

The effect of social influence on deferred consumption

(El efecto de la influencia social sobre el consumo diferido)

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RESUMEN

Estudiantes de psicología ($n=40$) escogieron repetidamente entre recompensas pequeñas inmediatas (1 unidad después de 0 segundos) y recompensas grandes demoradas (2 unidades después de 40 segundos) durante una sesión de 20 minutos. Antes de empezar las sesiones, se les dió a los sujetos diferentes tipos de información acerca de las ventajas de escoger recompensas grandes demoradas. A diez sujetos se les dijo que los psicólogos como grupo, consideraban la espera de recompensas como un acto de valor incondicional. A otros diez se les dijo que los psicólogos consideraban su valor en forma condicional dependiendo de condiciones económicas. A otros diez se les informó que debían hacer un total de 30 elecciones y a los diez restantes se les dijo que se les iban a dar 20 minutos para elegir. Se encontró que las elecciones de las recompensas demoradas fueron significativamente más frecuentes en los sujetos en la condición de "instrucciones de valor incondicional" que para aquellos en la condición de "instrucciones con valor condicional". La respuesta de los sujetos a la demora estuvo determinada por la información acerca del valor que tenía la espera, más que sobre condiciones económicas reales. El autor interpreta estos hallazgos como un apoyo a la idea de que las creencias acerca de los valores de las recompensas demoradas juegan un papel en la determinación de las elecciones intertemporales humanas.

Palabras clave: elección, recompensa demorada, instrucciones.

Abstract

Psychology students ($N=40$) chose repeatedly between small immediate (1 pence after 0 seconds) and large delayed rewards (2 pence after 40 seconds) during a 20 minute session. Before the start of the sessions subjects were given different information about the value of

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choosing the large delayed reward. Ten subjects were told that psychologists as a group regard waiting for rewards as an act with unconditional value. Ten more were told that psychologists regard its value as being conditional on economic conditions. Ten were told that they had to make a total of 30 choices and the final 10 were told they had 20 minutes in which to choose. Choice of the delayed reward was significantly more frequent for subjects in the "trials restriction instruction" condition than for those in the "time restriction instruction" condition and for those in the "unconditional value instruction" condition than in the "conditional value instruction" condition. Subjects response to delay was determined by information about the value of waiting rather than the actual economic conditions. The author interpreted this as supporting the idea that beliefs about the value of delayed rewards play a role in determining human intertemporal choice.

Key words: choice, delayed reward, instructions.

INTRODUCTION

Economic models of intertemporal choice assume that the value of rewards decrease as their availability is moved through time, into the future. This aspect of human choice which leads to a preference for immediacy of outcome is explained in terms of reward discounting and described as time preference proper. Within the majority of the population this effect of the passage of time on the value of rewards is seen as automatic, natural and normal (Stotz, 1956). But when individuals deviate from acceptable levels of reward discounting and display an unusually strong preference for immediacy of outcome they are described as impulsive.

The concept of impulsiveness has been operationalized in a number of different ways and on a number of different levels. For instance, psychologists taking a cognitive perspective regard it as a style of thought that leads an individual to give hurried, inaccurate and impulsive rather than reflective, answers while attempting to solve problems (Kagan, 1965). The usual test of this tendency of thought is called the Matching Familiar Figures Test. In this test subjects are asked to identify a target drawing from amongst a group of five similar distractors drawings. Children who respond quickly and make a large number of mistakes are described as being impulsive. Theorists taking a behavioral line might suggest an impulsive person is the one who takes the crumb today instead of the cake tomorrow and fails to delay gratification (Mischel, 1981). The normal test of this behavioral tendency is Mischel's delay of gratification test (Mischel, 1958). One version of this test involves choosing between a more preferred reward, the availability of which is to be delayed, and a less preferred reward, that is available immediately. The child who chooses the immediate reward is described as impulsive. While the child who chooses the delayed reward is considered to have shown "self control". In operant psychology, re-

searchers have adopted a more quantitative approach to the concept of impulsiveness. For instance, Navarick (1986) has suggested that impulsiveness consists of a maladaptive preference for a small immediate reward. This has been operationalized both in discrete trial and concurrent chained procedures (Sonuga-Barke, Lea & Webley, 1989a). Central to each of these definitions is the idea that impulsiveness involves; a) a preference for immediacy or an intolerance for delay which is b) expressed in a choice situation and which c) leads in some way to a maladaptive outcome.

But the term impulsiveness is much more than just a convenient label for a type of choice. It is part of a system of rhetoric upon which theories of personality and personality development are constructed (Sonuga-Barke, 1988). Basing the psychological study of intertemporal choice on the vocabulary of impulsiveness has two main consequences for our understanding of peoples' response to delay.

First, it means that impulsiveness as a concept has meaning on an organismic level as well as a behavioral level. This is because when psychologists describe an individual's actions as "competent" or "incompetent", "normal" or "abnormal", "mature" or "immature", "adaptive" or "maladaptive", "intelligent" or "unintelligent" and "sociable" or "anti-social" they also say something about the status of that individual. In the same way when an individual behaves in an impulsive manner then he or she is said to have an impulsive character. In line with this approach personality theorists have argued that impulsiveness constitutes a distinct and enduring trait of human personality (Eysenck & Eysenck, 1975).

