



ARCLIGHT

A pocket ophthalmoscope for the 21st century

“Wow, it really works!”—rural health worker, Malawi, 2016
“Less is more”—Peter Behrens, architect, 1868-1940

Around 285 million people in the world are estimated to be visually impaired,¹ and 360 million hearing impaired,² with the majority of cases considered preventable or treatable if diagnosed promptly. Ophthalmoscopes and otoscopes are typically designed for wealthy countries and are complex, heavy, and expensive; their basic designs have remained relatively unchanged for over 100 years.³

Very few practitioners in low and middle income countries have these essential tools. If they do, they are typically hand-me-downs that don't work because they need parts that are hard to find or expensive, such as bulbs and batteries.⁴ The vast majority of cases of vision and hearing impairment, however, are found in those countries with least access to diagnostic tools. The *Lancet* Commission has recommended greater focus on frugal technologies designed for the needs of low and middle income countries.⁴

Frugal inspiration from *The BMJ*

In 2000 the Christmas issue of *The BMJ* contained an article describing a cheap, homemade ophthalmoscope.⁵ This inspired the Arclight; a prototype pocket sized (110 mm×26 mm×9 mm, weight 18 g) ophthalmoscope, otoscope, and loupe powered by a slim rechargeable lithium battery that is charged by an integrated solar panel and illuminated by a patented

Andrew Blaikie and colleagues discuss the Arclight, a cheap, portable device that was inspired by a Christmas article in *The BMJ*

Several thousand devices have been distributed around the world, enabling comprehensive eye and ear care examinations for the first time

LED light source. The Fred Hollows Foundation offered seed development funding to develop the prototype into a device ready for market. The simplified design has considerably lower production costs than a traditional ophthalmoscope, and the Arclight is now available to low income users through the standard list of the International Agency for Prevention of Blindness at a fraction of the cost of traditional devices.⁶

Several thousand devices have been distributed to countries around the world, including Malawi, Ethiopia, Kenya, Tanzania, Rwanda, Ghana, Fiji, Indonesia, and the Solomon Islands, enabling healthcare workers to perform comprehensive eye and ear examinations for the first time.

Changing care

The Arclight is tailored to the conditions and needs of low resource settings⁷ so that it can be used to identify the most common causes of vision and hearing loss. Although it is still in the early stages of evaluation, preliminary studies from Scotland, Malawi, and Tanzania indicate that the device is more effective than traditional tools for teaching ophthalmoscopy^{8,9} and is just as accurate for screening for signs of diabetic retinopathy and glaucoma.^{7,10} Studies on other conditions requiring a “red reflex” examination, such as congenital cataract and retinoblastoma, which if diagnosed late can lead to poor visual outcomes and even death, are currently under way, and Sense International is using the Arclight in a large screening programme of infants aged 0-3 years in Kenya and Uganda.¹¹ The loupe of the device is being used by the Fred

Hollows Foundation in Ethiopia to screen for trachoma for the prevention of blindness that is estimated to affect over three million people worldwide.^{12,13} The otoscope has also been used in Malawi to identify and treat middle ear disease and cerumen impaction as part of a hearing impairment prevention programme.¹⁴

Feedback from formal training with users in Malawi identified several barriers to care, including the need for access to relevant training material and local referral guidelines.⁷ The next iteration of the Arclight contains a memory chip loaded with a multimedia training programme accessible through a smartphone app.¹⁵ The Arclight can also acquire digital images for remote interpretation and for training purposes by clipping it to a mobile phone camera.

The development of this device has created a piece of disruptive technology that has the potential to transform care in low and middle income countries. It all started with a paper in the millennial Christmas issue of *The BMJ*. So please keep reading the festive issue of the journal; you never know what ideas might light up.

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In memory of Sandy Holt-Wilson.

