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| <b>Institution:</b> Edge Hill University  |                                  |  |
| <b>Unit of Assessment:</b> 04 Psychology, Psychiatry and Neuroscience   |                                  |  |
| <b>Title of case study:</b> Enhancing national responses to alcohol harms and shaping understanding of substance use behaviours internationally   |                                  |  |
| <b>Period when the underpinning research was undertaken:</b> 2010-2020  |                                  |  |
| <b>Details of staff conducting the underpinning research from the submitting unit:</b>  |                                  |  |
| <b>Name(s):</b>   | <b>Role(s) (e.g. job title):</b> | <b>Period(s) employed by submitting HEI:</b> |
| Prof Derek Heim   | Professor of Psychology          | Sept 2012 onwards                            |
| Dr Rebecca Monk   | Reader in Psychology             | Sept 2013 onwards                            |
| Prof Philip Murphy  | Professor of Psychology          | 1995 onwards                                 |
| Dr Adam Qureshi   | Senior Lecturer in Psychology    | Sept 2013 onwards                            |
| Period when the claimed impact occurred: 2014-2020  |                                  |  |
| <b>Is this case study continued from a case study submitted in 2014?</b> N  |                                  |  |
| <b>1. Summary of the impact</b><br>Research undertaken by the Substance Use and Misuse Lab (SUML) at Edge Hill University has: <ul style="list-style-type: none"> <li>• Influenced large-scale national public health education initiatives “<i>Have a Little Less, Feel a Lot Better</i>” (2016-2018; Drinkaware), “<i>Drink Free Days</i>” (2018-2020; Drinkaware / Public Health England), and the “<i>Dry January</i>” behaviour change campaign (2018-2020; Alcohol Change UK). These reached millions across the UK (including at risk drinkers), promoted responsible alcohol behaviours and effectively engaged people to rethink their relationship with alcohol.</li> <li>• Contributed globally to public understanding and debate concerning substance use behaviours. This entailed worldwide media engagement with our novel research findings that contributed new knowledge (i) that the smell of alcohol alone may weaken inhibitory control and (ii) why intoxication may impact interpersonal perception.</li> <li>• Shaped the strategies and activities of major organisations and how they use and gather research evidence.</li> </ul>   |                                  |  |
| <b>2. Underpinning research</b><br>Despite the well-documented harms associated with alcohol consumption, the development of effective interventions has been difficult. This is partly because the underpinning research has been predominantly conducted in contexts that are removed from those in which people drink and are exposed to alcohol-related cues (including advertising). SUML research addresses this significant gap: since 2012 a programme of alcohol research has utilised qualitative and quantitative, experimental and ecological momentary assessment (EMA) research methods to investigate systematically the extent to which alcohol-related cognitions and behaviours are shaped by contextual forces. Using these diverse methodological approaches, our publications (n>40 since 2012) demonstrate that people’s thoughts and behaviours regarding alcohol vary as a function of who people are with, in which environment they are in, and whether they are assessed in laboratory or real-world contexts [e.g., R1; R2; G1]. Furthermore, our research has yielded novel insights into how behaviours and interpersonal perception are shaped by olfactory alcohol cues and the pharmacological effects of consuming the drug. SUML research was the first to show that the smell of alcohol alone can lower people’s inhibitory control with regards to alcohol-related stimuli [R3]. Contributing a possible explanation for the ‘beer goggles’ effect, whereby intoxication makes individuals perceive others as more attractive, our research suggests that this phenomenon results from a levelling of the playing field whereby attentional biases toward attractive faces are dampened as a result of light intoxication [R4]. Our outputs into illegal drugs (n>20 since 2000) have contributed to knowledge in two primary areas. First, we have demonstrated that the use of stimulant drugs, particularly cannabis and ecstasy (MDMA), is implicated in impairments of working memory executive functioning [R5]. Second, our research has afforded new insights into the treatment and support of people with substance use problems. This includes a better understanding of determinants of individuals’ willingness to receive abstinence orientated pharmacotherapies (notably injections of the opiate antagonist naltrexone) [e.g., R6]. Findings of this research strand highlight the importance of |                                  |  |

fostering psychological preparedness and efficacy-beliefs in treatment contexts such as prisons and community clinics.

Overall, SUML research shows that:

- Social and environmental contexts shape alcohol behaviours in important ways and that intervention efforts need to be sensitive to the contexts in which people drink [R1-2; G1].
- Pharmacological, sensory, and perceptual processes are significant influences on alcohol and interpersonal behaviours [R3-4].
- Stimulant use can be associated with working memory and executive functioning impairments [R5]
- Treatment approaches need to account for psychological influences [R6].

### 3. References to the research (indicative maximum of six references)

[R1] **Monk, R.L., & Heim, D.** (2014). A real-time examination of context effects on alcohol cognitions *Alcoholism: Clinical and Experimental Research*, 38, 2452-2459. DOI: 10.1111/acer.12504.

[R2] **Monk, R. L., Heim, D., Qureshi, A., & Price, A.** (2015). "I have no clue what I drunk last night" Using smartphone technology to compare in-vivo and retrospective self-reports of alcohol consumption. *PloS one*, 10(5), e0126209. DOI: 10.1371/journal.pone.0126209.

