



Future orientation is associated with less lockdown rule breaking, even during large illegal gatherings

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ABSTRACT

Critical questions for large societies revolve around whose behaviors anticipate future repercussions - be they socio-legal or health-based - and whose do not. We used an evolutionary Life History Framework with a sample of UK-based, self-defined “active” ravers ($n = 506$) to better understand attendance of, and behavior at, mass events where chances of infection were high during the COVID-19 pandemic. During periods of the COVID-19 lockdown in the UK, 42 % of participants reported still attending underground raves. Just over half of these individuals wore facemasks and regularly washed their hands at lockdown raves; perhaps unsurprisingly demonstrating significantly lower levels of pandemic-compliant behavior than reported by the general public in their day-to-day lives. Nonetheless, we found that ‘active’ ravers, in general, conformed to household mixing lockdown rules significantly better than over-80 s who had received a single dose of the vaccine. Ravers reporting faster life history strategies (i.e., more focus on proximal outcomes, reduced future orientation), broke more lockdown rules at these events. Those with slower life history strategies (increased distal or future orientation) reported the greatest improvements to their wellbeing following lockdown raves. An evolutionary life history framework can be used to target campaigns encouraging norm compliance toward populations who are most likely to break important health guidelines.

1. Introduction

During the pandemic, and following years of austerity, unemployment and mental health issues have soared among young people (<30 years old) in the UK (O'Connor et al., 2021). In theory, large social events, such as raves, allow young people to temporarily remedy their imposed isolation. Young people may not be going to church on a Sunday (even if this is allowed under COVID restrictions), but they're making up for it on Saturday night by receiving the equivalent of religious-type ecstasy on the dancefloor until the sun comes up (Newson, Khurana, Cazorla, & van Mulukom, 2021; St John, 2004).

The continued and emergent rave-scene is secretive and hard to access, in part due to its illegal activities, making it a hidden population valuable to research regarding subversive or emergent behaviors (Elgabry & Camilleri, 2021). Throughout lockdown, ‘free parties’ and underground raves have been taking place across the world (Mahmood, 2021). In a time of increasing physical distance (because of both long-term social media induced changes, as well as COVID-19 related restrictions), rave culture appears to be

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growing. Humankind has a deep-seated need to engage in bonding group rituals (Durkheim, 1912/2008; Whitehouse & Lanman, 2014). The early 2020's rave generation is being drawn in to not just a *subculture*, but to perhaps one of the few secular spaces left available in which to partake in those rituals we so crave.

In general, lockdown rule breaking (such as household mixing and attending large social gatherings) occurred in the minority of the UK population, with estimates of around 10 % (Fancourt et al., 2020). Even though it may be a minority who break the rules, this can have far-reaching consequences. In conjunction with understanding norm-compliance and risk-taking more broadly, it is therefore imperative that we understand their motives. Why do some people limit their behavior in anticipation of future sanctions, be they health-based (i.e., illness, hospitalization, or death) or socio-legal (i.e., ostracism, fines, or other penalties)? Why do others seem to attend to their immediate needs rather than needs that might accommodate their anticipated future selves? Furthermore, how can answers to these questions be used to help plot the future landscape of social interaction and mass events in relation to pandemic threat?

1.1. Life History Theory

One possible explanation for risky behaviors, such as lockdown rule breaking, comes from evolutionary Life History Theory¹ (Figueredo et al., 2005). In humans, species-specific life history strategies are relatively slow, i.e., lower fertility, greater parental investment, and larger body size. This is in stark contrast to an organism like a mouse, which has a relatively small body size and reproduces many times without investing much in its offspring. From the perspective of evolutionary biology, such strategies are adaptive given a species' ecological niche.

In psychology, Life History Theory is often applied to humans to explore intraspecies variation in the allocation of energy, time, and resources, and how these allocations may vary in response to particular environmental pressures (Del Giudice, Gangestad, & Kaplan, 2015). As such, the timing of life history events that develop from environmental conditions (whether they are predictable or unpredictable) allows us to conceptualize individuals along a slow-to-fast life history dimension. That is, people may adhere to a slower or faster life history strategy when compared to others.

