Time Discounting in Relation to Career Preferences

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Abstract

The present study used a longitudinal design to test aspects of Kirby and Herrnstein's (1995) theory of time discounting. Specifically, the prediction that preferences reverse due to changes in delay was tested in a longitudinal study of career-path selections made by employees in a Hong Kong real estate consultancy. Over a three-year period, 16 of 23 subjects reversed their career preference from a future senior managerial position to a lesser management role available earlier. Organizational and cultural factors which may have influenced these preference changes are discussed and areas of future research suggested. The study provides supporting evidence from the career selection perspective that preferences are not necessarily invariant across time.

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When deciding on a suitable career path, employees are often faced with the problem of dealing with delayed rewards, some of which involve making tradeoffs between outcomes occurring at different times. The decision to outlay time in training, study, and work experience in order to fill a senior position at a later date can mean foregoing earlier promotion to less senior positions. Moreover, the choice between short-term and long-term values can create on an ongoing conflict, frequently leading to a change in preference at a later date. The present study examined the application of time discounting theory to help account for career choices made by employees in a firm where there was a clear choice between long-term and short-term goals.

Time discounting (also called delay discounting) refers to the devaluing of positive or negative outcomes as a result of delay (Hesketh 1997). Early versions of time discounting theory proposed that where two goods are separated by a fixed time, they are discounted by a constant fraction per unit of time (e.g., Koopmans, 1960; Fishburn & Rubinstein, 1982). The ratio of the values of both rewards is constant across delays, so the relative preference between those goods is unaffected by how far in the future they may be. In essence, the preference is always for the shorter term reward.

Kirby and Herrnstein (1995), however, argued that delay discount rates do not remain constant. Instead, they proposed that the choice between two outcomes with differing delays reverses as a function of the distance between the time the choice has to be made and the extent of the delay. When today both the smaller, earlier reward and the larger later reward are far off in the future, the latter is preferred over the former. In other words, at this point people express a preference for the longer term goal. However, as time passes and the two alternatives become nearer to the present, the preference reverses to the more immediate goal, crossing over at point C in Kirby and Herrnstein's (1995) illustration of what has been termed the hyperbolic discounting model (See Figure 1).



Figure 1

Reversal Model of Time Discounting (from Kirby & Herrnstein, 1995)

The hyperbolic discounting model, accounting as it does for reversals of preference over time, has received strong support from a variety of disciplines. The relationship between time discounting and aspects of decision-making at work was examined by Hesketh, Watson-Brown and Whiteley (1998). They argued that career decision making often involves a choice between nearer goals of lesser value and more distant goals of greater value, a scenario that fits the time discounting paradigm. In a series of studies Hesketh et al. (1998) demonstrated that value discounting follows the hyperbolic discount function when applied to job selection, that discounting patterns varied with the age of participants, and that discounting tends to be reduced when the period of delay is filled with meaningful activity. This promising research was conducted with university students under laboratory conditions, a context in which it may have been difficult for the participants to give the choices the degree of importance they would normally assume when making real-life career decisions. Further, it was obviously not possible to reproduce the actual time frame over which the participants' preferences might be expected to change. However, the study drew attention to the relevance of time discounting to this field and its role in bringing about preference reversals in career decision-making.

To add to the research on time discounting relating to employee career-path decisions and to improve the ecological validity of research conducted in this field, the present study investigated job preferences of selected high talented staff members during a five-year development course designed to prepare them for senior management. The organization involved recognised that effective performance at the senior level required a breadth of training and experience that would take some years for trainees to accumulate, requiring them in the meantime to bypass lesser advancement opportunities. These conditions are very similar to those listed by Hesketh et al. (1998) as justifying the application of time discounting theory to job selection. In particular, the requirement for individuals to invest substantial time and energy in extensive study or training when the benefits follow much later. This is precisely the condition imposed on the employees of the company involved here. In addition to the delayed gratification, employees of the present company were likely to be tempted by lesser shorter term rewards, another classic characteristic of time discounting situations. Given these conditions it was expected that, over time, employees' preferences would show the classic reversal pattern described by Kirby and Herrnstein (1995) and noted by Hesketh et al. (1998) in laboratory studies of career preference.

