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Sleep waves and recovery from drug and alcohol dependence: Towards a rhythm analysis of sleep in residential treatment

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ABSTRACT

This paper reports on a study of sleep amongst men and women who are living in residential rehabilitation centres in the UK and who are receiving support for their recovery from addiction to alcohol and other forms of substance use. Conceptually and methodologically, the paper draws on the work of the French sociologist Lefebvre and, in particular, his rhythmanalysis. We argue that this approach offers a useful way of exploring sleep in terms of biological, experiential, temporal, spatial and social rhythms. It also has the potential to facilitate interdisciplinary dialogue. Empirical data comprising qualitative interviews with 28 individuals, sleep diaries, and actigraphy reports (which measure movement as a proxy for sleep) are examined in combination to generate insights into the challenges associated with sleep in recovery from substance misuse. We examine how sleep in recovery involves an alignment of the spatiotemporal rhythms of rehabilitation and the multiple embodied rhythms of individuals. Institutionalised routines reproduce and impose ideas of day/night sleep cycles which are presumed to accord with 'natural' circadian rhythms. Although study participants very much want to achieve these 'natural' rhythms of sleep, alignment of individual and institutional rhythms is difficult to achieve. We develop the notion of 'sleep waves' as an analytic to capture the multifaceted elements of sleep and to argue that sleep waves recur but are also shaped by complex networks of rhythms, rituals and routines. Sleep waves can become relatively stabilised in rehabilitation settings, but the anticipation of moving on disturbs rhythms and generates anxieties which can affect recovery.

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1. Introduction

The paper reports on a study of the sleep of men and women living in drug and alcohol residential treatment services. Prompted by a biomedical literature that indicates that good sleep can play a critical role in recovery (Conroy and Arnedt, 2014) and a separate sociological literature that indicates that in residential treatment sleep, subjectively at least, can improve (Nettleton et al., 2011a; Neale et al., 2012), the aim of this article is to deploy Lefebvre's (2004 [1992]) *rhythmanalysis* to make sense of empirical data on sleep in these settings. Lefebvre's rhythmanalysis, at once a conceptual and a methodological approach, is apposite to sleep

because it seeks to examine the temporal, material and relational aspects of embodied social life. The central concept - *rhythm* - takes many interconnected forms. Embodied rhythms are, for instance, related to spatial rhythms, temporal rhythms, natural rhythms, and cosmic rhythms (Rantala and Valtonen, 2014; Schwanen et al., 2012). This focus on temporalities and rhythms finds resonance in biomedical literature on sleep in general, and sleep and drug use in particular, indicating potential for interdisciplinary research on this topic. The lexical affinities of socio-biological clocks and rhythms, although rooted in divergent epistemological traditions, offer opportunities for dialogue across the human sciences. Rhythmanalysis may therefore be a way to respond to calls within the sociology of health and illness for interdisciplinary exchange between social and natural scientists (Rose, 2013; Timmermans and Haas, 2008).

We foreground our empirical data with a brief review of how sleep is described in temporal and rhythmic terms within the

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natural and social science disciplines. We then offer a summary of Lefebvre's rhythmanalysis and his use of the wave metaphor. We find that across disciplines there is an emphasis on the play between multiple endogenous (internal) and exogenous (external) rhythms indicating scope for the analysis of sleep as embodied: viscerally and socially. These analytical insights give purchase on the interpretation of our empirical data, which comprise qualitative interviews, self-completion sleep diaries, and actigraphs. Throughout our analysis we play with the idea of *sleep waves* as a foil to the neurophysiological articulation of the term as used in the vocabulary of 'circadian rhythms' and 'slow wave sleep'. We introduce these terms that are core to sleep science and then turn to Lefebvre's conceptualisation of rhythms and waves, and suggest that a sociological notion of *sleep waves* serves to capture the extent to which sleep is repetitive and rhythmic and always a combination of biological and social contingencies.

2. A language of rhythms: the circadian and entrainment

Sleep scientists work on the premise that sleep combines two interrelated processes: sleep pressure (a homeostatic process) which increases as individuals remain awake and decreases as they sleep, and circadian rhythm (the 'internal biological clock') which is unaffected by sleep deprivation (Borbély, 1982). They assert that the homeostatic and circadian processes are interlinked: homeostatic processes primarily determine 'slow-wave sleep', whilst the circadian rhythm regulates Rapid Eye Movement (REM) sleep (Dijk and von Schantz, 2005; Arnedt et al., 2012). In 'healthy' sleep, the endogenous circadian clock is aligned with, or in the language of sleep science 'entrained' by, diurnal cues, known as 'zeitgebers', such that 'normal' sleep is in tune with the day/night cycle (Dijk and Lazar, 2012). Light is considered the dominant stimulus for this 'entraining' of circadian rhythms to local temporal environments (Mistlberger and Skene, 2004). Sleep science, then, frames sleep as a series of chronobiologically endogenous processes and circadian rhythms which are nevertheless influenced by external social factors and social 'clocks'.