Slower strategies include being more distally or future orientated, having later puberty and sexual debut, having fewer offspring later in life, and the favoring of parental effort over mating effort. Faster life history strategies in humans are associated with an increased proximal (present) focus and reduced future orientation, earlier maturation, an earlier sexual debut, having children at a younger age, and behaviors such as risk taking and drug use (Ellis et al., 2012; Griskevicius, Tybur, Delton, & Robertson, 2011; Johns, Dickins, & Clegg, 2011; Mishra, Templeton, & Meadows, 2017).

Raves constitute a social ritual that challenges norms and conventions, with illegal events often having little security (Newson et al., 2021). Here, we test whether an individual's life history strategy, and thus their future orientation, is associated with (a) illegal rave attendance during lockdown and (b) pandemic rule-breaking at such events. We also investigate how pandemic rule-breaking differs between our sample of self-described ravers, the general population, and a sample of single-dose vaccinated over 80-year-olds. Finally, we test whether attending raves is related to wellbeing, even in times of pandemic lockdown when attendance is unequivocally illegal (and also potentially negative for one's health), and how this might vary between people with reduced or increased future orientation.

2. Materials and methods

To investigate whether individual life history strategy was associated with attendance at underground raves or 'free parties' and compliance to pandemic guidelines while at these events, we conducted online surveys in Spring 2021 with self-reported ravers from the UK aged over 18 ($n = 506$) using both snowball sampling and the Prolific data collection platform. We initially advertised on social media and online forums (e.g., Facebook groups and Reddit threads dedicated to underground electronic music and 'free parties') inviting people who had attended a rave or free party in the last five years to contribute to research. Due to the time-sensitive nature of Covid-19 research we wanted to complete data collection within one month so, when snowballing recruitment slowed down, we used Prolific. We used a pre-screening survey on Prolific that allowed us to only administer the survey to participants who had attended a rave or free party in the last five years. We did not find any significant differences in age ($p = .340$) or gender ($p = .814$) between the two recruitment strategies. Demographics and descriptive statistics for all measures can be found in Table 1.

This study was pre-registered on OSF prior to data collection. The data analyzed here forms part of a larger dataset relating to rave attendance (Newson et al., 2021) and comparing ritual behavior between ravers and religious people (Newson et al., in prep). Ethical approval was granted by the University of Kent Research and Ethics committee (ref. 004-ST-21). All data collection was anonymous and informed consent was obtained prior to participants starting our survey.

2.1. Measures

Participants reported whether they had attended lockdown events (yes/no) and were asked about the additional number of pandemic rules broken when attending those events (i.e., social distancing, handwashing, mixing outside of one's household, mixing in groups <6, and mask wearing). They also completed the mini-K, which is a short-form, well-validated, psychometric assessment of

¹ Not to be confused with how Life History is used in the Sociology - as an interviewing method used to record an individual's autobiographic history.

Table 1
Descriptive statistics.

Variable	Statistic
Age (<i>M, SD</i>)	30.45 (9.95)
Gender	
Male	42.9 %
Female	56.7 %
Prefer not to say / other	0.4 %
Rave attendance during the pandemic	42.1 % yes
Wellbeing following lockdown event (<i>M, SD</i>)	21.79 (22.60)
K-Factor (<i>M, SD</i>)	0.90 (0.72)

human life history strategies (Figueredo et al., 2005), the mean of which produces a K-Factor. A lower K-Factor indicates a faster life history strategy, and a higher K-Factor indicates a slower strategy. Finally, participants completed a modified wellbeing scale designed to capture wellbeing after a past event based on a well-established measure (Tennant et al., 2007), and demographic measures. Detailed methods are provided in the SI.

Comparative percentages of rule breaking were obtained from the Office for National Statistics (general UK population $n = 4624$; Murphy & Shine, 2021 (single-vaccinated over 80-year-olds $n = 2070$; Littleboy, 2021). Confirmatory factor analysis of the mini-K was consistent with previous reports (Richardson, Chen, Dai, Brubaker, & Nedelec, 2017).