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Open toe sandals syndrome

Is fear of summer foot exposure contributing to the workload of mycology labs, ask **Andrew Borman** and **Elizabeth Johnson**

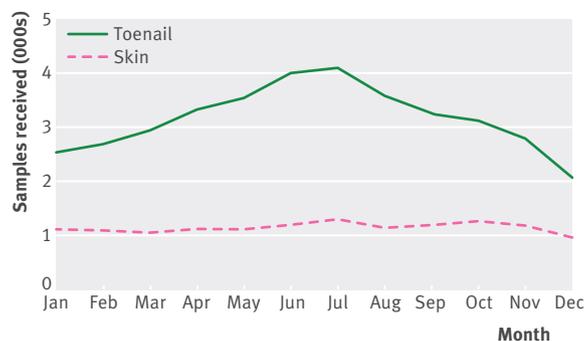
The diagnosis and management of infections are common uses of resources and finances in many healthcare settings, including the NHS. Our laboratory routinely tests for dermatophytes, a group comprising three types of fungi that infect and grow in dead keratin. These fungi can cause infections of the skin, hair, and nails (*tinea corporis*, also known as ringworm), groin (*tinea cruris*), scalp (*tinea capitis*), and skin of the feet (*tinea pedis*, also known as athlete's foot). Dermatophyte infection of the nails is known as *tinea unguium*.

At our laboratory we receive and process samples of skin, hair, and nails from patients across the south-west of England who present to GPs with suspected dermatophytosis.

Seasonal variation

Over the years we have remarked on a reproducible and striking seasonal variation in the number of dermatology samples submitted for analysis. Our laboratory receives around 3000 samples each month during the winter period, and this increases throughout spring to reach peaks of 5000 each month during May to August.

An important consideration is whether this trend represents a real seasonal increase in dermatophyte



Seasonal dermatophyte samples for 2007-2014. Cumulative total numbers of toenail (solid line) and skin (dashed line) samples received per month over an eight year period

infections, perhaps due to warmer temperatures and higher humidity, or could be explained by another, hitherto undescribed, phenomenon.

Upon closer scrutiny, the seasonal increase exclusively involves toenail samples (figure). By contrast, referred samples of skin, hair, and fingernails remain constant throughout the year. This in itself suggests that seasonal temperature increases do not lead to a greater incidence of dermatophyte infections, unless *tinea unguium* is more affected than other tineaes by such changes.

Sandal paranoia

To investigate these seasonal changes we generated several non-exclusive working hypotheses that might explain the specific increase in toenail samples (box).

Surprisingly, there is no notable seasonal variation in toenail samples that test positive for fungal infections. Between 55% and 60% of all toenail samples examined contain fungal elements that are diagnostic of infection, regardless of the season or month of sampling, thus effectively negating PCIGS and ONLATS as major causes of seasonal variation. Instead, we believe that the dramatic increase in toenail sampling in spring to late summer is

almost exclusively caused by open toe sandals syndrome. Interestingly, this hitherto undescribed syndrome appears to afflict both sexes equally. The proportions of samples received from male and female patients remain constant throughout the year (approximately 45% of samples are from men) and the proportions of samples that are positive remain constant for each sex (70%-75% of samples from men and boys, compared with 50%-55% from women and girls). We speculate that the difference in the rates of positive diagnosis might reflect an increase in cases of toenail dystrophy in women, whose nails are more likely to be damaged by compression or friction caused by wearing fashion shoes. Such dystrophy can mimic dermatophytosis.

In summary, we propose that open toe sandals syndrome is a major contributor to increased workloads for mycology laboratories and general practice dermatology staff in the warmer months. Future studies will attempt to differentiate between two further novel syndromes: "too busy preparing for Christmas" (TBPC) and "too inebriated to care" (TITC) as the reason for the dearth of dermatology samples received each December.

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HYPOTHESES FOR INCREASE IN TOENAIL SAMPLES

- A real increase in infections at this site, possibly due to greater use of communal sports facilities early in the year, which we termed "post Christmas indulgence gym syndrome" (PCIGS)
- An increased awareness of pre-existing genuine fungal infections of toenails as summer approaches and feet are bared, or "Oh no, look at those syndrome" (ONLATS)
- An increased fear that slightly disfigured toenails visible in summer shoes might be the results of dermatophyte infection, or "open toe sandals syndrome" (OTSS)



ORIGINAL RESEARCH

Analysis of the English Longitudinal Study of Ageing

Sustained enjoyment of life and mortality at older ages

Paola Zaninotto, Jane Wardle, Andrew Steptoe



Objective To test whether the number of reports of enjoyment of life over a four year period is quantitatively associated with all cause mortality, and with death from cardiovascular disease and from other causes.

