

The Effects of Desire for Control and Extrinsic Rewards on the Illusion of Control and Gambling

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The role of individual differences in the desire to control events in an "illusion of control" situation was examined. Subjects high and low in the desire for control played several trials of a gambling game under conditions either facilitating or not facilitating the perception that the subject had control over the outcome of the game. Half of the subjects were allowed to trade their winnings in on prizes at the end of the experiment. The other half played the game without extrinsic incentives. It was found that high desire-for-control subjects were more susceptible to the illusion of control, but only when the winnings could be traded in on prizes. Desire for control level and illusion of control manipulations did not appear to affect betting behavior in the absence of extrinsic rewards.

Gambling, legal and illegal, is a multi-billion-dollar-a-year enterprise in the United States, engaged in at least occasionally by the majority of Americans (Kallick-Kaufmann, 1979). Although friendly poker games and football-game wagers are not generally considered of clinical significance, extensive gambling is often seen as a problem behavior. Explanations of the behavior of "compulsive" gamblers include an unconscious desire to lose and punish oneself (Bergler, 1957), a learning history of randomly reinforced superstitious behaviors (Skinner, 1948), and a phenomenological need for play and finding meaning in one's existence (Kusyszyn, 1977).

One area of social-psychological research appears to have some direct implications for understanding gambling behavior. Several experimental demonstrations of the "illusion of control" (e.g., Langer, 1975) have found that certain situational cues suggesting that the individual has some

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personal control over the outcome lead to a perception of increased control and subsequently to increased betting. For example, allowing subjects to throw the dice after they know what number they are "shooting for" (Strickland, Lewicki, & Katz, 1966) and allowing subjects to select their own lottery tickets (Langer, 1975) have been found to increase the perception of personal control and increase the amount bet.

Recently, Burger and Cooper (1979) examined the role of individual differences in the desire to control events in an illusion of control setting. Subjects were allowed to bet on and throw dice either before or after they knew what the "payoff" number was on each of many trials. It was found that only subjects scoring high on an individual difference measure of desire for control (DC) were affected by this manipulation. Whereas high-DC subjects bet significantly more when allowed to place their bets before throwing the dice than when not allowed this opportunity (the illusion of control), no differences between the two conditions were found for the low-DC subjects. Burger and Cooper note that individuals "hooked" on gambling may be those who are highly motivated to control their environments.

One question that remains unresolved in this literature concerns the meaning subjects ascribe to their bets. Subjects in the Burger and Cooper study were given poker chips and instructed to act as if each chip represented a dollar. Aside from this imaginary amount, the bets held no particular value for the subjects. It is not certain, therefore, if the Burger and Cooper findings would apply to a real gambling situation in which chips translate into tangible extrinsic values. Two hypotheses can be advanced. First, persons high in the desire for control may be intrinsically motivated to exercise control over events. Behavioral differences between high- and low-DC individuals may be found only in those situations in which obvious extrinsic incentives (e.g., money, prizes) are absent. If such were the case, subjects in the Burger and Cooper study might not have responded to the chips as dollars and the results of the study might not have direct implications for real gamblers. On the other hand, the desire for control may become operative only when the exercise of control can result in some distinct advantage for the individual. Thus, it is possible that the high-DC subjects in the Burger and Cooper experiment *were* responding as if they were playing with real dollars, and thus as real gamblers.

In the present experiment, high- and low-DC subjects were placed in situations that either facilitated or did not facilitate the illusion of control phenomenon. Most important, either the subjects played for poker chips with no monetary value or they played with chips that could be traded in for prizes. If individual differences in the desire for control have direct implications for real gambling, then high- and low-DC subjects should differ in

their susceptibility to the illusion of control when they are playing for extrinsic rewards.

METHOD

Subjects

Sixty-nine male and female undergraduates served as subjects in exchange for class credit. All had taken the Desirability of Control Scale (Burger & Cooper, 1979) between 1 and 2 months earlier during the administration of a series of personality tests. No connection was made between the DC Scale and the present experiment at the time of the recruitment. Subjects were randomly selected from those scoring above the 60th percentile and below the 40th percentile of scores for the entire pretested population.

Procedure

Subjects were informed at the beginning of the experiment that they were participating in a study on gambling behavior and that they would be playing a series of gambling games. All subjects were given 50 poker chips to use to place bets. The experimenter explained that they would be playing 14 games of "Kings and Queens." The game consisted of placing the eight kings and queens from a poker deck of playing cards face down on a table. The object for each game was to select one card that matched a predetermined target suit. It was explained to the subjects that the odds of selecting the correct suit were one in four. It was further explained that on each trial the subjects would bet from 0 to 5 chips on whether or not a card matching the target suit would be chosen. The payoff odds for each trial (3 times the bet if correct) and how the subject would win or lose chips was explained until each subject appeared to understand the payoff system.

Control/No-Control Manipulation. The experimenter, kept blind to this point to experimental condition as well as DC (high or low) condition, then glanced at a list that had randomly preassigned subjects into either the control or the no-control condition. In the *control* condition subjects were told they would shuffle the cards and lay them out on the table. They would then be told what the target suit was and, after placing their bets, attempt to select a card matching that suit. Subjects in the *no-control* condition were told that the experimenter would shuffle the cards and place them on the table. The experimenter explained that she would then select one of the

cards and, before turning it over, would ask the subject to make his or her bet that the selected card was of the target suit. The experimenter explained that she would announce the target suit after the bet was placed. These two conditions were designed to provide subjects in the control condition with several situational cues increasing the likelihood, as compared with the no-control group, that they would perceive an illusion of control over the selection of the winning card. The no-control condition was designed to provide as few of these cues as possible. Pilot testing had determined that these manipulations were relatively successful in producing an illusion of control effect.