3. Results

First, we tested lockdown rave attendance. Nearly half of the self-described ravers (42.1 %) reported attending at least one rave during the pandemic. K-Factor had little impact on whether participants attended a rave during lockdown ($p = .206$).

Next, we examined lockdown rule breaking at these events. The most common rules broken during lockdown raves (other than being there) were not social distancing at 2 m and mixing outside of one’s household, but most lockdown ravers reported using face coverings and regularly washing their hands at these events (Fig. 1). Slower life history strategies (high K-Factor) negatively predicted the number of rules broken at these events, $R^2 = .03$, $F(1, 210) = 5.83$, $B = -0.40$, $SE = .17$, $p = .017$.

Comparing our rave data to data collected by the UK’s Office for National Statistics, ravers complied to pandemic rules while attending raves less than pandemic rule adherence by the general public in their day-to-day lives. Nonetheless, ONS data showed that, compared to only 39.2 % of self-described active ravers who chose to attend lockdown raves, 67.0 % of single-dose vaccinated over-80 s had mixed outside of their household and indoors, contrary to lockdown rules at that time ($z = 7.94$, $p < .001$).

Finally, we looked at changes to wellbeing following lockdown raves. Ravers with a higher K-factor (more future orientated) reported the most improvements to their wellbeing following a lockdown rave, $R^2 = .06$, $F(1, 210) = 12.12$, $B = 7.62$, $SE = 2.19$, $p < .001$, as compared to ravers with a lower K-factor. We did not find any significant gender by K-Factor interactions (p ’s $> .198$), though women reported significantly slower life history strategies, ($M = 1.13$, $SD = 0.70$) than men ($M = 0.81$, $SD = 0.69$), $t(1014) = -7.34$, $p < .001$, Cohen’s $d = 0.46$, which corroborates results from other studies showing higher future orientation in young women (e.g. Schechter & Francis, 2010).

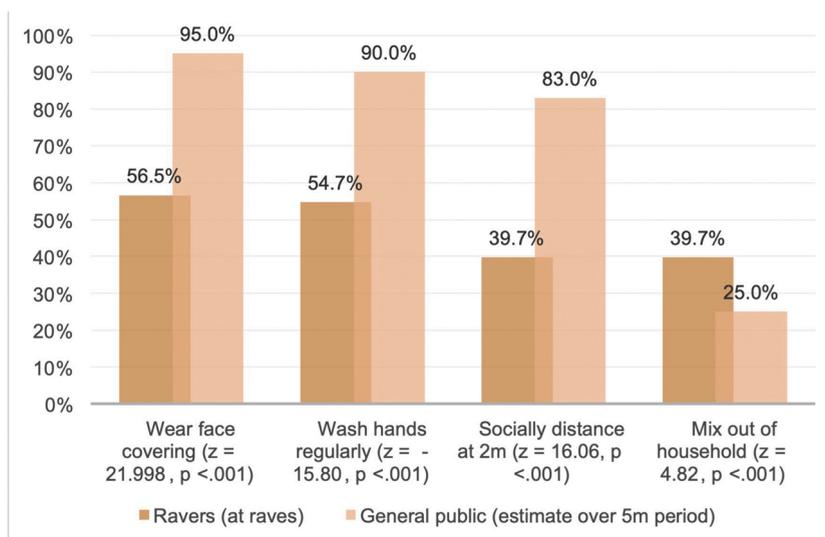


Fig. 1. Pandemic guideline compliance at raves and in the general public’s day-to-day lives.

4. Discussion

We found that most people breaking lockdown to attend raves continued to conform to some guidelines, particularly regular handwashing and wearing masks, albeit significantly less than the general public's compliance in day-to-day life. However, compliance among the over 80's who had received a single dose of the vaccine was worse than our total active raver sample, at least in terms of breaking rules around household mixing.