Design and setting Longitudinal observational population study using the English Longitudinal Study of Ageing (ELSA), a nationally representative sample of older men and women living in England.

Participants 9365 men and women aged 50 years or older (mean 63, standard deviation 9.3) at recruitment.

Main outcome measures Time to death, based on mortality between the third phase of data collection (wave 3 in 2006) and March 2013 (up to seven years).

Results Subjective wellbeing with measures of enjoyment of life were assessed in 2002 (wave 1), 2004 (wave 2), and 2006 (wave 3). 2264 (24%) respondents reported no enjoyment of life on any assessment, with 1833 (20%) reporting high enjoyment on one report of high enjoyment of life, 2063 (22%) on two reports, and 3205 (34%) on all three occasions. 1310 deaths were recorded during follow-up. Mortality was inversely associated with the number of occasions on which participants reported high enjoyment of life. Compared with the no high enjoyment group, the hazard ratio for all cause mortality was 0.83 (95% confidence interval 0.70 to 0.99) for two reports of enjoyment of life, and 0.76 (0.64 to 0.89) for three reports, after adjustment for demographic factors, baseline health, mobility impairment, and depressive symptoms. The same association was observed after deaths occurring within two years of the third enjoyment measure were excluded (0.90 (0.85 to 0.95) for every additional report of enjoyment), and in the complete case analysis (0.90 (0.83 to 0.96)).

Conclusions This is an observational study, so causal conclusions cannot be drawn. Nonetheless, the results add a new dimension to understanding the significance of subjective wellbeing for health outcomes by documenting the importance of sustained wellbeing over time.

Introduction

Several studies have documented protective associations between subjective wellbeing (life satisfaction, enjoyment of life) based on a single report and mortality,²⁻¹² but another aspect of exposure might be important—namely, the duration of the experience. In the present analysis, we tested the notion that repeated reports over several years would have stronger associations with mortality than a single occurrence.

Methods

Participants

The English Longitudinal Study of Ageing (ELSA) is an ongoing, population representative, prospective cohort study of men and women living in England aged 50 years or more at recruitment in 2002 (first phase of data collection referred to as wave 1).¹³ The analytical sample consisted of 9365 participants who were alive at waves 1, 2 (2004), and 3 (2006) of data collection. Mortality was ascertained from wave 3 of ELSA (2006) until March 2013 (1310 deaths) through linkage to the National Health Service central data registry (maximum follow-up seven years).

Measures

Enjoyment of life was indexed with four items from the CASP-19 quality of life instrument, as described previously.^{12,14} Each item was assessed on a four point scale, from 0 (“never”) to 3 (“often”), was subsequently coded as 0 (“never or rarely”) and 1 (“sometimes and often”).

The four binary items were summed to generate the number of items for which enjoyment was reported, with scores ranging from 0 to 4.

We then generated a variable for enjoyment, defining no enjoyment as scores from 0 to 2, and high enjoyment if scores were 3 or 4. Baseline covariates included age, sex, ethnicity, marital status, employment status, quintile of non-pension household wealth, educational qualifications, impaired self rated health,¹⁵ limiting longstanding illness, doctor diagnosis of chronic conditions, and impaired mobility.

(Methods, including details on statistical analysis are discussed further in the full paper on thebmj.com.)

Results

We found that 2264 (24%) participants reported no high levels of enjoyment of life on any occasion, with 1833 (20%) having one, 2063 (22%) having two, and 3205 (34%) having three reports of high enjoyment. The number of reports of high enjoyment of life was greater in women,

WHAT IS ALREADY KNOWN ON THIS TOPIC

- Subjective wellbeing (feelings of enjoyment and satisfaction with life) has been associated with greater longevity in longitudinal population studies
- Previous studies have measured wellbeing on a single occasion, and the importance of sustained wellbeing is not known

WHAT THIS STUDY ADDS

- In the present study, a dose-response association was seen between sustained positive wellbeing over several years and all cause mortality
- These effects remained significant after adjusting statistically not only for demographic and health status, but also adjusting for physical functional impairment and depressive symptoms



and in participants who were married or cohabiting, well educated, wealthier, younger, and currently employed (table 1, see thebmj.com). Baseline health profiles were more favourable in those who reported more sustained enjoyment of life, with better self-rated health; less limiting longstanding illness; fewer diagnoses of coronary heart disease, diabetes, arthritis, stroke, or chronic lung disease; and less impaired mobility and impaired activities of daily living. We also found associations with a history of depressive illness and current depressive symptoms.

