, 2003), it is not clear what factors lead to changes in discounting. The discounting function itself is descriptive. So one can identify individuals who discount more steeply than others, but that does not provide an explanation for why they do so. Weatherly and Dixon (2007) proposed that discounting functions change because some of the risk factors for pathological gambling (e.g., ethnic minority status; see Petry, 2005) potentially serve as setting events (Kantor & Smith, 1975) that change how those individuals discount delayed monetary consequences. On the bright side, recent research from our laboratory suggests that steepness of the discounting function is related to how much money people will gamble on a slot machine during an experimental session (Weatherly, Marino, Ferraro, & Slagle, submitted). On the dark side, our research (Weatherly, Derenne, & Chase, in press) has also failed to show a predictive relationship between the risk factors for pathological gambling and rates of discounting or between rates of discounting and scores on the South Oaks Gambling Screen (Lesieur & Blume, 1987), a self-report measure of past gambling history. In short, discounting of future consequences may be related to gambling, but we do not have a good understanding of what experiences or situations lead to changes in discounting. That understanding would appear to be critical to fully understanding the true relationship between discounting and gambling.

In the end, Fantino and Stolarz-Fantino come to the issue that is arguably the crux of the matter. How is it that many individuals can experience the same or similar situation and the majority of those individuals walk away without displaying long-term negative behavioral problems and a small minority comes to display pathological behavior? Their description of the sunk-cost effect is a good example. All gamblers, with continued play, will ultimately face that situation. However, only 1 – 2% of the population will come to display pathology.

I agree with the authors in that the answer likely will be found in differential prior experiences of the gamblers. I also agree that a full understanding of gambling behavior, and especially pathological gambling, will require

a better understanding of the social and verbal contingencies than we have today. If I have learned anything from my efforts to research gambling behavior, it has been that, however straightforward the manipulation may appear, its influence on gambling behavior will not be a simple or even a direct one.

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