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COMMENTARY

WHAT ELSE MIGHT WE ASK?: COMMENTARY ON FANTINO AND STOLARZ-FANTINO'S "GAMBLING: SOMETIMES UNSEEMLY; NOT WHAT IT SEEMS"

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Fantino and Stolarz-Fantino have offered a highly informative summary of behavior analytic knowledge regarding problem gambling. As is sometimes the case with this sort of treatment, its greatest value might lie in making clear how much we do not know. Below, I follow their lead in discussing how behavior analytic considerations of problem gambling may be incomplete and suggesting additional, potentially fruitful, avenues of inquiry.

ON THE RELEVANCE OF SUNK COSTS AND THE SALIENCE OF RISK INFORMATION

Fantino and Stolarz-Fantino ask "How salient are the contingencies in standard gambling situations?" The implication is that making the prevailing contingencies more transparent may make behavior more optimal. This has clearly played out well in the authors' examinations of cost sunk-effects. Sunk-cost effects seem particularly relevant and, I think, cannot be overestimated in the current context. This particular form of irrational behavior pervades the gambling culture and influences problem gambling on both

local and extended temporal scales. Individual bets are influenced by sunk costs (see below) and, in the longer run, self-statements such as "one more big bet can help me re-coup all those prior losses" are also a form of sunk-cost effect. The so-called "gambler's fallacy", a failure to understand or acknowledge that past failures or successes have no bearing on the probability of winning the next gamble, is almost certainly related to sunk costs.

Navarro and Fantino (2005) clearly succeeded in pointing towards promising directions for curtailing sunk-cost effects. Still, as the current authors note, stimuli indicating risk are already ubiquitous in the gambling environment. Informational strategies aimed at curtailing sunk-cost effects may be further questioned insofar as experienced gamblers have a keen self-awareness of this form of irrational behavior. This is perhaps illustrated by the elaborate vocabulary for such effects that exists in gambling culture. Poker players, for example, acknowledge being "pot committed" to a hand—the poker player's version of sunk cost. Similarly, being "on tilt," describes, among other things, an extended period of emotionally infused irrational decision-making. That gamblers can already discern these features of their own behavior makes one question the benefits of supplemental stimuli that confirm its irrationality.

Informational strategies further fail to acknowledge other, possibly self-defeating, effects that such stimuli may have. A potential-

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ly relevant extrapolation from recent research is that reward-related stimuli, ironically, may decrease sensitivity to risk information. Ditto, Pizarro, Epstein, Jacobson, and MacDonald (2006) arranged two relative probabilities of winning a pleasant experience (eating an unlimited number of cookies) versus an unpleasant task (completing problems for 30 min). The gamble was made by choosing a card from a deck of 10. For some subjects, 8 cards resulted in cookies and 2 resulted in work (low-risk scenario); for others, 6 cards resulted in cookies and 4 resulted in work (higher-risk scenario). The dependent variable was simply what proportion of the subjects accepted the gamble. When the cookies were simply described to subjects, they showed a rational sensitivity to risk information: 95% took the low-risk gamble, but only 45% accepted the high-risk gamble. When visceral cues were provided (the students could see and smell the fresh-baked cookies), these differences disappeared: over 80% of students in both the low- and higher-risk group accepted the gamble. In essence, the students' behavior was less sensitive to risk information in the presence of those cues than in the absence of the cues. Furthermore, the visceral cues altered the perceived likelihood of winning. Students rated their chances of winning the cookies to be better when the cues were present than when they were absent.

If we can extrapolate to the current context, stimuli that increase the salience of risk are themselves visceral (at least visual) cues, and/or are often embedded in contexts that provide further related stimulation. Where is the problem gambler likely to encounter risk information on betting on a given horse? For some, the answer is at the race track amidst the sights, sounds, and yes, smells of horse racing. This may help to account for Dixon, Jacobs, and Sanders' (2006) finding that delayed rewards generally were discounted more steeply in a gambling environment than in a non-gambling environment. Context ap-

pears to matter. Individual predispositions, however developed, to various forms of context-driven arousal may also be relevant. For example, sexually aroused college students, not surprisingly, reported a higher likelihood of engaging in risky sexual behavior than when they were not sexually aroused (Ariely & Lowenstein, 2006).