There were 1310 deaths over the average 6.5 year follow-up period, and the proportion people who died was 30% in those with no reports of high enjoyment of life, 23% in those with one report, 22% in those with two reports, and 25% in those with three reports. Cox regression confirmed that the number of reports of high enjoyment of life showed a graded inverse association with mortality (table 2, see thebmj.com). Compared with no reports of high enjoyment, the hazard ratio adjusted for age and sex was 0.87 (95% confidence interval 0.73 to 1.03) for one report, 0.73 (0.62 to 0.87) for two, and 0.60 (0.51 to 0.70) for three reports. The hazard ratio for every unit increase in reported enjoyment of life was 0.84

(0.80 to 0.89). These associations were somewhat attenuated with adjustment for covariates, particularly pre-existing health issues (model 3). Nevertheless, in the final model including all covariates, the adjusted hazard ratio was 0.83 (0.70 to 0.99) for two reports of enjoyment and 0.76 (0.64 to 0.89) for three reports, and the hazard ratio for every additional report of high enjoyment of life was 0.91 (0.86 to 0.96).

Discussion

Our results indicate that the maintenance of positive wellbeing over a four year period is systematically related to subsequent mortality. A graded effect was apparent, with progressively higher mortality among people with fewer reports of high enjoyment. In the fully adjusted model, the hazard was reduced by 17% among people giving two reports of high enjoyment of life, and by 24% in those giving three reports. Associations also persisted after deaths within two years of the last measure of enjoyment of life were excluded, arguing against reverse causality or the effect of terminal decline in wellbeing.¹⁷

Strengths and limitations

This study advances understanding of the role of subjective wellbeing in health in three ways. First, it shows that duration of exposure to positive emotional states is important. Previous research has documented associations between intensity of positive

wellbeing at a single measurement point and survival, but not how often wellbeing is experienced, and studies with repeated assessments of positive wellbeing are rare.¹⁸ Our observation that multiple reports of high enjoyment of life show stronger associations with mortality than a single episode adds to the plausibility that subjective wellbeing might causally influence health outcomes. Single reports of enjoyment of life could be affected by current circumstances or fleeting experiences, while persistent subjective wellbeing might influence longer term determinants of health.

Second, we took account of a wide range of potential confounders in these analyses. Previous studies have included controls for demographics and baseline prevalence of serious illness,³⁻¹⁹ but not disability or mobility impairment. Impaired mobility is an independent predictor of mortality,²⁰ and is associated with reduced enjoyment of life.¹⁴ We also measured self-rated health and limiting longstanding illness as indicators of less tangible health problems that might confound associations between positive wellbeing and mortality,¹¹ and assessments of depressive symptoms to account for the presence of negative affective states.

A limitation of this analysis was that we only assessed enjoyment of life every two years, and do not know whether it fluctuated between measurement points.¹⁸ Baseline health status was measured by self report, but this has been shown to be quite comparable with physician examination in studies of adults of similar ages.^{24 25}

Conclusions

These results add a new dimension to understanding the significance of subjective wellbeing for physical health outcomes by documenting a dose-response association with sustained wellbeing. They highlight the need to study biological and behavioural mediators in order to establish the mechanisms through which subjective wellbeing is associated with health outcomes.

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ORIGINAL RESEARCH Difference in differences study

Gotta catch 'em all! Pokémon GO and physical activity in young adults

Katherine B Howe,^{1 2} Christian Suharlim,³ Peter Ueda,^{4 5} Daniel Howe Ichiro Kawachi,² Eric B Rimm^{1 6 7}

Objective To estimate the effect of playing Pokémon GO on the number of steps taken daily up to six weeks after installation of the game.

Design Cohort study using online survey data.

Participants Survey participants of Amazon Mechanical Turk (n=1182) residing in the United States, aged 18 to 35 years and using iPhone 6 series smartphones.

