Individuals' Circadian Cycle and Temporal Behavior

Jacob Hornik, Leon Recanati Graduate School of Business Administration, Tel Aviv University
Giulia Miniero, Bocconi University, Milan, Italy

The study of the diurnal variation of consumer behavior should be of interest to marketing researchers, especially for the possible managerial considerations regarding the scheduling of various activities, like, in store activities, the timing of advertising campaign or the experimental and testing environment of marketing research. Since behavior occurs within the context of varied sets of circumstances, one may assume that these circumstances are an important source of variations in consumer response and therefore, deserve also more theoretical attention. Hence, the purpose of the paper is two fold: first to bring the attention of the marketing research community to the theoretical and practical aspects of one of the most important biological rhythm expressed by individuals' diurnal preferences. Second, to use an ongoing marketing research project, on consumers' time perception and behavior, to illustrate how individuals' behavioral and perceptual differences might be a result of their diurnal preferences. The paper develops an initial exploration of this subject in marketing by presenting some major theoretical considerations linking circadian rhythm to consumer behavior. Afterward, a brief review of the essential concepts and models of time behavior and perception, that are relevant to our investigation is provided. Then the article extends a recent pilot study and introduces two experimental studies designed to examine the influence of time-of-day (TOD) on common consumers situations, consumers' perception and evaluation of tasks duration. The intention of the first study is to investigate the influence of circadian types on time behavior and perception of the
following activity: completion of a short marketing questionnaire administered online. Results show that At both times of day the Mt and Et types tended to underestimate the morning and evening sessions, during their peak times, respectively. The major objective of Study 2 is to assess the magnitude of the measures to a different and much longer task: internet time. Results show a clear tendency of all three groups to underestimate this relative long task. Second, the results confirmed our predictions of smaller time estimates and higher search behavior for the Mt and Et types at their respective optimal compared to non optimal TOD. The meanings of the results are clear: a consumer's response is highly dependent on time of measurement and exposure. Synchrony effects seem to influence customer behavior controlling thoughts and actions. It appears, therefore, that TOD effects on task performance are far more complex and time specific than previously acknowledged (Feldman & Hornik, 1981). Next, by drawing on the research results, theoretical and practical implications for marketing research are presented. Finally, further investigations into the role of TOD on consumer behavior and new avenues for marketing research are suggested.

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[to cite]:


[url]:

http://www.acrwebsite.org/volumes/13986/eacr/vol8/E-08

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Individuals’ Circadian Cycle and Temporal Behavior
Jacob Hornik, Tel-Aviv University, Israel
Guilia Miniero, Bocconi University, Milan, Italy

EXTENDED ABSTRACT

Conventional wisdom suggests that hungry people buy more products; also, people buy more French wine when French music is played in the supermarket (North et al. 1997); body feedbacks, like arm flexion, influence consumers’ evaluation of products (Foster, 2004); and, casual interpersonal touch increases patrons amount of tipping (Lynn & Grassman, 1990). Contextual influences are becoming an increasingly important area of inquiry in marketing research. Recent notable examples include mood effects on consumers’ behavior showing that people in positive mood evaluate products more favorably than people in a negative mood (Gardner, 2000); also, mood was shown to have strong influence on consumers use of time (Hornik, 1982); and very recent observation that “feeling right” influences consumers’ cognitive and affective reactions (Avnet & Higgins, 2006).

As researchers attempt to understand how consumers behave and make decisions, the study of momentary and temporal moderating influences is becoming more varied. For example, the amount of time between stimuli and the time of the day in which they are received is an important factor in determining individuals’ response (Mehrabian & Russell 1974). If such, factors that are significant and uncontrolled, may reduce the reliability and validity of test results.

One such construct that is completely neglected in the marketing literature but is receiving growing attention in other social science publication is the role of individual circadian rhythm on behavior. Circadian rhythms are a fundamental component of biological organisms, including humans. These rhythms are generated within the body and help coordinating the timing of our internal bodily functions, including sleeping and eating, as well as our interactions with the external world, like perception of stimuli, judgment and preference.

A number of variables are now believed to be influenced by circadian cycle. For example, Natale, et al. (2003) illustrated differences between morning and evening types on cognitive efficiency of four different tasks: visual search, logic reasoning, spatial reasoning, and mathematical reasoning.

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Hence, the purpose of the paper is two fold: first to bring the attention of the marketing research community to the theoretical and practical aspects of one of the most important biological rhythm expressed by individuals’ diurnal preferences. Second, to use an ongoing marketing research project, on consumers’ time perception and behavior, to illustrate how individuals’ behavioral and perceptual differences might be a result of their diurnal preferences. The paper develops an initial exploration of this subject in marketing by presenting some major theoretical considerations linking circadian rhythm to consumer behavior. Afterward, a brief review of the essential concepts and models of time behavior and perception, that are relevant to our investigation is provided. Then the article extends a recent pilot study and introduces two experimental studies designed to examine the influence of time-of-day (TOD) on common consumers situations, consumers’ perception and evaluation of tasks duration. The intention of the first study is to investigate the influence of circadian types on time behavior and perception of the following activity: completion of a short marketing questionnaire administered online. Results show that At both times of day the Mt and Et types tended to underestimate the morning and evening sessions, during their peak times, respectively.

The major objective of Study 2 is to assess the magnitude of the measures to a different and much longer task: internet time. Results show a clear tendency of all three groups to underestimate this relative long task. Second, the results confirmed our predictions of smaller time estimates and higher search behavior for the Mt and Et types at their respective optimal compared to non optimal TOD.

