

ZEO - Sleeping with Technology

Case Study



1 Sleeping with technology

1.1 Sleep monitoring

Sleep monitoring might be one new way of creating awareness about sleeping patterns and getting people to take action and change behaviors as a result. A lot of new monitoring devices are appearing on the market along with various sleep apps. Most of these devices have been developed due to the widespread desire in people to wake up calmly, feeling ready for the day. Too many people are too familiar with feeling drowsy and being in a bad mood after being woken up by a loud alarm clock at the wrong time in the sleep cycle. According to various app developers and product designers like Lark Inc., Zeo Inc., MDLabs whom I talked to.

People spend about one third of their lives sleeping, and many are keenly aware of the need for sleep. But getting adequate sleep remains a challenge for many Americans. More than half of adults (54%) say they have trouble sleeping at least a few nights a week, and one third (33%) say they have trouble every night or almost every night. (Landis JR, Koch GG. The measurement of observer agreement for categorical data. *Biometrics*. 1977;33:159-174.)

Although inadequate sleep leaves many people feeling less than their best, few realize what the healthcare community has long known – that gaining knowledge about sleep, especially if it is personal and evidence-based, affects how they understand their problem and provides a foundation for improving their choices about sleep. Learning about the benefits of sleep and arming themselves with the tools to improve their sleep habits may have a profound effect on their daytime performance and overall well being.

(The ZEO Personal Sleep Coach, Information for Healthcare Professionals)

The Zeo Personal Sleep Coach is a new educational tool and motivational program that is designed to:

- Help people understand how they are sleeping
- Reveal habits and behaviors that may be helping or hindering their sleep
- Teach them new ways to get a better night's rest.

The Zeo Personal Sleep Coach represents the culmination of breakthrough technological innovation and cutting-edge knowledge and techniques within sleep science.

The experimental research is part of the empiric research by using the Zeo Personal Sleep Coach. Although there are a lot of other apps and devices out there, in this stage we will use the ZEO device. Compared to other similar devices, the Zeo gives the most details on a nightly analysis about your sleep cycles, including “Time To Z” (Z stands for sleep), REM, Deep, light sleep and wake time and the amount of wake-ups. All that information generates an average ZQ score in the morning. The information is gathered on an SD Card with which you can upload your sleep data to the ZEO website which allows you to store and analyze your data over time. The longer you gather information, the more patterns and new material you have to work with. The scores vary among age groups, as sleep and sleep patterns change with age.

The Zeo community is a worldwide one through which you can compare results with your peers from the same age group and gender.

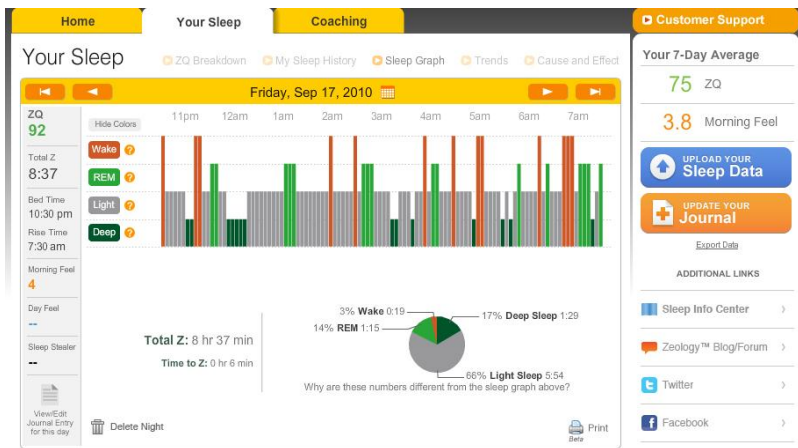


Fig 1. One of the data generated by ZEO device.

1.2 Why is sleep so important and how is this related to the ‘always-on’ phenomenon

First of all, it is important to note that ZEO is not a medical device. It is an awareness device, which exposes you to information that can help make you think clearly about your lifestyle.

As mentioned in an earlier paragraph, and also stated in The European Research Sleep Center, insomnia affects 15 % of the population, predicts depression and causes dramatic health costs. Insomnia is one of the most frequent subjective complaints, chronically affecting 10-15 % of the population and causing 15 % of GP consultations in Germany for example.

Sleep deprivation is something we build up, which can be linked to our lifestyle. One only starts to think about it when one gets seriously ill or is tired and does not feel refreshed in the morning and finds oneself sleepy or yawning all day. Furthermore, the change in our eating habits, which is creating more and more obesity and diabetes problems, also has an impact on our sleep. As mentioned before, the always-being-connected trend and having our devices with us all the time have been significant life changers as well.