Research on sleep and addiction currently prioritises a focus on endogenous (internal) processes; exploring alterations in circadian systems with exposure to substances of abuse (Arnedt et al., 2012; Falcón and McClung, 2009). For example, studies of alcohol-dependent adults at two weeks into withdrawal show phase differences in melatonin profiles relative to 'healthy' controls (Hasler et al., 2012). Additionally, male heroin-dependent individuals show disruption in cortisol rhythms three days post cessation, but not by day ten, suggesting that the first few weeks of abstinence may be a key time for chronobiologically informed treatments. However, the same individuals also show longer-term disruption to the rhythms of the 'clock' genes (identified as PER1 and PER2). These genes are also implicated in reward processing, with clinical scientists suggesting that their continued disruption may contribute to persistent craving and withdrawal (Hasler et al., 2012; 2014).

Despite this focus on endogenous processes, the model of sleep underpinning this research remains one which talks of both internal and external rhythms. The study of chronobiology can be linked to 'chronogeography', wherein social places are continually '(re)made through the intersection of multiple rhythms' (Lager et al., 2016: 4). Places are understood to be generative of rhythmic events (such as, job shifts, opening hours of shops, transport timetables, festivals and so on) which are said to act like 'pacemakers' (or *zeitgebers* see above), pacing both single behaviours and constellations of behaviours (Parkes and Thrift, 1979: 361). 'Pacemakers' of the night-time economy, for example, may include opening hours and availability of nightlife facilities, perceptions of

crime, disorderliness and safety, and availability of transport (Parkes and Thrift, 1979: 362). In combination, studies point to the interconnectedness of socio-temporal, spatial, experiential and biological rhythms, suggesting that Lefebvre's rhythmanalysis may be a particularly apposite analytic for comprehending sleep within given socio-spatiotemporal configurations. Lager et al. (2016) suggest that Lefebvre's *rhythmanalysis* links chronobiology with chronogeography, highlighting how the 'rhythmic orderings of people and place come into being and inform their experiences' (p.1565). As we have seen, the life sciences focus on the endogenous but also acknowledge – although they do not elaborate on – the exogenous. So rhythmanalysis offers a tool to integrate disciplinary approaches.

3. Rhythms, waves, everyday life and sleep

Lefebvre's (2004) *Rhythmanalysis* is primarily an approach that seeks to capture the interplay of multiple rhythms – biological, experiential, spatial, temporal and social. A rhythmanalysis involves an 'analytic operation' to identify 'the plurality of rhythmic interactions' which Lefebvre refers to as 'polyrhythms' (2004:42). It is crucial here to appreciate how he conceives rhythm; specifically, it involves repetition, but unlike the mechanical repetitious thud of machines, embodied and social repetition or rhythms *never* replicate their repetition, instead they invariably generate 'something new and unforeseen' (2004:8). Lefebvre most effectively communicates this idea of rhythm through the use of a maritime metaphor.

'To grasp rhythm and polyrhythmias in a sensible, preconceptual but vivid way, it is enough to look carefully at the surface of the sea. Waves come in succession: they take shape in the vicinity of the beach, the cliff, the banks. The waves have a rhythm, which depends on the season, the water and the winds, but also on the sea that carries them, that brings them. [...] But look closely at each wave. It changes ceaselessly.' (2004: 79)

The wave indicates incessant repetition yet with constant change as the interconnections of a multitude of things, objects, atmospheres, and processes create each wave as a unique configuration. Each sea has its rhythm, yet if we 'look closely at each wave' we might begin to grasp how bundles of movements, spaces, and objects alter' (p79). Transferring the maritime metaphor to social contexts, he advises that we examine spaces, objects, people and movements as they combine to generate rhythms in all their uniqueness.

This metaphor is important for our argument because it foregrounds the interconnectedness and contingent nature of rhythms. We carry the metaphor through to the polyrhythmias of sleep, enabling us to think in terms of *sleep waves*. Sleep waves come in succession and take shape according to their vicinity. The notion of *sleep waves* allows us to capture sleep as repetitious, but crucially also rhythmic, thus recognizing that each and every experience of sleep is unique. In sum, human sleep is experientially distinctive and yet it is also fundamentally shaped by spatial, temporal, physical and social contexts. *Sleep waves* captures the multiple rhythms of sleep.

Sleep waves as an analytic therefore prompt us to (i) capture the rhythm and repetitions of rhythms over time and space; (ii) explore how these everyday rhythms come into being by situating them against aggregate and experiential rhythms in place and the pacemakers of multiple territories; (iii) explore how this rhythmic ordering affects individuals' sense of sleep (cf. Lager et al., 2016). We begin to address these issues in our empirical work which comprises subjective accounts and (proxy) measures of the rest-activity circadian rhythm.

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