Main outcome measures Number of daily steps taken each of the four weeks before and six weeks after installation of Pokémon GO, automatically recorded in the “Health” application of the iPhone 6 series smartphones and reported by the participants. A difference in difference regression model was used to estimate the change in daily steps in players of Pokémon GO compared with non-players.

Results 560 (47.4%) of the survey participants reported playing Pokémon GO and walked on average 4256 steps (SD 2697) each day in the four weeks before installation of the game. The difference in difference analysis showed that the daily average steps for Pokémon GO players during the first week of installation increased by 955 additional steps (95% confidence interval 697 to 1213), and then this increase gradually attenuated over the subsequent five weeks. By the sixth week after installation, the number of daily steps had gone back to pre-installation levels. No significant effect modification of Pokémon GO was found by sex, age, race group, weight status, urbanity, or walkability of the area of residence.

Conclusions Pokémon GO was associated with an increase in the daily number of steps after installation of the game. The association was, however, moderate and no longer observed after six weeks.

Introduction

Pokémon GO is an augmented reality game in which players search real world locations for cartoon characters appearing on their smartphone screen. Since its launch in July 2016, the game has been downloaded more than 500 million times worldwide.

Games that incentivise exercise might have the potential to promote and sustain physical activity habits.^{1 2} Because walking is encouraged while playing, Pokémon GO has been suggested to increase physical activity and improve public health, but these claims have been based on anecdotal evidence.³⁻⁵

We used an online survey and automatically recorded step count data from iPhones to estimate the change in daily steps after installation of Pokémon GO among young adults in the United States.

Methods

Study population

We conducted an online survey using the Amazon Mechanical Turk (MTurk), between 1 and 31 of August 2016. MTurk is a website for recruitment of online workers (>500 000 registered workers worldwide⁶) who receive a small compensation for completing tasks, including responding to surveys.

We recruited survey participants who were aged 18 to 35 years, resident in the US, and used an iPhone 6, because they automatically record the number of steps taken while carrying the device. Participants were paid \$2.0 (£1.6) for completed participation. Because the number of people fulfilling the inclusion criteria who were exposed to the online posting of our

Players of Pokémon tended to be younger, have a lower education, and be obese

study is not known, it was not possible to calculate the response rate. Of the 2225 people who responded, we excluded 115 who had downloaded Pokémon GO but not achieved a “trainer level” of at least 5, which is reached after around two hours of walking. At this level, functions integral to the game are unlocked, including joining a team and competing for Pokémon gyms.

Covariates

Survey participants were asked about their zip code and urbanity of residence, education level, household income, marital status, and weight and height from which body mass index was calculated. Participants who reported that they played Pokémon GO were asked to upload a screenshot of their Pokémon GO application, which shows the installation date. We matched the zip code with a validated neighbourhood web based walkability index (Walk score), which was categorised into four groups (car dependent, somewhat walkable, very walkable, and walker’s paradise).^{10 11}

Participants were asked to upload screenshots showing their number of steps daily while carrying their iPhone, for each day during the two months preceding the date of study participation. This information is recorded by default in the “Health” application of iPhone 6, using the device’s built-in accelerometer. (Methods are discussed further in the full paper on thebmj.com.)

WHAT IS ALREADY KNOWN ON THIS TOPIC

- Pokémon GO is an augmented reality game overlaying graphics on the real world using the camera function of smartphones
- The game has been downloaded more than 500 million times worldwide
- Because the game encourages walking it has been suggested to increase physical activity

WHAT THIS STUDY ADDS

- In young US adults using iPhones, Pokémon GO was associated with a moderate increase in daily number of steps
- This increase was not, however, sustained: the number of steps reverted to pre-installation levels by the sixth week
- The impact of Pokémon GO on physical activity was limited in our study population of young adults in the US



Results

Of the survey participants, 560 (47.4%) played Pokémon GO at a trainer level of 5 or more. Of the players, 90% (n=622) installed the game within 10 days of its release on 6 July 2016 (median 8 July 2016). Playing Pokémon GO was common across various subgroups of the population; players, however, tended to be younger, have a lower education and household income, and be obese, and were more likely to be single and less likely to be black compared with non-players (table, see thebmj.com).