Method

Participants

The research was conducted within the Hong Kong Branch of a leading real estate consultancy. The participants were 23 Hong Kong Chinese employees selected for a senior management development program. Of these, 19 were males and 4 were females, their ages ranging between 23 and 32 years at the time of selection.

Materials

The trainees' ongoing commitment to the development program was gauged through repeated administrations of a single item bipolar scale termed the Career Preference Scale (CPS). The CPS was developed for the present study but was similar in format to scales used by other researchers in this field (e.g., Rachlin, Raineri, & Cross, 1991; Hesketh et al., 1998). The CPS required respondents to indicate their preference for promotion to a senior management position in *x* years time or promotion to a middle management position in *y* years time. For scoring purposes, strong preference for a later senior management appointment was rated as +10, undecided was rated as 0, and strong preference for an early middle management appointment was scored as -10. Responses could range anywhere between the -10 and +10 extremes. To avoid possible bias, mathematical symbols did not appear on the actual form.

The CPS was administered by the one of the investigators at the commencement of the development program and then again at 13 months, 25 months, and 35 months into the program, making four times in all. Plans to administer it a fifth time were abandoned when

the company introduced significant changes to the program after the 35 month point. For each administration of the CPS, the periods of delay for senior (x) and middle management (y) appointments were reduced as follows: 1) senior management appointment in five years or middle management appointment in three years; 2) senior management appointment in four years or middle management appointment in two years; 3) senior management appointment in three years or middle management appointment in one year; 4) senior management appointment in two years or middle management appointment as soon as a position became available. The CPS is reproduced in Appendix A.

In addition to the CPS, participants were also asked to answer two further questions: Q1) "I am prepared to continue getting the training and experience necessary to reach a senior management position"; and Q2) "I would accept a middle management position if it were offered soon". A five point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) was used for both these questions, which were administered at the same time as the CPS. Assessing preferences for the two career options in this unipolar format allowed us to check the attractiveness of the two options across the period of the study. All those participating in this study had an excellent command of English, the language used for both the CPS and the supplementary questions.

Procedure

The 23 trainees selected for the development program attended a two-day orientation course that outlined the form and content of future training. During the orientation course frequent emphasis was placed on the lengthy duration of the forthcoming program required in order to gain the expertise and breadth of experience necessary for effective senior management. The trainees accepted the extended time span and were very positive toward the program in general. Because of the commitment required by participants, regular supervision and periodic monitoring of their attitudes and career preferences were regarded as critical supporting initiatives if the program was to succeed. The four administrations of the CPS were treated as part of the monitoring process. At these periodical administrations, which were always conducted by one of the investigators, the trainees were assured of confidentiality and were asked to be frank and honest in their responses. The data collection was explained as part of an overall evaluation of the senior executive program.

Results

The CPS required participants to indicate the strength of their interest in their current career path preference. At the first administration, made at the program's commencement, the CPS showed lead times of five years (senior management) and three years (middle management). Subsequent administrations progressively shortened the intervals to both rewards. The effect of the ever-reducing period of delay may be seen in Table 1. Here, the raw scores for each of the participants for each administration of the CPS have been tabulated and a mean determined. These means were derived from scores of the participants still in the program at the time of administration. In this sense, they are a conservative estimate of the appeal of shorter term rewards because they do not include data from employees who resigned or transferred out of the program.

Participant	Administrations of CPS								
-	1 st (Start)	2^{nd} (13 months)	3 rd (25 months)	4^{th} (35 months)					
А	8	6	0	-4					
В	9	7	0	TFR					
С	9	7	5	5					
D	8	6	0	-6					
E	7	1	0	TFR					
F	8	-2	RSG	RSG					
G	6	6	4	-6					
Н	6	5	0	-6					
Ι	8	2	-4	TFR					
J	8	8	6	6					
K	8	6	2	-6					
L	6	RSG	RSG	RSG					
М	7	7	7	3					
Ν	10	8	8	8					
0	10	4	-4	-6					
Р	6	0	RSG	RSG					
Q	5	1	TFR	RSG					
R	6	6	4	TFR					
S	8	8	6	6					
Т	8	6	0	6					
U	6	-6	RSG	RSG					
V	6	RSG	RSG	RSG					
W	8	8	6	8					
Means	+ 7.44	+ 4.48	+ 2.35	+ 0.62					

Table 1 Individual Career Preference Scale Scores and Means For Each Administration (N = 23)