1.3 A personal sleep coaching journey

In 2010 I had the opportunity to monitor my sleep with ‘Zeo’ personal sleep coaching device. The idea of the experiment was to explore the persuasive design of this device and to determine if it would change my behavior by tracking my sleep patterns. In this experiment, I worked together with ZEO Inc. and Dr. BJ Fogg using Fogg’s Purple Path behavior, which focuses on increasing behavior from now on. (Purple Path Behavior Guide ©Stanford Persuasive Tech Lab (alpha version 0.50 December 2010)) Fogg’s ‘Behavior Wizard’, is a method for matching target behaviors with solutions for achieving those behaviors. Basically, a purple path behavior involves adding hot triggers to what people already do to establish the increase of a certain behavior. This is not limited or constrained to one domain. For example, take someone who is already running 3 times a week for 30 minutes. By putting alerts and triggers in his routine, ‘he can be influenced to run an extra 5 minutes’. The person might consider doing this, and after a series of doing this will run 35 minutes and even more later on

In the case of ZEO, the goal is to stimulate people to sleep better and optimize their sleep quality, which also might mean changing their daily patterns and rituals or routines.

This personal sleep monitoring taught me a lot about my sleeping patterns, and how the quality of my sleep influences my daily habits.

Zeo works with these principles:

1. Track your sleep

2. Manage your sleep stealers
3. Sleep better and do more, perform better

In 2011, after a year of gathering my own personal sleep data, I reorganized my daily life and succeeded in performing better, handling stress better, being more relaxed in managing my team and getting things done in a more effective and non-stressful way.

Zeo personal sleeping coach is based on mass interpersonal persuasion (Mass Interpersonal Persuasion: An Early View of a New Phenomenon, BJ Fogg Persuasive Technology Lab Stanford University Cordura Hall 122 Stanford, CA 94305, In: Proc. Third International Conference on Persuasive Technology, Persuasive 2008. Berlin: Springer. p. 2-4) and 'The Hidden influence of social networks' – Nicholas Christakis (Connected: the surprising power of our social networks and how they shape our lives-how your friends' friends' friends affect everything you feel, think, and do Nicholas A. Christakis, MD, PhD James H. Fowler, PhD ©2009).

The emergence of MIP mass interpersonal persuasion became possible recently because Facebook, a social network service, created a new way for third parties to create and distribute interactive applications (web apps) to the millions of people linked in an online social network. Facebook made this possible on May 24th, 2007, when they launched Facebook Platform (their API and related tools). According to Fogg there are six Components in Mass Interpersonal Persuasion Described below, all of them existed before Facebook launched Platform. But the six components had never been bundled together in one place:

1. **Persuasive Experience:** An experience that is created to change attitudes, behaviors, or both.
2. **Automated Structure:** Digital technology structures the persuasive experience.
3. **Social Distribution:** The persuasive experience is shared from one friend to another.
4. **Rapid Cycle:** The persuasive experience can be distributed quickly from one person to another.
5. **Huge Social Graph:** The persuasive experience can potentially reach millions of people connected through social ties or structured interactions.
6. **Measured Impact:** The effect of the persuasive experience is observable by users and creators.

ZEO is not only creating connections within its own community on the myzeo.com website, but also has the ability to connect on Facebook and share with communities there, which are most probably different from the one you have in ZEO. Through these communities, you can attract new users for the ZEO system and influence others to make their lives better by stimulating them to use the ZEO to get more awareness about their lifestyle.

One might think that sleep is a very personal experience, and to some extent it is, which I will come back to later. But people do like to share their sleep results, especially within a group experiment like the one I have set up in Howest University College. There are exceptions and restraints that will reveal this openness is not always the case. But since I started talking about the experiment at colleges, universities and conferences, people have freely started opening up about their sleep behavior and the so called problems they have. This goes for CEO's to labor workers; To all kinds of people, sleep is an ever-present, everyday topic and social connector. Its importance should not be underestimated.

There are two fundamental aspects in social networks no matter how the network is formed. First is the connection and second contagion which pertains to what, if anything, that flows across the ties (Christakis, Fowler 2009), one fundamental determinant of flow is the tendency of human beings influencing and copying one another. (Christakis and Fowler 2009)

1.4 Extending the research and experiment to get a broader view

After 6 months, I extended this experiment to include a group of 10 people from Howest University College to explore this in a broader sense with the focus on people who work in an educational environment. This group has diverse profiles, from department heads and managers to lecturers, researchers, assistants and project managers. The selection was based on their sleeping habits with all of them starting with the idea that they had some sort of sleeping problem. Some of them had already gone to a sleep clinic while others hadn't yet but were planning to do so. This experiment will conclude on the 15th of February 2012.

This data will be part of my empiric research, and will be accompanied by log reports and in depth interviews with the respondents.

1.5 Conclusion

Since I started to monitor the Howest respondents in March 2010, I have already seen some restraints and drop-outs of the research, due to several factors, which I will highlight during my further research in this paper. One of the reasons for these drop-outs has been the technology itself. Other reasons have been related to the user friendliness of the device, the subject that is also observer and different aspects of the self, personality and so forth.

Further research on this topic can go in different directions, which will become clear when I have an overall view of this one year of tracking sleep with the Howest respondents and their behavior towards the 'always-on' phenomenon.

Research by Christel De Maeyer – Howest 2010 – 2011- 2012