In the four weeks before installation of Pokémon GO, participants who played the game took on average 4256 (SD 2697) steps daily. The corresponding number for non-players in the four weeks preceding 8 July (median date of Pokémon GO installation among the players) was 4126 (SD 2930). After installation of the game, the daily steps among players increased sharply before gradually returning to the pre-installation levels, whereas the number of daily steps for non-players remained at similar levels throughout the study period (fig 1).

The difference in difference analysis confirmed the pattern: Pokémon GO was associated with an increase in daily steps of 955 (95% confidence interval 697 to 1213) during the first week, the effect was gradually attenuated over the subsequent weeks, and by week 6 it was not significant (130, -593 to 853) (fig 2 and supplementary table 2).

The analyses on effect modification of Pokémon GO by baseline variables showed no significant interaction between the variables, Pokémon GO and week since installation of the game (all P values ≥ 0.076 , see supplementary table 3). Adjusting for differences in time trends in number of steps by baseline variables did not materially affect the results (see supplementary table 4).

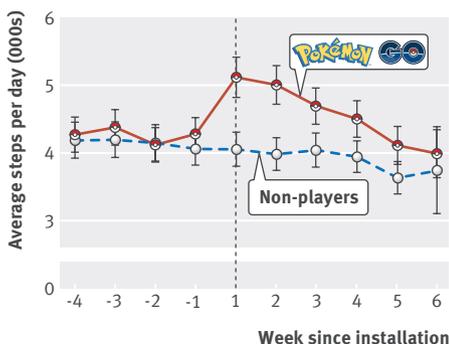


Fig 1 | Average number of daily steps and 95% confidence intervals by week before and after installation of Pokémon GO (median 8 July 2016)

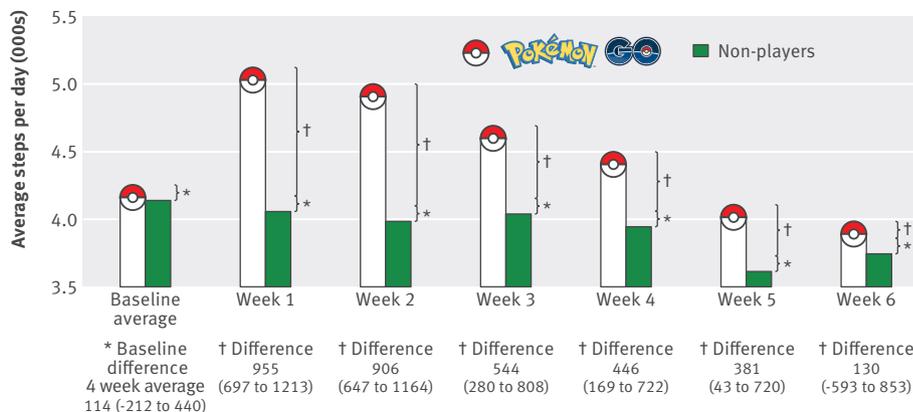


Fig 2 | Average daily number of steps before and after installation of Pokémon GO (median 8 July 2016). Confidence intervals are estimated using a difference in difference regression model (see supplementary table 1 for the full model)

Discussion

In this study on the impact of Pokémon GO on physical activity in young US adults, we found that in the first week after installation the game was associated with an increase in daily number of steps of 955 (95% confidence interval 697 to 1213). The association was attenuated during the subsequent weeks and was no longer significant by the sixth week. Assuming steps of 0.8 m at a pace of 4 km/h,¹⁴ the change in number of steps in the first week would translate into 11 minutes of additional walking daily, which is around half of the World Health Organization recommendation of 150 or more minutes weekly.¹⁵

Pokémon GO has been suggested to improve public health by promoting physical activity.³⁻⁵ In our study population, however, the results indicate that the health impact of Pokémon GO might be moderate. Interventions designed to increase walking typically increase the number of steps by 2500 daily.¹⁶ Even if smaller amounts of physical activity might also be important for health outcomes,^{15,17} the increase in steps from Pokémon GO, as with many physical activity interventions,¹⁸ was not sustained over time. Pokémon GO might also entail risks, such as injuries and road traffic incidents.^{19,20}

Strengths of this study include the use of automatically recorded data on steps from the iPhone, which has been shown to accurately track step counts²¹; validation of Pokémon GO installation and date using screenshots; and a study population from a wide range of sociodemographic groups and US regions.

