Discount Rates For Time Versus Dates: The Sensitivity of Discounting to Time-Interval Description

Robyn A. LeBoeuf, University of Florida

This research examines the impact of time-interval description on consumers’ discount rates. An initial study shows that consumers demand more money to delay income for a given time interval when that interval is described by an extent of time than when it is described by dates. This heightened discounting under extent-based (compared to date-based) descriptions also manifests when consumers specify their own waiting times, when they choose among investments, and when they postpone debts. Additional results suggest that this pattern arises because time intervals are perceived as longer when described by extent than when described by dates.

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EXTENDED ABSTRACT

Consumers must often consider tradeoffs between future and present dollars, as when they decide to forego immediate consumption to save for a long-term goal, such as college tuition or retirement. A long research tradition has examined such intertemporal choices, with much attention focusing on the phenomenon of positive temporal discounting; people perceive money available in the future as worth somewhat less than an equivalent amount in the present. Over the years, research on consumer discounting has played a vital role in attempts to model and predict intertemporal decisions (see Loewenstein, Read, and Baumeister 2003, for review).

This paper identifies a new consideration that substantially affects temporal discounting. The current experiments examine how discounting is impacted by whether time intervals are described in terms of temporal extent (e.g., number of months) or in terms of boundaries (e.g., dates). Specifically, future dates may seem like relatively abstract points in time; interval length may not loom large when dates are considered. In contrast, when extents are considered, the amount of time in an interval is, by definition, highlighted, and attention is called explicitly to interval length. Such attention to the sheer length of intervals may in turn make those intervals seem longer. Thus, consumers may find future dollars to appear exceptionally distant (and thus to deserve more discounting) when extent-based descriptors are used, compared to when date-based descriptors are used.

In experiment 1, participants (N=356) were asked to imagine choosing between a prize of specified value now and a prize of unspecified greater value after a given time interval had passed. Participants were asked to state the future prize value that would render waiting the time interval (and foregoing the immediate prize) worthwhile. The time intervals were either described by extent (e.g., “in eight months”) or date (e.g., “on October 15th,” a date exactly eight months in the future). Across four such scenarios, reliably greater future prizes were requested with extent than with date descriptions. In other words, participants demanded more compensation to endure a delay (i.e., they discounted future dollars to a greater degree) when the delay was described by the amount of time to be waited than when it was described by the wait’s endpoint.

Experiment 2’s task had a similar structure, but in experiment 2, the dollar amounts of the immediate and future prizes were fixed, and participants (N=253) were required to specify (either with extent or date) the time interval that would make them indifferent between receiving the smaller prize immediately and the larger prize after the interval passed. Across three such scenarios, those specifying extents were not willing to wait as long as those specifying dates. This supports the idea that discount rates are higher (i.e., impatience increases) when future intervals are thought of in terms of lengths instead of boundaries.

Experiment 3 investigated whether these effects are strong enough to even affect choices between pre-defined alternatives. Participants (N=133) considered six investments that each had two options: a smaller, shorter-term payoff, and a larger, longer-term payoff. The times until the payoffs were either described by dates or by extents of time, and for each investment, participants were asked to select the payoff they preferred. For each investment, participants were reliably less likely to select the long-term payoff when time was described by extent than when it was described by date. Participants thus again behaved reliably more impatiently when extent, instead of date, descriptors were used, indicating that increased discounting under extent descriptors manifests even when participants are asked to choose between discrete options.

Experiment 4 examined whether similar effects arise when consumers consider future losses. Participants (N=81) each read three scenarios that gave them an opportunity to defer a debt (e.g., a tax bill) for a fixed interval. The interval was either described by an extent of time or by the date on which the deferral would end. Participants indicated the total amount they would be willing to pay post-deferral to avoid paying anything immediately. Across the three scenarios, those in the extent condition were willing to pay reliably more to defer their debts than were those in the date-condition counterparts. As in the previous studies, participants seem to have discounted future dollars (here, future debts) to a greater degree when time was described by extent.

Experiment 5 investigated a potential reason for this finding: although objective interval length does not change when interval description is manipulated, perceptions of interval length may be affected by such manipulations. By explicitly mentioning an amount of time, an extent description might render more vivid the upcoming delay, making the interval itself seem rather long. Thus, in experiment 5, participants (N=132) each considered three time intervals, described either by extent or date. Participants were asked to rate the perceived length of each interval on a seven-point scale ranging from “seems very short” to “seems very long.” Indeed, participants facing extent-based intervals reported that the intervals seemed reliably longer than did those facing equivalent date-based intervals.

Discount rates are apparently sensitive enough to fluctuate with slight changes in time-interval description. Across multiple domains and despite disparate elicitation procedures, consumers consistently exhibited more discounting when time intervals were described with extents instead of dates, perhaps because under the former description, the distance to future transactions actually seems longer. The current results have obvious implications for consumer decisions involving intertemporal tradeoffs (such as investment decisions), and these results join years of research showing consumer discount rates to be more unstable, and intertemporal choice to be relatively less orderly, than early normative models posited (e.g., Samuelson 1937). Notably, the current work highlights the fact that even when all conceivable objective factors in the decision situation are fixed, discount rates remain quite malleable and sensitive to ostensibly irrelevant nuances generated by descriptions.

REFERENCES

Loewenstein, George, Daniel Read, and Roy F. Baumeister (2003), Time and Decision, New York: Russell Sage Foundation.