Key: RSG = Resigned TFR = Transfer

It can be seen from column 1 that all participants favoured the longer term goal at the outset. This is not surprising, given that they knew the aims of the program and had agreed to be included. By the end of the third year of the program (4th administration of CPS), however, 10 participants had dropped out because of transfers or resignations. All 10 of these were initially in favour of waiting for a senior executive position at the completion of the five-year program, as shown by their scores in column 1. Their transfers and resignations are taken as indicating a behavioral switch to an earlier reward, an interpretation that is supported by their decreasing scores prior to dropping out. Decreasing scores were also evident among those who stayed in the program: compared with shorter term rewards the attractiveness of long term senior executive appointments diminished with the passage of time. In total, 16 employees either left the program or ended up with negative scores on the CPS by the 35th month. The trend of the means suggests that more reversals were likely before the program was completed, although the increasing proximity of the final goal over the last two years of the program may have led to an upward kick in the preferences for this goal. A final point to note from Table 1 is that there were marked individual differences in these time discounting data. Some participants reversed preferences very early, others maintained a strong preference for long term rewards even after three years.

The bipolar format of the CPS forced participants to choose either goal, or to indicate neutrality. The two supplementary questions, however, allowed participants to rate the attractiveness of the two options separately. Figure 2 plots the mean responses to each question. To calculate the mean response to Q1 ("I am prepared to continue getting the

training and experience necessary to reach a senior management position"), all missing data points were assigned the value 2 (Disagree). Similarly, for Q2 (" I would accept a promotion to middle management if it was offered now"), missing data points were replaced with the value 4 (Agree). Arguably, the missing data points could be given the value 1 for Q1 and 5 for Q2 on the grounds that those missing had shown quite emphatically that by leaving the program they valued a shorter term goal more highly. The more conservative values were used, however, because although employees who had left or resigned were contacted, we still could not be absolutely sure of their motives for leaving.



Key:

- SER = Mean response (N = 23) to question "I would accept a promotion to middle management if it was offered now".
- LLR = Mean response (N = 23) to question " I am prepared to continue getting the training and experience necessary to reach a senior management position".

Figure 2

Mean Responses to Questions Regarding Value of Early Middle Management Promotion (SER) and Later Senior Management Promotion (LLR)

From Figure 3 it can be seen that after the initial enthusiasm, the perceived value of the longer term reward decreased in the middle stages of the program. Such an outcome is not predicted by the time discounting model proposed by Kirby and Herrnstein (1995) where the attractiveness of both options is expected to continue to increase (see Figure 1). It can also be seen that there was a marked increase in the perceived value of shorter term rewards after a year or so of the program. The cross-over point predicted by Kirby and Herrnstein had been reached by the 35 month stage of this 60 month program. The dotted lines for both reward outcomes beyond the 35th month indicate that we have no further data and that we are speculating beyond this stage. As mentioned earlier, the program was revised substantially after this point, rendering any subsequent data collection meaningless. Our main expectation would be that the remaining trainees would show a characteristic upward lift in their preference for the longer term goal as the program entered its final stages. In the situation

described in this study, preference for the shorter term goal may even decline over the concluding stages as the major reward draws closer. To reflect our uncertainty about the perceived value of the SER beyond the 35 month point, we have drawn dotted lines going up (as predicted for the classic time-discounting situation) and also going down (as seems more probable in the context in which this study took place).

Discussion

The partial results reported here demonstrate that changes do occur in career preferences over time as a function of proximity of rewards of differing absolute value. The resignations and transfers, combined with the shift in preference in the questionnaire data from long term rewards towards short term rewards, is consistent with the reversal view of time-discounting put forward by Kirby and Herrnstein in their challenge to traditional economic theory and supported by Hesketh et al. (1998) in their laboratory study of job selection. The present study also shows that this phenomenon occurs when the shorter term reward is not at some fixed interval from the longer term reward – a situation typifying most time discounting studies - but is available at more or less random points according to labour market demands. A further interesting point to note in these data is that people do not appear to switch preferences on the spur of the moment. Seven out of the ten employees who resigned or transferred out of the senior development program gave indications 12 months ahead that they were losing interest in the long term path (Table 1).