Our study has limitations. First, steps were only recorded when the iPhone was carried. Second, although our results did

not change materially when adjusting for several baseline variables, the difference in difference analysis is susceptible to confounding from changes in number of daily steps that were unique to Pokémon GO players but independent of the game. Third, our study population was limited to iPhone users in the US, and MTurk workers are not representative of the general population—for example, in terms of sex (over-representation of women), political views, and personality.²² Generalisability of our results might therefore be limited.

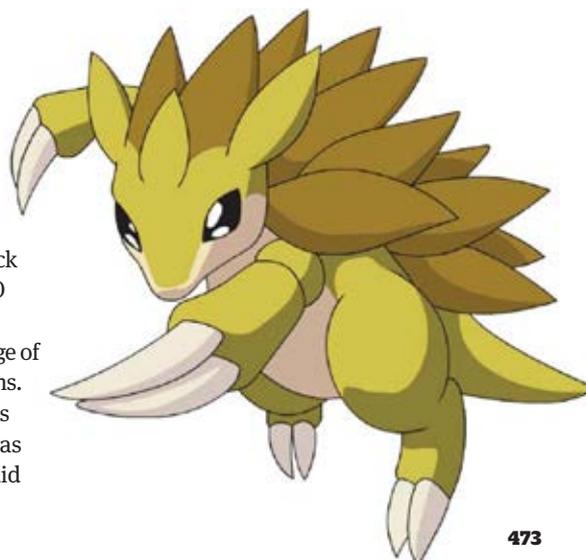
Although the association between Pokémon GO and change in number of steps was short lived in our study, some people might sustain increased physical activity through the game. Also, the effect of Pokémon GO on physical activity might be different in children, who were not included in our study. Other potential benefits might exist, such as increased social connectedness and improved mood.

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Morality and non-medical drug use

So long as others are not harmed, there are no moral grounds for restricting use of cannabis or heroin any more than alcohol or caffeine, argues **A C Grayling**



BIOGRAPHY

Anthony Grayling was professor of philosophy at Birkbeck College, University of London, until 2011, when he founded the New College of the Humanities and became its first master. He has written and edited more than 30 books on philosophy and other subjects and contributes often to newspapers and magazines and to BBC radio. For nearly 10 years he was honorary secretary of the UK's principal philosophical association, the Aristotelian Society. His new book, *The Age of Genius*, was published in March 2016.

Forbidding people to eat or drink what they wish, or to seek certain pleasures, is unjustifiable, whatever one thinks about the practice involved

Conservative moral attitudes are fruitful in causing social problems. The question of the use of drugs such as cannabis and heroin is a prime illustration of this fact. Arguably, neither the use nor the misuse of mind altering substances is a moral problem, though both, and especially misuse, can cause practical problems. But if in addition their use is criminalised, those problems are exacerbated and the cost to society balloons.

By “drugs” in what follows I mean opium and its derivatives, cocaine, various forms of cannabis, LSD, “ecstasy,” amphetamines, solvents, tranquillisers, and anything else people use to alter their states of consciousness and emotion, whether or not they become addicted to them.

Moral inconsistency

The list should also therefore include alcohol, nicotine, and caffeine, but it usually does not. There are yet other substances in what we eat and drink that have narcotic, stimulant, or hallucinogenic effects—sugar, for example, in the stimulant class—but usually with milder immediate consequences (though perhaps with as great or greater longer term effects on health—again, as with sugar). But these too we do not outlaw.

The fact that only some drug use is regarded as morally opprobrious is a problem. Is it immoral to drink a glass of wine or put a lump of sugar in your tea? Hardly anyone would think so. If not, why is it immoral to put cannabis in your cake mix? Parity of reasoning says it is not.

The 19th century English philosopher John Stuart Mill argued that what an individual chooses to consume is his or her business alone, unless harm is done to others as a result. This explains why there are neither moral nor

legal prohibitions against getting drunk yet it is immoral and illegal to drive a car while drunk: that is pure Mill. Getting drunk is regarded as a lapse in taste not a moral issue unless it is habitual and results in neglect of work and family, thus harming others. Why cannot the same principle apply to all the other drugs? The answer is that they are treated not merely from a legal point of view, as alcohol is, but a moral one also. What is the difference?

