

The WAGER Vol. 7(7) - Is it Worth the Wait?

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Many researchers (e.g., Strayhorn, 2002) suggest that self-control problems are common to a number of mental disorders, including disordered gambling. A recent study (Petry, 2001) examined one aspect of self-control: whether pathological gamblers were more or less likely than non-pathological gamblers to pass up larger delayed rewards in favor of smaller immediate rewards.

Petry (2001) enrolled 60 pathological gamblers¹ and 26 non-pathological gamblers closely matched in financial concern, education, race, age, and gender to participate in the study. Non-pathological gamblers had to have no lifetime history of any substance abuse. Approximately half of the pathological gamblers had a lifetime history of substance abuse.

Participants reported whether they would prefer receiving \$1,000 after a delay or some smaller dollar value reward immediately. The delay for the larger reward and the amount of the smaller reward varied and participants made a series of decisions about reward-size/delay balance. Smaller immediate rewards ranged from \$1 to \$999. Delays for the \$1,000 reward ranged from 6 hours to 25 years. Petry (2001) recorded the dollar value that an immediate small reward would have to exceed before a participant would sacrifice the larger delayed reward. She called this point, the point of indifference. For example, if an individual's point of indifference was \$10, the immediate small reward would have to exceed \$10 before he or she would pass up the \$1,000 delayed reward.

From these self-reports, Petry (2001) calculated each individual's degree of delay discounting, or the tendency to pass over delayed rewards for smaller immediate rewards, using the following formula:²

$$\text{Degree of Delay Discounting} = ([\text{Value of delayed reward} / \text{Point of indifference}] - 1) / \text{Duration of Delay}$$

Petry (2001) suggested that individuals with larger degrees of delay discounting have less self-control because they are more willing to forego large delayed

rewards in favor of smaller immediate rewards. She expected that substance-abusing pathological gamblers would have the largest degree of delay discounting followed by pathological gamblers who do not abuse substances, and finally non-pathological gamblers.

Results confirmed Petry's expectations. The average degree of delay discounting was greater for pathological gamblers (0.07) than for non-pathological gamblers (0.02). Pathological gamblers with a history of substance abuse had the largest mean degree of delay discounting (0.30). An analysis of covariance controlling for income, smoking status, gender, and age found the mean degree of delay discounting was significantly different across groups ($F(2, 79)=4.92, p<0.01$).

But what does this mean for the choices that different people are likely to make? Based on Petry's findings, we can deduce that:

Non-pathological gamblers required a minimum of \$807 to pass up \$1,000 a year later

Pathological gamblers required a minimum of \$544 to pass up \$1,000 a year later

Substance-abusing pathological gamblers required a minimum of \$218 to pass up \$1,000 a year later

This study was well designed, original and informative. One limitation, common to most research on pathological gambling, is that the pathological sample was comprised of treatment seekers. It is unclear how representative this group is of other gamblers and impulsive people who do not seek treatment. Additionally, some readers might find the use of point of indifference and duration of delay discounting to assess individuals' problems with self-control unconventional and not immediately intuitive. This latter limitation, however, did not seem to detract from the validity of the results. The direction and consistency of the results within groups suggests that the participants had little difficulty completing the task. Finally, although Petry focuses on self-control, there could be alternative explanations for these findings. For example, it is possible that these results have less to do with self-control and more to do with the participants' expectations about the potential future value of money-in-hand. That is, rather than not having self-control, pathological gamblers may instead have exceedingly high expectations about the future returns of invested (or gambled) money. More

research is needed to determine whether high and potentially unrealistic expectations or poor self-control are the root of observed differences.³

This research provides an alternative to self-report to assess impulsivity—and perhaps the severity of impulsivity—of individuals with disordered gambling. Treatment providers might find this approach useful. There is evidence that self-control can be improved with practice (Strayhorn, 2002) and treatment providers might want to consider integrating self-control training into therapeutic protocols.⁴

Notes

1 Pathological gamblers were identified using DSM-IV.

2 As cited in Petry (2001), this hyperbolic equation was derived by Mazur (1987).

3 The point of indifference can be considered the capital in a compounded interest investment. Non-pathological gamblers on average were willing to invest no more than \$143 to receive \$1,000 after 300 months. The annual compound interest rate for that investment would be 8.1%. Pathological gamblers were not willing to delay the return on investment for that level of interest. Converting to the long-term investment model, pathological gamblers were willing to wait if the interest rate was 13.2% and substance abusing pathological gamblers expected 19.8% to compensate for the delay. These may be conservative investments. The prudent investor would adjust the return over 25 years for the rate of inflation to calculate the return in current dollars. The annual rate of inflation from 1990 through 2000 was 3%. The long-term investment would yield only \$478 adjusted for inflation. On that basis, non-pathological gamblers delayed return for a yield of 5%, pathological gamblers delayed for 9.9%, and substance abusing pathological gamblers would realize 16.3% interest. It may be that problem gamblers are more exacting financial planners than non-problem gamblers.

4 Strayhorn (2002) notes that self-control training that is used to boost self-control can fail if attempts at control are impossible to achieve.

References

Petry, N. M. (2001). Pathological gamblers, with and without substance use disorders, discount delayed rewards at high rates. *Journal of Abnormal Psychology*, 110(3), 482-487.

Strayhorn, J. M. (2002). Self-control: Theory and research. *Journal of the American Academy of Child & Adolescent Psychiatry*, 41(1), 7-16.