

TUT Economic Research Series
Department of Economics and Finance
Tallinn University of Technology

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Why force owls to start work early? The work schedules of R&D employees and sleep

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TUTECON Research Brief No. RB-2017/3

Why force owls to start work early? The work schedules of R&D employees and sleep

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Abstract

Are you a lark, an owl, or a hummingbird? Getting to work on time might be a breeze for early birds but a challenge for owls, who would prefer to stay in bed, since they went to sleep late. The conventional “nine-to-five” work schedule does not accommodate the natural sleeping habits of all employees. Using data from a survey conducted among Estonian creative R&D employees, we aimed to uncover what the links are between work arrangements, sleep habits and work related sleep disturbances that employees are feeling. We find the sleep schedule of evening-oriented employees or “owls” to be considerably more affected by work-driven constraints than that of other types of employees. Moreover, we find the “owls” to have a much higher level of daytime sleepiness. As there is to some extent a genetic background to the idea of the morning types and evening types of people, it is important that employees as well as regulators acknowledge these important individual differences. Moreover, as impaired sleep could lead to decreased productivity among employees and the underutilisation of their creative abilities, employers and regulators should consider implementing more flexible working arrangements. This could have a major positive impact both on employee work results as well as their overall quality of life.

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Miks oodata öökullidelt hommikuti töötamist? Teadus- ja arendustöötajate tööajakorralduse ja une häirituse seostest

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Kokkuvõte

Küllap on paljud tundnud nii iseenda kui teiste puhul ära nõ looke või öökull tüüpe, samuti kindla hommikuse-õhtuse tüübita inimesi. Õigeks ajaks tööle jõudmine on varastele ärkajatele imelihtne, kuid paras katsumus öökullidele, kes eelistavad hiljem magama minna ja seega hiljem ärgata. Harjumuspärane “üheksast viieni” töögraafik ei pruugi kõigile töötajatele sobida. Viisime läbi uuringu Eesti teadus- ja arendustöötajate seas, mille üheks eesmärgiks oli tuvastada, millised on töötajate tööajakorralduse, unerežiimi ja une häirituse vahelised seosed. Avastasime, et võrreldes muud tüüpi töötajatega on õhtust tüüpi töötajate ehk “öökullide” unerütm töökorraldusest oluliselt enam häiritud. Põhjuseid ei pea otsima kaugelt – tavapärane tööpäeva ajastus sobib ilmselgelt paremini hommikustele, mitte õhtustele tüüpidele. Lisaks näitavad meie uurimuse tulemused, et õhtustel tüüpidel esineb oluliselt enam ülemäärast päevast unisust. Selle üheks oluliseks arvatavaks põhjuseks on tööpäeva ebasobiv ajastus, mis häirib und. Kuna õhtususe-hommikususe põhjused on viimase aja teadusuuringute põhjal osalt geneetilised ning inimese jaoks tihti raskesti muudetavad, ei ole põhjendatud oodata kõigilt töötajatelt töötegemist ühel ja samal ajal. Nii töötajate, tööandjate kui poliitikakujundajate seas on oluline teadvustada inimeste individuaalseid loomupäraseid erinevusi, sh unerežiimis. Kuna puudulik uni võib põhjustada töötajate produktiivsuse langust ning nende loomingulise potentsiaali alakasutamist, peaksid tööandjad kaaluma paindlikuma töökorralduse võimaldamist. Sellel võib olla tugev positiivne mõju nii töötulemustele kui töötajate heaolule laiemalt.

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Larks and owls like to work at different times

If you could choose freely, independent of work and family responsibilities as well as other people's expectations, then what time would you get up in the morning? Does waking up early come naturally, so that there is ample time in the morning to exercise or enjoy a long breakfast before heading to work? If yes, you could be a "lark". Or is the alarm clock your nemesis and getting up a constant struggle? If so, you might be an "owl". If you fall somewhere in between, you may call yourself a "hummingbird". These differences in the natural time preferences are not a surprise; however, the economic and work related consequences often remain unnoticed by both employers as well as employees.

Our preferred sleep-wake timing and the time of day when we feel more active and alert – our morningness-eveningness – is regulated by our inner circadian clock. Everyone's inner clock is quite different, and appears to be in large part determined by our genetic makeup (for more details, refer to the recent article by Kalmbach et al., 2017). However, individual features like age or gender and some environmental factors can have an influence as well (see Adan et al., 2012). For example, teenagers are more likely to be owls, and people become progressively more morning-oriented when growing older (Adan et al., 2012). It is believed that roughly 40 per cent of people are distinctly morning (larks) or evening types (owls), while the rest are neither type (i.e. hummingbirds) (Adan et al., 2012; Roenneberg, 2012). So what, and why should you read about these things from a research brief from the Department of Economics and Finance?

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Traditional working day design expects all to work at similar times

It has been widely shown that shift work or night work can have adverse effects on sleep and health in general (see for example Costa, 1996; Åkerstedt, 2003; Ohayon et al., 2010). Shift work and night work are, however, the extremes, and the health effects of the usual daily working time arrangements have not been sufficiently studied. Yet, conventional working time arrangements, where work starts between 8 and 9 in the morning may not accommodate all employees. Owls in particular might feel disadvantaged, as the start of a working day around 8 or 9 is rather in favour of morning type people. This is a cause for concern since ill-suited work schedules, out of sync with the inner circadian clock, may have unfavourable effects on the employees and increase the risk of health problems (Veatch et al., 2017; Juda et al., 2013).

