

Zhu, Meng, and Rebecca K. Ratner. "Scarcity polarizes preferences: The impact on choice among multiple items in a product class." *Journal of Marketing Research* 52, no. 1 (2015): 13-26.

The Effects of Sleepiness on Consumer Variety Seeking

Zhongqiang (Tak) Huang, University of Hong Kong, Hong Kong*

Yitian (Sky) Liang, University of British Columbia, Canada

Charles B. Weinberg, University of British Columbia, Canada

Gerald J. Gorn, Hong Kong Polytechnic University, Hong Kong*

Extensive research has revealed negative health consequences of sleep deficiency (for a summary, see O'Connor, 2015). However, surprisingly there has been no research that has examined the effects of sleep deprivation on consumption-related behavior. The present research attempts to fill this gap in the literature. We do so by investigating the impact of sleep on one pervasive decision tendency that can occur in a wide range of consumption situations, namely, variety seeking.

Sleep disturbances are common. Yet people seek to maintain wakefulness so that they can perform their daily job tasks well even if they do not sleep well. For example, night shift workers often make efforts to resist drowsiness and stay awake so as to be able to work as normally as possible (Lee, 1992). Various methods are used by people to minimize sleepiness and maintain alertness. The most obvious solution is to reduce drowsiness directly by restoring a healthier sleep pattern, and also by taking naps (Ferrara & De Gennaro, 2001). However, people can resort to alternative means when it is not feasible for them to take rest (e.g., when at work). These alternative methods typically involve stimulation. For example, people may take caffeine (e.g., coffee, tea) to stay awake (Walsh et al., 1990). They also may expose themselves to external stimulation such as bright light (Campbell & Dawson, 1990) and cold water to fight sleepiness (Hayashi, Masuda, & Hori, 2003). Hence, people may seek sensation to keep themselves awake and alert.

In the present research, we document that consumption behavior can be used by people as a way of coping with sleepiness, specifically by engaging in variety-seeking behavior. The need for sensation seeking is an important antecedent of variety-seeking behavior (McAlister & Pessemier, 1982; Van Trijp, Hoyer, & Inman, 1996). People may engage in exploratory behavior, such as trying different things, to obtain stimulation (Fiske & Maddi, 1961; Ratner Kahn, & Kahneman, 1999). Kahn and Isen (1993) also demonstrated that when people experience positive affect, their need for sensation increases, leading them to choose more variety to fulfill this need.

To recap, people often try to maintain wakefulness through seeking sensation and stimulation when they feel sleepy or have poor sleep quality. At the same time, variety seeking can serve the goal of sensation seeking. Hence, we predict that people who are sleepier or who have poorer sleep might seek more variety in their consumption. Three studies were conducted to test the proposed effect and its mechanism.

Study 1 aims at finding preliminary evidence of the causal relationship between sleep deprivation and variety seeking from actual purchasing data of candy bars (i.e., number of different candy bars purchased; Chicago Nielson Panel data from 2004 to 2014). Prior to 2007, DST began at the first Sunday in April. However, DST begins at the 2nd Sunday in March starting from 2007 in all states observing DST. We utilized a difference-in-difference (DD) quasi-experimental design based on the DST policy change.

We classify the 2nd Sundays in March as the treatment group in which DST occurred, and the 1st Sundays in March as the control group in which DST never occurred. In the treatment group, the difference before and after the policy change includes the sleep deprivation effect of DST. However, it may also include other temporal effects before and after the policy change. A good estimate for such temporal effects is the difference within the control group. The difference in difference shows that sleep deprivation due to DST can increase variety seeking.

If sleepiness increases variety seeking due to a desire to seek sensation to stay awake, this effect should be eliminated when people do not deem it necessary to maintain wakefulness. Study 2 tested this prediction by telling half of the participants that it was OK for them to relax without staying alert as they have completed the major part of the study. We measured variety seeking by observing participants' real choice of candy bars and also assessed sensation seeking. When participants did not receive the instruction to relax, poorer sleep quality in the previous night predicted more variety seeking in choices of candy bars and greater sensation seeking. However, when participants were led to believe that they could relax without staying alert, the effects of last night's sleep quality on variety seeking and sensation seeking were not evident. Relaxation instruction moderated the mediating effect of sensation seeking in the relationship between last night's sleep quality and variety seeking.

Study 3 again provided additional support to our conceptualization. Consistent with a goal satiation paradigm, we demonstrated that when the motivation for sensation was fulfilled by listening to stimulating sounds, people who self-reported to be sleepier at the moment would not seek more sensation, and consequently, would not choose more variety in ice cream flavors. The effects of sleepiness on sensation seeking and variety seeking were only evident when participants' need for sensation was not satiated. Satiation of the sensation-seeking goal via stimulating sounds moderated the mediating effect of sensation seeking in the relationship between sleepiness and variety seeking.

To the best of our knowledge, this research is the first to investigate what implications sleep deficiency may have for consumer behavior. It opens up potential avenues for future research investigation on this broad topic. Our findings also have implications for research on variety-seeking behavior by revealing a physiological antecedent of variety seeking.