Unfortunately, there was no opportunity to observe what might have happened beyond the 35 month period. Taking note of the high attrition rate to that point, the company modified the course, incorporating a number of initiatives to make it more attractive. These included: a) appointment of participants to middle-management status within the program after three years of satisfactory progress; b) raising the commencement age of new participants so that they can acquire more experience before joining the program; c) regular counselling of all trainees by a personnel manager; d) measurement of progress through setting and meeting a series of short term goals; e) a review of the remuneration package of those participating.

The fact that changes of this magnitude had to be introduced argues for the strength of the time discounting effect in job selection decisions. Despite high levels of initial commitment to long term goals, this commitment will weaken unless compensatory mechanisms are put in place. Appointing the trainees to middle management status at the midpoint of the program and increasing their remuneration package substantially reduces the gap between the perceived values of the shorter and longer term rewards. Likewise, the introduction of goal setting and regular counselling sessions should act as "filler activities", which Hesketh et al. (1998) found to decrease the time discounting effect. These initiatives should all work against the time discounting effect.

Limitations of Study

There are important differences in the design of this study to those employed in laboratory studies of time discounting (e.g., Hesketh et al., 1998). The necessity to abandon the project at the 35 month point is an obvious methodological shortcoming of the study in that we were not able to observe what happened over the final stages of the program. As with most field studies, the gains in ecological validity were offset to some extent by the loss of control. Whereas in laboratory studies it is possible to fix the point where short term and long term rewards are to be attained, in the present study we were able to fix only the long term reward. Although participants were admitted to the senior executive program on the understanding that they would see it through, in reality they had the opportunity to accept short term rewards from both outside and within the company at any time. The random timing of the short term rewards and the unknown values of these rewards (resignations and transfers) prevented a proper test of the mathematical model proposed by Kirby and Herrnstein (1995). Instead, we were restricted to searching for evidence that people behave in a way that is either consistent or inconsistent with the model.

The small sample size was a further limitation, making it difficult to search for individual differences variables that covary with the time discounting phenomenon. Gender was the only variable that stood out as a possible moderating variable with three out of the four females electing longer term rewards right up to the 35 month period, but even here the numbers were too small to warrant firm conclusions.

When considering threats to the external validity of the study, it is important to draw attention to some contextual factors that were perhaps unique to Hong Kong and the period. The frenetic pace of building construction and property dealing over the period of the study provided many openings at the middle-management level. Thus, there was an uncharacteristically high level of recruitment to middle-management level during this period. A second important contextual factor was the transition of sovereignty from Britain to China. From July 1997, the people of Hong Kong became not only Chinese by culture, but also by nationality. The general commercial uncertainty created by the impending transition may have resulted in additional pressures to accept immediate rewards. Whilst these conditions were ideal for testing the resolve of employees undertaking a program aimed at highly valued but longer term goals, they were probably not typical of a normal commercial environment.

Future Studies

Not all individuals in the present study made the reversal in preference. Hesketh et al (1998) found a link between anxiety and time discounting with anxious people more likely to choose a shorter term reward, and we have noted a possible association with gender, but there is still much to be done in this area. If variables such as anxiety covary with time discounting behaviour in a laboratory setting, their effect should be much stronger in a field setting where the timing and value of the shorter term reward is unknown and where the pressure to increase income to meet current financial obligations is high. Identification of individual differences variables that enable people to resist these pressures will help us to understand career decision making in a dynamic commercial environment.

References

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APPENDIX 1

CAREER PREFERENCE SCALE

Notes to Participants:

- Here you have the opportunity to indicate the type of management career you are currently seeking.
- Bearing in mind the time delays involved, if you had to select between a promotion to a senior management position in *x* years time* and a middle management position in *y* years time*, which of these career paths would you choose today?
- Place one tick on the line below to indicate the present degree of interest you have in that future career path. For example, a rating of 2 means that right now you are a little interested in that position when it comes up and a rating of 10 means that right now you are extremely interested.

Senior Management (Later Appointment)				Undecided Middle Management (Earlier Appointment)				nent nent)		
										Place tick on line
10	8	6	4	2	0	2	4	6	8	10

*The number of years shown decreased with each succeeding administration. For a senior management position, the period remaining in years was shown successively as 5, 4, 3, 2. For a middle management position the first three administrations showed the interval remaining in years as 3, 2, and 1 respectively, with the final administration reading "as soon as possible".