Our data suggest that rule-breaking, with serious future health and socio-legal implications, was associated with a faster life history strategy, and thus, by extension being less future orientated. Gatekeepers of rave culture sought out a variety of strategies to keep raves on their calendar and as "safe" as possible, including distributing face masks and mapping out social distancing zones with police tape (Blake, 2020), so it appears that opportunities to behave safely and with increased compliance (while, somewhat contradictorily, undertaking an illegal activity) were available to those who wanted to rave with reduced risk of catching or spreading COVID-19.

Life history strategies that are more anticipatory, i.e., *slower* strategies, are associated with more stable lifestyles that are rich in cues of ample resources and opportunities, safety, security and reduced mortality risk. Indeed, we found that ravers with higher K-Factor scores broke fewer lockdown rules at pandemic raves than ravers whose K-Factor indicated adherence to a faster strategy. Those with slower strategies were also most likely to report better wellbeing after attending a lockdown rave, despite the obvious risks, than people with a K-Factor associated with a faster, less future orientated strategy.

These wellbeing effects may be because, in addition to increased future orientation, people with slower life history strategies also report stronger community ties and material resources (Del Giudice et al., 2015). As such, the negative aspects of attending a large event may not have been so emotionally damaging, e.g., the social and financial risks of having to self-isolate if one was to contract the virus. People with slower life history strategies and increased future orientation are also likely to engage in more norm compliant, less risky behaviors more generally (Ellis et al., 2012), e.g., they would have been less likely to consume drugs at these events, which could diminish feelings of wellbeing post-event.

Life history strategy development continues into older adulthood (Kubinski, Chopik, & Grimm, 2017). Although some research suggests that older people's life history strategies tend to slow down (Kubinski et al., 2017), it's plausible that living in an environment with high mortality cues (i.e., a pandemic) would heighten a proximally focused approach to life. This could explain the - perhaps surprising - finding that this population's pandemic-based rule compliance was lower than that of a younger population who self-described as belonging to the rave scene - a sub-culture often associated with risk-taking, illegal gatherings, drug use, and norm non-compliance. Although some of these self-described ravers did choose to attend illegal pandemic raves, the vast majority did not, and as a group showed more compliance than might be expected given their leisure interests.

Future research is required to investigate whether cues produced by the pandemic (signals of increased mortality, health poverty and resource scarcity) might play a role in shifting individual life histories toward a faster strategy for those most affected by the above cues. In the future, the pandemic may come to be associated with the pattern for baby booms following natural disasters (Ullah et al., 2020), following initial drops in the birth rate due to socio-economic changes and anti-COVID measures (De Rose, Ambrosini, Mantica, & Terrone, 2021).

This study suffered from two main limitations. First, further research is required to disambiguate whether rule compliance during illegal gatherings is associated with the rave population specifically, or whether this behavior reflects broader trends in groups who still continued to meet for both ritual and social purposes (for example, religious lockdown gatherings). Second, the data is correlational rather than causal, and further experimental or longitudinal research is required to better understand how life history strategies influence our behaviors.

In sum, people with slower life history strategies who are oriented toward the future received the biggest wellbeing benefits post lockdown rave, reaping the social rewards of group rituals, whilst still attempting to conform to at least some national pandemic guidelines. This study illustrates how evolutionary Life History Theory can be used as a framework to inform future public health efforts to understand why rule compliance is poor in some parts of the population regarding risk taking and proximally focused behaviors.

Applying evolutionary thinking to tackle future problems is not a new idea, but as this case study illuminates, Life History Theory offers us unique insights into why people choose risky behaviors that may at first appear maladaptive. As such, Life History Theory could be an important part of futures studies interested in risk-taking, rule compliance and time orientation, especially concerning health related norm compliance and social behaviour.

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Data statement

The data and pre-registration is available at https://osf.io/8by9r/?view_only=4c0820236755403b82c20ae8064f3d1a.

Declaration of Competing Interest

The authors report no declarations of interest.

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Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:<https://doi.org/10.1016/j.futures.2021.102883>.

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