The second consequence related to the first is that have explanations of impulsive behavior always have to be recovered in the negative. That is to say that the type of choices made by the "impulsive" person are explained in terms of a fundamental (or perhaps constitutional) deficit in his or her "self control". For the personality theorist the explanation of an impulsive behavior is intimately bound up with the values suggested by the term itself. To call a person impulsive is to suggest that they have poor self control and that impulsive behaviors are the result of a breakdown or a deficit in regulative processes. From this point of view Impulsiveness not only describes a form of behavioral deviance but is also assumed to be a product of a defect in character mediated by dysfunction of regulative processes or even to be associated with aspects of child psychopathology (Quay, 1979) and adult psychopathy (Zuckerman, 1978).

Sonuga-Barke, Lea & Webley, (1990) have questioned the assumption of the constitutional basis of impulsive choices by arguing that responses to delay are often based on beliefs about the value deferred consumption constructed over time within social groups. If this were the case one would

predict that preference for large rewards would be determined in part by the types of social influence to which an individual is subjected.

Recently a number of studies have shown that changes in a subject's verbal behavior established either through direct instruction (e.g. Hayes, Brownstein, Zettle, Rosenfarb & Korn, 1986) or by reinforcement of verbal rules (e.g. Catania, Mathews & Shimnoff, 1982), can influence the instrumental behavior of human subjects. If it is the case that social influence determines intertemporal choice we might expect instructions containing information about the social value of a choice for the delayed over the immediate to influence actual levels of choice. But although the effects of instructions of performance on single schedules has been studied extensively, there have been few studies examining the effect of varying instructions on choice performance.

The present study was designed to examine the effect of changing the content of instructions about the social and economic value of deferred consumption on choice between large delayed and small immediate rewards.

Whithin the psychological community there are different beliefs about the value of deferred consumption some of which we have already mentioned. Personality theorists give the choice of the large reward unconditional value and argue that much of effective human action is based on an ability to wait for large rewards, (Mischel, 1974). Choice theorists, on the other hand, recognize that its value is conditional on many economic factors. For instance under certain conditions increases in delay preceding a reward lead to decreases in reward density associated with that alternative and so to less reward over a period of time (Sonuga-Barke, Lea & Webley, 1989b). In the present study these two ideas about the value of the large reward in a self control paradigm were used as two types of social influence. One emphasizing the unconditional value of the choice of the large reward and one arguing for the choice of the small reward under certain economic circumstances.

If psychology students regard their academic community as a salient source of social influence then its beliefs about value should be important determinants of their intertemporal choices. Their choices between immediate and delayed reward should be differentially influenced by instructions outlining these personality theorists and choice theorists beliefs.

METHOD

Subjects

A total of 40 first year undergraduate psychology students participated during a psychology practical class.

Apparatus

The experimental contingencies were implemented on a microcomputer (BBC Model B, Acorn Computers PLC). Two keys on the computer keyboard were used as response buttons. One was colored red, the other blue.

Procedure

Each experimental session lasted 20 minutes during which time a discrete trials procedure was in force. Such a procedure is a "special case" of a concurrent chained schedule (Mazur, 1986), and for consistency with previous literature the procedure is described using the vocabulary of chained schedules.

Entry into the initial link was signalled by the appearance of two colored arrows on the monitor screen, one red and one blue, each positioned toward the bottom of the screen, above the response button corresponding to its color. The first response on either of the two buttons was reinforced by access to the appropriate terminal link. On entry into the terminal link, the monitor screen turned white and a small square corresponding in color to the button last pressed appeared in the centre of the screen, and remained there for the duration of the terminal link. Responses during the terminal link had no consequences. At the end of the terminal link period a points counter appeared in the centre of the screen and was incremented by the appropriate number. Reentry into the initial link followed half a second after the reward period and was signalled by the reappearance of the two arrows. The terminal link associated with the red button gave one point immediately, while that associated with the blue button gave two points preceded by 40 seconds delay. Because subjects had only 20 minutes in all to earn their points this arrangement of choice parameters ensured that the most effective choice strategy involved a repeated choice of the small immediate reward. Any deviation away from this approach would lead to a loss of potential reward.

Ten subjects were assigned to each of four experimental groups, an “unconditional value instruction”, a “conditional value instruction” group, a “time restriction instruction” group and a “trials restriction instruction” group. Before the start of the experiment, all subjects received the following instructions.

Although there have been a large number of studies in animal choice, there have been surprisingly few studies looking at the way people choose. The experiment in which you are about to take part consists of a series of choices between two alternatives. One alternative gives a small reward and the other gives a large reward. The small reward is available immediately, while the large reward is available after a delay. You will make this choice between the two colored keys on the computer keyboard. After you have read this brief introduction and you are ready to start the experiment press the space bar on the computer and the experiment will begin. The points that you earn will be converted into money at the end of the practical; one point equals one penny. So it is important for you to do as well as you can.

