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Behavior: How a Global Social Lockdown Unlocks Time for Sleep

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Two new studies show that the social lockdown imposed as a result of the SARS-CoV-2 pandemic has helped unlock more time for sleep. Although daily stress during the lockdown increased, and sleep quality decreased, sleep behaviour was generally healthier.

Before the pandemic began, a list of wishes shared by most people probably included working more often from home, spending more time with the family, and ideally sleeping more. Related to this is a yearning to be free of hectic days with long commutes, traffic jams, and overfilled trains, busses, and offices. In early 2020, a biological virus made these wishes come true for millions of people. Who would have thought that a virus could compel governments around the globe to force people to work from home, to not commute, and to avoid overcrowded spaces. But these are the events that have transpired and which have been accompanied by an unprecedented impact on our health as well as economic systems. As first countermeasures, governments set new rules and laws trying to control the spread of the SARS-CoV-2 virus, which already in December 2019 had started its pandemic tour. The new rules included restrictions on the physical distance maintained by persons outside the home and also the number of contacts allowed at the same time in the same space. This global lockdown or shutdown included closure of schools, kindergartens, factories, offices, restaurants, shops, and almost all social amenities. The consequences were forced work from home with, in parallel, 24/7 childcare and home schooling. Face/nose masks were first required for people in essential jobs (i.e. hospital staff, police, etc.), but soon everyone else had to wear such masks during encounters with others and visits to shops, restaurants, or at the workplace (for those essential workers where this was allowed). Obviously, the lockdown turned people's daily lives upside down, forcing many to quickly evaluate and redesign their work–life–family–sleep balance. Exactly these circumstances raise an obvious question: how does people's sleep change during the lockdown? As reported in this issue of *Current Biology*, Blume *et al.* [1] and Wright *et al.* [2] have independently used the SARS-CoV-2 pandemic as an opportunity to study precisely that: the impact of the lockdown regulations on human sleep.

The study by Blume *et al.* [1] investigated the impact the lockdown had on the sleep of the general public in Switzerland, Austria, and Germany. The authors performed an online survey between 23 March and 26 April, 2020. A total of 435 entries were gathered, of which a majority consisted of young female responders. Their observational survey included questions about sleep quality and sleep duration on both workdays and work-free days. The authors used the ultra-short version of the Munich Chronotype Questionnaire [3] to also assess 'social jetlag', a suggested proxy for a challenged circadian system and compromised sleep [4]. In addition, the authors assessed 'social sleep restriction' in their participants, which assesses the difference in sleep duration between workdays and work-free days. All questionnaires were administered twice, once referring to the time before the lockdown and once referring to the time since participants noticed the effects of the lockdown [1]. The paper by Wright *et al.* [2] describes findings of a study on sleep in a student population at the University of Colorado, Boulder. The paper reports comparison of sleep diary entries from 29 January to 4 February, 2020 (before the SARS-CoV-2 outbreak) to sleep data collected in the same students from 22 April to 29 April, 2020, when the Stay-at-Home/Safer-at Home order went into effect.

What do we learn from the two studies? Blume *et al.* [1] found that during the lockdown the mismatch between social and biological sleep–wake timing — social jetlag — was reduced. Like social jetlag, social sleep restriction was also reduced during lockdown, which resulted in an increase in sleep duration. However, sleep quality, the authors report, was reduced. An interesting finding by Blume *et al.* was a non-intuitive correlation with respect to sleep quality. We learn that a reduction in social jetlag and increase in sleep duration do not necessarily coincide with better sleep quality for everyone. This finding may spark new research to explore the concepts of social jetlag and sleep quality, helping to determine the extent to which people can determine the quality and quantity of their own sleep. A recent study in young individuals, for example, showed that subjective sleep quality was not rated differently with respect to whether caffeine was consumed prior to sleep, although objectively their sleep was affected [5]. Wright *et al.* [2] also found that during lockdown the average sleep duration in their student population increased on

both weekdays and work-free days (weekends in their paper). Sleep regularity was improved as well (through a reduction in the variance in sleep timing). The authors further report that sleep timing became later both on workdays and work-free days. As shown by Blume *et al.* [1] in their study, Wright *et al.* [2] showed that during lockdown the amount of social jetlag was reduced. Hence, both of these new papers do complement each other well.

Research during the past decades has clearly shown that the time people allocate to work very often interferes with the time needed to recover from work, as well as the time devoted to restorative sleep [6–9]. The consequences of lost sleep at the level of both the individual and society are dramatic [7,8,10–12] and costly [13]. As mentioned, social jetlag is one subjective proxy that can be used to quickly screen for this conflict [4]. The studies by Blume *et al.* [1] and Wright *et al.* [2] both help to understand that social jetlag is reduced when temporal work obligations are lifted. The global lockdown, of course, was not planned as a remedy against social jetlag or sleep loss, and it surely would not be a wise solution to the problem. Still, the findings of both papers show that sleep duration and sleep stability improve when the necessity to leave the house for work or study is lifted. A question which these papers did not address is to what extent the changes in sleep timing reflect changes in health or disease status, also with respect to changes in entrainment signals to the circadian system. Changes in light exposure — as a main driver in the entrainment process of the circadian system — were not assessed in these two studies, but potentially could explain a good portion of the reported changes in sleep timing and social jetlag [14–17]. In addition, an understudied aspect in this realm is synchronisation processes between humans living together in isolation. There is evidence of mutual synchronisation processes in humans [18] and other animals [19], and future lockdowns, which likely will come, could be an opportunity to more deeply explore the biology and psychology of group behaviour.

One thing should not be forgotten: the SARS-CoV-2 pandemic is one of the greatest threats to humankind. Many actions are in place to assist in dealing with this global challenge. Some of these actions, as we learn now, are also linked to unintended but positive side effects. One of these side effects is probably a better understanding of how we humans handle our time. Now it is up to us — as always — to use the collected knowledge wisely, if only to unlock more time for sleep.

DECLARATION OF INTERESTS

T.K. is founder of SynOpus, a business involved in consulting to companies with respect to work design and lighting.

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