The answer is none. A glance at the history of the criminalisation of drug use shows how the legal and moral distinctions between controlled and uncontrolled substances are not based on principle but an accident of history. The moral case against controlled drugs is premised on the harm they do to their users. The argument is, in short, that society has to protect people against themselves. Without irony, the makers of this case add as a further reason that drug use also imposes a cost on society—without acknowledging that much of that cost arises from criminalising drug use so that it goes underground and into the hands of crime.

Social acceptability

The argument of harm to user does not survive scrutiny. Alcohol is as dangerous as cannabis, and perhaps more so, and whereas cannabis is recognised as having some medical value—as do opium derivatives and cocaine for analgesia and anaesthesia—alcohol has relatively little such use. So the reason that the use of alcohol is morally unexceptionable and legal for adults while the use of opiates and cocaine is neither, is the arbitrary fact of alcohol's greater social acceptability resulting from longer public use. The reason is no better than that.

Drugs came under legal control in Britain for the first time in 1868, not for reasons of moral distaste



but to protect the business of pharmacists, who wanted the sole right to dispense them. Soldiers tempered the horrors of the first world war trenches by using opiates and gave themselves resolve for going over the top by using cocaine. This prompted a Defence of the Realm Act banning drugs for the first time. For decades beforehand there had been campaigns on both sides of the Atlantic for prohibition, mainly of alcohol but also other substances, to protect people from harming themselves and society from being harmed by them. In the US, prohibition was enacted after the war, and in the same mood laws were soon passed in most Western countries against other drugs.

The moral opprobrium once felt only by campaigners became generalised as a result. Until then consumption of, say, laudanum had been regarded as no different from consumption of alcohol, and addiction had been viewed as a medical rather than a moral or legal problem. It was the successful effort of antidrug campaigners to demonise as well as criminalise drug use that brought their use—but not the use of alcohol or nicotine—into the domain of moral judgment.

In a sad way

I suggested that drug misuse is not a moral problem, but it is an ethical one. Ethics (from Greek *ethos*) is about what sort of person one is, while morality (from Latin *mos, mores*) is about duties and

obligations in relation to others. By saying that drug use and misuse is an ethical matter I mean that people who become dependent on chemical means for their wellbeing, or for coping with life, are in a sad way.

Occasional recreational use invites no ethical judgment; it is a personal choice that others might variously think silly, interesting, or irrelevant, but on Mill's grounds it is both ethically and morally unexceptionable if others are not harmed. It is a quite different matter to say that living in dependence on drugs is to be less than one could be without such dependence. That is an ethical judgment. But it is not a reason for making drug use illegal.

Forbidding people to eat or drink what they wish, or to seek certain pleasures, is unjustifiable, whatever one thinks about the practice involved. We should certainly suggest limits, just as we do with alcohol: on the age at which people can consume it, and on the acceptable degree of the consequence of consuming it, under the governing condition that doing so must not harm others. There is plenty of justification for regulating all drugs, alcohol too, in these ways, but none for outlawing them.

Presumption for permission

It is important to iterate two points. The first is that prohibition is a creator of problems, not their solution. This insight applies almost

universally. To lift prohibitions is not to deregulate entirely; any group of people discussing their common interests would conclude that some rules are needed. But on Mill's grounds, the presumption has to be on the side of permission, not prohibition; every limitation needs a very good justification.

The second point expands the remark about ethics as opposed to morals. It is that we may not wish, and I rather think ought not to wish, to be people dependent on drugs for wellbeing. This is a point about autonomy: if you are a heroin addict, you are at the mercy of a powder; you are in a heteronymous state, governed by a not very admirable something external to you. The good life for an individual must include self government to the maximum degree consistent with the community setting.

A life of dependency on drugs—whether alcohol, heroin, or tobacco—is not such a life, and it seems a feeble and, in my view, disagreeable way to live. But, that one does not like drugs, or the thought of people living in dependence on them, is no ground for judging their use immoral, still less for criminalising them. It is only a ground for persuading, educating, and making your own different ethical choices.

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Is it immoral to drink a glass of wine or put a lump of sugar in your tea? If not, why is it immoral to put cannabis in your cake mix?