The “unconditional value instruction” group received the following additional instructions.

Psychologists have suggested that one of the most important components in human activity is the ability to wait for larger rewards when given these types of choices. For instance, in his book ‘An introduction to personality’ Walter Mischel writes that ‘Learning to wait for desired (larger) rewards is essential for the successful achievement of goals... even the most primitive steps in socialization require learning to control ones impulses’.

For the “unconditional instruction” group the additional instructions read;

Psychologists have suggested that one of the most important components of human activity is the ability to use time effectively. For instance, Sharpe in his book called ‘The economics of time’, wrote ‘...that the fundamental issue is to consider how time can be allocated between all available activities so that maximum utility [value] can be obtained.

The remaining two groups were given information about the economic conditions under which they were operating. One group was told (incorrectly) that they had 30 choices to make (the “trials restriction instruction” group) and the other group was told (correctly) that they had 20 minutes to make their choices (the “time restriction instruction” group).

Results

The proportion of responses on the key associated with the larger delayed reward for the first 30 trials after both keys were sampled was the dependent measure. A one-way analysis of variance revealed that there was an overall effect of instructions ($F=59.45$, d.f. 3,36; ps). Using planned orthogonal comparisons it was shown that the "trials restriction instruction" group chose the larger reward more often ($M=0.87$; $SD=0.12$) than the "time restriction instruction" group ($M=0.12$; $SD=0.09$; $F=117.95$, d.f. 1,18; p) and that the "unconditional value instruction" group ($M=0.23$; $SD=0.23$) chose it more often than the "conditional value instruction" group ($M=0.04$; $SD=0.038$; $F=7.80$, d.f. 1,18; p).

Discussion

In the present experiment changing the content of the instructions affected the subjects' choice of large delayed rewards over small immediate rewards in a discrete choice paradigm, as they have previously been shown to affect human performance in single schedule situations. Subjects under the "trials restriction instruction" condition chose the delayed reward more than those in the "time restriction instruction" condition while those in the "unconditional value instruction" condition chose it more than those in the "conditional value instruction" condition. This was the case even though none of the instructions given actually tried to influence the choice strategy directly by saying which was the best button to press. The information given in the instructions was more subtle, as it gave information about the value that is ascribed to the choice of the delayed reward by the academic psychological community as well as the value implicit in the instructions about the time and trials constraints operating.

As in previous studies following instructions led to an insensitivity to the actual requirements for effective performance. This is because each response on the button associated with the large reward was a maladaptive response, regardless of the instructions given. The effect of the instructions on choice meant that subjects operating under the trials restriction and the unconditional value condition earned less money than those subjects in the other conditions.

A possible reason for the greater effect of the economic manipulation of value (changing the economic definition of value resulted in a reversal of preference while changing the social definition of value resulted in a shift in preference towards indifference) is that the effects of the two type of manipulation were due to different types of processes. Instructional control might

have different characteristics depending on whether the instructions present information about social or economic understandings of value.

In general a subject's sensitivity to the content of information about the value of a reward depends on the level of influence which the author of the information has over the subject. In the time and trials conditions, so long as the subject believes the experimenter to be honest the economic character of the situation is unambiguous and the value of the two alternatives explicit. As far as the differences in choice under the time and trials conditions is concerned this study shows that effect of delay and reward rate are conditional on instructions informing subjects that they are operating under a time constraint. Whether the "trials restriction instruction" condition would override information about the "time" based constraint which repeated presentation of the experimental session would provide is not addressed in the present study.

Sensitivity of a subject's performance to instructions expressing a "social" definition of value involves social influence in a more interesting way. Where the value of actions are ambiguous and open to interpretation, individuals might take into account information originating from a "respected actor" as they attempt to understand which choices are regarded as most valuable. The performance of subjects was mediated by one of two views of the value of delayed reward, each originating from the psychological community. Although each view was presented as the majority views and so appeared to be imbued with the power which the information derived from that source holds over the individual, the fact that the manipulation had a limited effect suggests that the sources were not seen as entirely legitimate or compelling by the subject.

Social psychologists have identified a number of factors that predict an individual's disposition to conform to an authority figure. For instance, the stronger an individual's need for approval (Strickland & Crowne, 1962), the lower the individual's self esteem (Dittes, 1959), the more anxious the individual's need for affiliation (Hardy, 1957) the more readily he or she will conform under "social" influence. From this it would follow that one explanation of the smaller effect of changes in the instruction of the social definition of value is the individual differences in these measures found in a random sample of 40 subjects used in the present experiment.

Consequently, give, a more salient manipulation the social value the effect of the "unconditional and conditional instructions could be increased. In future studies this increased salience could perhaps be achieved by stressing the importance of "psychologists" as a socially cohesive group of individuals so that the part played by the behaviour of each individual in defining the groups specifically "psychological" identity is seen as more important.

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