The meanings of the results are clear: a consumer’s response is highly dependent on time of measurement and exposure. Synchrony effects seem to influence customer behavior controlling thoughts and actions. It appears, therefore, that TOD effects on task performance are far more complex and time specific than previously acknowledged (Feldman & Hornik, 1981).

Next, by drawing on the research results, theoretical and practical implications for marketing research are presented. Finally, further investigations into the role of TOD on consumer behavior and new avenues for marketing research are suggested.
Motivational Influences in Time Discounting: The Effect of Regulatory Focus
Rongrong Zhou, HKUST, Hong Kong
Shenghui Zhao, University of Miami, USA

EXTENDED ABSTRACT

Consumers often need to allocate resources to satisfy their present needs and those of the future. Choices in those situations are often driven by personal discount rate, the extent to which one values the future relative to the present. In this research, we examine the influence of regulatory focus on discount rates for hypothetical monetary gains and losses.

Regulatory Focus and Time Discounting
Regulatory focus theory (Higgins 1998, Pham and Higgins 2005) distinguishes two mechanisms of self-regulation: promotion and prevention, which differ in terms of desired end states and preferred means of attaining one’s desired end states. Prior research shows that promotion focus is more sensitive to the presence and magnitude of gains whereas prevention focus induces greater sensitivity to those of losses. The finding of differential hedonic sensitivity has two implications for time discounting. First, the differential sensitivity to gains and losses suggests differences in the shape of the value function: in the gain domain, the value function should be steeper for promotion (vs. prevention) focus, whereas prevention focus is associated with steeper value function (i.e., greater loss aversion) in the loss domain. Researchers have argued that steeper value function is generally associated with higher discount rates (e.g., Loewenstein and Prelec 1992). Thus, we expect lower discount rate for promotion focus (vs. prevention focus) in the gain domain and the reverse in the loss domain.

Another implication of the differential hedonic sensitivity to gains and losses relates to the role of anticipation. Savoring from a future positive event leads to a desire to delay the event (i.e., lower discount rate) whereas dread from a future negative event leads to a desire to expedite the event (i.e., lower discount rate). Given their differential sensitivity to gains and losses, promotion-focused individuals (vs. prevention-focused ones) will experience greater savoring from future gains and hence exhibit lower discount rates. In contrast, future losses will induce more dread for prevention-focused individuals, leading to lower discount rates. Furthermore, promotion-focused individuals may assign greater weight to savoring because they perceive savoring as more diagnostic for making decisions (the same logic applies to dread for prevention-focused individuals).

In addition, prior research has shown that promotion focus, relative to prevention focus, is associated with a stronger preference to postpone goal pursuit because the activation of maximal goals under promotion focus encourages a more exhaustive search for alternative strategies prior to goal pursuit (e.g., Pennington and Roese 2003). This may be suggestive of a general preference for delay in intertemporal tradeoffs. This also predicts lower discount rates under promotion (vs. prevention) focus for gains but higher discount rates for losses.

In sum, drawing on research in regulatory focus, we expect a lower discount rate for promotion focus than for prevention focus when the tradeoff involves two future gains. However, when two future losses are involved, we expect the reverse to hold true. This prediction was tested in three laboratory experiments.

Empirical Tests
In study 1 (N=58), we measured discount rates through a matching procedure, and then after a 30-minute delay measured participants’ chronic promotion and prevention strengths. We then regressed discount rates on chronic promotion and prevention strengths for gains and losses separately. As predicted, chronic promotion strength significantly reduced discount rates in the gain domain (promotion strength had no effect), but in the loss domain, prevention strength significantly lowered discount rates (promotion strength had no effect). These results provided preliminary support for our hypothesis. However, they could not establish causality. To address this issue, we manipulated regulatory focus in study 2.

In study 2 (N=52), we measured discount rates through the same matching procedure as in study 1, but manipulated participants’ situational strengths for promotion and prevention via a priming procedure (Lockwood, Jordon, and Kunda 2002). Our hypothesis was supported. Discount rates were significantly lower for promotion-primed participants than for prevention-primed ones for future gains. In contrast, for future losses, promotion-primed participants indicated higher discount rates than their prevention-primed counterparts.

In study 3 (N=88), instead of the matching procedure, we measured discount rates through choices in more familiar tasks (annuity payment for gains and loan repayment for losses). The goal is to test the robustness and generalizability of the findings from the previous two studies. In addition, we included a control group who were not primed with either promotion or prevention focus. Consistent with our prediction, promotion-primed participants indicated significantly lower discount rates for gains than prevention-primed participants or those in the control group. Conversely, for losses, the prevention group showed lower discount rates than promotion or control groups.

General Discussion
The present research contributes to the behavioral research on time discounting by highlighting the importance of motivational influences, which has been largely neglected in the existing research. Our results suggest that motivational factors matter and should be incorporated into theories of time discounting. Moreover, our research contributes to the growing interest in individual differences in decision making and judgmental biases (e.g., Stanovich and West 1998). To marketing practitioners, our results suggest a new way of market segmentation for marketers of intertemporal goods (products and services that involve intertemporal tradeoffs, e.g., appliances, credit cards, etc.). To this end, identifying observable markers of market segments with different regulatory foci may be a fruitful avenue for future research. Second, marketers of different intertemporal goods may also want to employ different marketing mixes in accordance with their specific products since products themselves may activate or prime different regulatory focus (Zhou and Pham 2004).

Future research may examine more closely the underlying causes of the effects reported here by directly measuring or manipu-