You have probably noticed sleepy colleagues around you. Drinking coffee and energy drinks is their usual response. However, why are these people at work and not sleeping at home so they start working later (or earlier) when they feel fresher? Greater control over working time could have favourable effects on employee sleep as it enables them to be in tune with their natural biological rhythms and work when they feel more alert. Takahashi et al. (2011) utilised a large sample of both daytime and shift workers and uncovered that better control over working hours and days off was linked to many favourable outcomes such as decreases in daytime sleepiness, insomnia symptoms (for men), and depression symptoms. Moen et al. (2011) conducted a survey over many years in a corporation where some employees participated in a corporate initiative providing more worktime flexibility, thus creating a natural experiment. These researchers found that employees who participated in that initiative exhibited positive changes in several health-related behaviours like getting almost an extra hour of sleep at night, exercising more, and not going to their workplace when ill.

In a collaboration involving economic and medical researchers at Tallinn University of Technology and our partner institutions, we have carried out a research project on the effects of working time arrangements on work results, perceived health effects and the individual wellbeing of Estonian creative research and development employees. These

employees include academic as well as applied researchers, product developers, IT developers and other employees with creative R&D work tasks at banks, IT and technology companies and in public as well as private R&D companies. In this research overview we bring you some of the findings on one of the topics of our research – do the larks, owls and hummingbirds feel differently about how work restricts their sleeping patterns.

Owls in particular feel the effects of work on sleep

Among other potential drivers of excessive daytime sleepiness, we are interested in the morningness-eveningness type of the employee. To determine whether the employee is an “owl”, “lark” or “hummingbird”, we applied the widely-used questionnaire proposed by Adan and Almirall (1991).

Our study reveals fascinating patterns. R&D employees who are owls were much more likely to say that work upsets their sleep than employees who are larks or hummingbirds. These findings corroborate the premise that traditional work schedules where employees are expected to start working between 8 or 9 in the morning are not suitable for evening types who naturally desire to wake up late. As the circadian clock appears to be primarily genetically determined (Kalmbach et al., 2017), and a sleep-wake cycle that is not in tune with this clock relates to negative sleep and health outcomes (Veatch et al., 2017, Juda et al., 2013), a review of the conventional regulation of working time may be warranted. If the morningness-eveningness type is something that the person cannot change, at least not easily, why require them to work at a time when they would rather sleep? And why expect them to sleep at a time of the day when they could be very productive with work?

In many jobs, including various creative R&D work positions, there is no inherent need for all the employees to work at a specific time of the day. Despite the deeply rooted social norms on what the “normal” working hours are, it would not be that difficult to arrange working time so that employees would feel their sleep less affected by work. On a positive note, offering employees flexible work arrangements could be helpful in promoting better sleep. Based on our study, the sleep of R&D employees that enjoyed flexible working arrangements in terms of the time and place for work was perceived to be considerably less constrained by work. This finding is in accordance with earlier international studies by

Takahashi et al. (2011) and Moen et al. (2011), where greater control over working time is shown to be linked with improved sleep.

Awareness of employees' sleeping patterns is needed

All in all, our study indicates that the traditional organisation of working time disregards the individuality of (creative R&D) employees – the way working time is arranged has not changed much in spite of the huge change in the increased knowledge intensity of work. The sleep of owls, whose inner circadian clock lags compared to hummingbirds and larks, is much more likely to be affected by work related constraints. This is alarming, as disrupted sleep may lead to adverse health outcomes and a decline in overall well-being. The key message to employees would be to pay attention to the problems that the timing of work has on their sleep. It is perhaps easier to say this than to put it into practice, but aligning daily work routines with inherent sleep needs, and not vice versa, may have positive effects for both health and work. The key message to employers is therefore to pay attention to the differences in the sleep regimes of their employees. Having employees working at different times may seem complicated at first, but the expected improved outcomes in terms of volume and quality of work that employees can achieve when properly fresh, may have a favourable impact on the economic performance and efficiency of companies and other organisations.

As R&D employees often work for companies in the service sector, which is more vulnerable to sustainability risks compared to physical capital intensive businesses (including in the Estonian case; refer to Männasoo, 2008), efficiency is key for survival and development. In broader terms, R&D efficiency could help to achieve and sustain the competitive advantage of a country and foster its human capital development. This study represents one element in a larger effort to study the impact of working time arrangements on the results of work, sleep and tiredness and individual well-being among creative R&D employees in Estonia (see www.ttu.ee/ta2). Furthermore, it is part of a broader research programme of the research group to study the institutional, individual, financial and competition related drivers of development in R&D and knowledge intensive societies. Policy implications outlined in these papers and research briefs and papers may serve as useful input to the discussion on these societally important topics.

Acknowledgments

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 734712 "Institutions for Knowledge Intensive Development" (IKID). Support from the Estonian Research Agency grant PUT315 "Towards the Knowledge Economy: Incentives, Regulation and Capital Allocation" is gratefully acknowledged.

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ISSN 2346-6146