Reward/No-Reward Manipulation. The experimenter then checked a second list that randomly assigned subjects to either the reward or the no-reward condition. In the *reward* condition, subjects were informed that the chips they possessed at the end of the 14 trials could be exchanged for prizes. A chart was presented that explained the prize value of the chips. A successful player could win such prizes as a T-shirt and a restaurant meal. Less successful players could still receive some smaller prizes, such as chewing gum and candy bars. The prize values were designed so that a total of 50 chips, the amount with which the subject began, was worth a few small prizes. Subjects in the *no-reward* condition were told nothing about prizes.

Subjects then played 14 trials of the game. Bets were collected or paid off by the experimenter with poker chips after each trial. The experimenter recorded the number of chips bet on each trial. At the end of the 14 trials, subjects in the reward condition traded in their chips for prizes. Because only half of the subjects signing up for the experiment received prizes, care was taken during debriefing to emphasize the importance of not informing other potential subjects that prizes could be won in the experiment.

RESULTS

The total number of chips bet by the subject for the 14 trials was calculated. These scores were then examined within a 2 (high DC-low DC) by 2 (control-no control) by 2 (reward-no reward) analysis of variance. No significant effects emerged on this analysis (all p 's > .15). The total-bet measure was then examined separately for subjects in the reward and no-reward conditions. A significant DC level by control condition effect was found in the reward condition ($F(1, 33) = 4.91, p < .05$). As can be seen in Table I, high-DC subjects tended to bet more in the control condition than in the no-control condition. In contrast, low-DC subjects tended to bet more in the no-control condition than in the control condition. No signifi-

Table I. Mean Total Number of Chips Bet

	Reward		No reward	
	High DC	Low DC	High DC	Low DC
Control	46.45(13.34) ^a	34.75(10.54)	39.25(18.38)	41.50(9.49)
No control	35.90(14.86)	40.62(8.38)	38.50(10.01)	42.75(6.67)

^aStandard deviations for each cell appear in parentheses.

cant effects were found for the total-bet measure when examining scores from subjects in the no-reward condition. Finally, a comparison of betting scores for male and female subjects across all conditions revealed no significant gender effect.

DISCUSSION

The findings provide some insight into the conditions under which individual differences in the desire for control influence gambling behavior. It was found that high- and low-DC individuals reacted differently to situational cues suggesting an increased illusion of control for the player, but *only* when the winnings could be traded in for extrinsic rewards. When bets could be translated into extrinsic value, high-DC individuals appeared to be particularly vulnerable to the illusion of control and, hence, increased betting. Low-DC individuals were not only less susceptible to this illusion of control but, interestingly, seemed to be more confident of their bets when control over the handling of the cards and knowledge of the target suit was removed. Neither the subject's desire for control level nor the illusion of control manipulations appeared to have an effect upon betting behavior when there was no opportunity to win prizes.

The results thus suggest that individual differences in the desire to control may be important determinants of gambling behavior. Many "games of chance" are arranged to provide the player with the perception that he or she has some control over the outcome of the game. Kallick-Kaufmann (1979) found that for certain kinds of gambling, such as card games and horse-race betting, the participants generally believe that skill plays a much greater role in their winning or losing than does luck. Although there are no doubt many different motives for gambling, there may be some people for whom the built-in illusion of control in many games is irresistible. High desire-for-control persons may have difficulty avoiding the perception that, despite the odds, they somehow possess the ability to control outcomes just enough to cash in on their share of the stakes.

The findings also provide additional insight into the desire-for-control concept. Burger and Cooper (1979) suggest that individual differences in this trait interact with situational variables to account for behavioral differences. They suggest that behavioral differences between high- and low-DC individuals should not be found when there is no apparent advantage to controlling events. Consistent with their analysis, when the accumulation of poker chips held no apparent advantage for subjects (no reward), individual differences in the desire for control did not appear to affect behavior.

This study thus adds to the growing understanding of how individual differences in the desire for control are related to behavior. Several current topics of psychological investigation have been theoretically and empirically linked to a motivation for personal control. These include depression (Abramson, Seligman, & Teasdale, 1978), intrinsic motivation (Deci, 1975), changes in self-efficacy expectancies during therapy (Bandura, 1977), and causal attributions (Wortman, 1976). An examination of individual differences in desire for control should provide greater understanding and prediction in these and other areas. For example, recent research with the DC scale has found significant individual difference effects when dealing with such areas as learned helplessness (Burger & Arkin, 1980), attitude change (Burger & Vartabedian, 1980), and the undermining of intrinsic motivation with monetary rewards (Burger, 1981).

Finally, the findings in the present experiment have some important implications for psychologists working with individuals with gambling problems. Therapists working with high-DC individuals may want to introduce cognitive and/or behavioral strategies for increasing the perception that gambling outcomes are chance-determined. Limiting gambling to those games that participants generally do not consider skill-determined, such as numbers and lotteries (Kallick-Kaufmann, 1979), may also help to break the illusion of control.

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