ON THE RELEVANCE OF SELF-CONTROL AND DISCOUNTING PARADIGMS

Fantino and Stolarz-Fantino later ask, "What remains incomplete in any account of gambling based on discounting?" Discounting of delayed rewards is certainly relevant and essential differences in discounting patterns between pathological gamblers and others are informative. Still, I agree with Fantino and Stolarz-Fantino that accounts based on differences in discounting functions may be incomplete or oversimplified. How might behavioral discounting preparations, whether intertemporal or probabilistic, more fully capture important features of the real problem space?

One issue is whether sooner-smaller vs. larger-later choices adequately take into account the actual consequences of poor choices. Larger, delayed outcomes are typically cast as greater magnitudes along the same qualitative dimension, but aren't delayed aversive consequences more to the point when considering "pathological impulsivity"? The suffering produced by the delayed aversive outcome of risky behavior is *qualitatively* different from foregoing the delayed potential gain. For example, lighting a cigarette is sometimes cast as a choice between immediate benefits of nicotine self-administration vs. the delayed benefits of a longer, healthier life. But losing out on a long life is not quite equivalent to suffering through lung cancer. Similarly, the delayed gains of larger amounts of money are very different from dealing with bankruptcy. Self-control has, on occasion, been cast in terms of negative consequences

(e.g., Deluty, 1978), but my point is that the positive and negative consequence versions are not necessarily equivalent. As Fantino and Stolarz-Fantino point out, aversion of risk is motivationally more potent than the promise of gain (as exemplified by the 50/50 chance of winning \$200 vs. losing \$100 experiment). In dealing with pathology, might we be closer to the point in arranging choices between small, immediate gains vs. large, delayed aversive consequences?

In relation, typical self-control preparations fail to fully take into account dependencies inherent in real-world choices. Repeated impulsive choices do not simply displace the alternative rational options; they lessen the quality of the delayed consequences. The more frequently the impulsive choice is repeated, the greater the probability of the delayed aversive outcome. Thus, more frequent decisions to light up that cigarette actually *decreases* the probability of a long, healthy life and/or *increases* the likelihood of lung cancer, heart disease, etc. In dealing with pathology, might we be closer to the point in arranging choices between small, immediate gains vs. delayed alternatives that worsen as a function of impulsive choices?

Yes, many people gamble, but only some develop pathology. Behavior analysts have examined different sensitivities between problem gamblers and others as a basis of addressing the problem. Temporal discounting is certainly a good start, as are observations that gamblers are less sensitive to changes in the probability of rewards (Holt, Green, and Myerson's, 2003). Fantino and Stolarz-Fantino have proposed a variety of potentially useful avenues for examining further differences: Do problem gamblers evince the same degree of risk aversion? Are gamblers more prone to be thinking about gambling? Are problem gamblers more susceptible to gambling related instructions or advertisement? My hope is that the above is informative in stimulating still others: Are problem gam-

blers relatively less likely to understand that past failures have no bearing on future odds or are they simply more driven by other factors to ignore these relations? Are problem gamblers relatively less likely to attend to risk information—possibly an observing response issue? Are problem gamblers more sensitive to the effects of gambling-related visceral cues? Do they become relatively more aroused by the outcomes, positive or negative, of their choices? Could there be benefit in casting self-control experiments in terms of small, immediate gains vs. delayed aversive consequences. Are problem gamblers relatively less sensitive to long-term aversive outcomes than casual gamblers or non-gamblers? Most importantly, from a functional behavior analytic perspective, what sort of individual history impacts relative sensitivity to these variables? Onward.

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