[R3] **Monk, R.L., Sunley, J., Qureshi, A.W., & Heim, D.** (2016). Smells like inhibition: The effects of olfactory and visual alcohol cues on inhibitory control. *Psychopharmacology*, 233, 1331-1337. DOI: 10.1007/s00213-016-4221-1.

[R4] **Monk, R. L., Qureshi, A. W., Lee, S., Darcy, N., Darker, G., & Heim, D.** (2020). Can beauty be-er ignored? A preregistered implicit examination of the beer goggles effect. *Psychology of Addictive Behaviors*, 34, 477–483. DOI: 10.1037/adb0000555.

[R5] **Murphy, P.N., Erwin, P.G., MacIver, L., Fisk, J.E., Larkin, D., Wareing, M., Montgomery, C., Hilton, J., Tames, F.J., Bradley, B., Yanulevitch, K. and Ralley, R.** (2011). The relationships of 'ecstasy' (MDMA) and cannabis use to impaired executive inhibition and access to semantic long term memory. *Human Psychopharmacology: Clinical and Experimental*, 26, 460-469. DOI: 10.1002/hup.1228

[R6] Jones, S., Jack, B., Kirby, J., Wilson, T. L., & **Murphy, P. N.** (2021; online May 2020). Methadone-Assisted Opiate Withdrawal and Subsequent Heroin Abstinence: The Importance of Psychological Preparedness. *The American Journal on Addictions*, 30, 11-20. DOI: 10.1111/ajad.13062.

→These were published in leading international outlets following peer review.

*Research grant:*

[G1] **Monk, R. L., & Heim, D.** (2014). "There's an App for that": Examining variation between in vivo and retrospective reports of alcohol consumption. *Alcohol Research UK* (£5,000).

→This was obtained via the competitive open *Alcohol Research UK* small grants call following rigorous peer review. It is included here to illustrate what we have achieved with small amounts of funding.

### 4. Details of the impact

Alcohol consumption and use of illegal drugs is associated with wide-ranging health, social and economic harms that extend beyond the individuals directly affected to their families and society at large. In 2018, the UK government estimated the social and economic cost of alcohol to be £21 billion in the UK alone (<https://tinyurl.com/tc5cu6xe>) and globally it is estimated that 5.3% of deaths are attributable to alcohol (<https://www.who.int/news-room/fact-sheets/detail/alcohol>).

Combating such harms is a policy priority area for the UK governments (e.g., [health-ni.gov.uk/articles/alcohol-and-drugs-misuse](https://www.health-ni.gov.uk/articles/alcohol-and-drugs-misuse)), supranational organisations such as the WHO (e.g., [who.int/substance\\_abuse/](https://www.who.int/substance_abuse/)) and third-sector organisations (e.g., [drinkaware.co.uk/](https://www.drinkaware.co.uk/); [alcoholchange.org.uk/](https://www.alcoholchange.org.uk/)). SUML research into substance use behaviours has:

1. Influenced specific national public health education campaigns / initiatives concerning alcohol consumption that changed individual behaviours and improved health.
2. Contributed internationally to public understanding and debate concerning substance use behaviours through indirect and direct public engagement activities.
3. Shaped the strategies and activities of major organisations and how they use and gather research evidence.

# **1. Influenced specific national public health education campaigns / initiatives concerning alcohol consumption that changed individual behaviours and improved health.**

Our research has shaped alcohol-related public health messaging/campaigns of two leading UK charities and helped reduce alcohol-related harms. First, the national charity Alcohol Change UK used our EMA research [R2; G1] to inform the development of the Try Dry app (released in 2018; current version downloads: Android 100k+; Apple Store downloads not publicly available) which forms an important part of their annual Dry January event which encourages individuals to abstain from alcohol consumption for the month of January. Specifically, our work suggesting that reports of people's consumption the day/week after may underestimate actual consumption [R2; G1] was used to inform the inclusion of real-time, daily assessment tracking within the Try Dry App. This work, as the Alcohol Change UK CEO remarks, *"...has been important in showing how limitations of retrospective self-report alcohol measures can be overcome using smartphone technology, which helped the charity to develop the award-winning Try Dry app, which enables daily drink tracking, substantially increasing the quality of datasets about drinking levels"* [S1]. Alcohol Change UK has also applied our findings in their activities that extend beyond participation in Dry January. Our work highlights that individuals who wish to sustain behavioural changes regarding alcohol behaviours can benefit from being sensitised to social and contextual influences that can encourage alcohol behaviours. For example, our work demonstrates that the smell of alcohol may make it harder to resist alcohol-relevant cues [e.g., R3] potentially exerting pressures on individuals wishing to abstain. Furthermore, we have found that specific environmental contexts, and being with friends (rather than alone) impact alcohol-related beliefs impact the likelihood of subsequent consumption [R1-2; G1]. As such, our findings indicating that environmental and social contextual influences can significantly shape alcohol behaviours have been *"important [in] highlighting the need for intervention efforts to be sensitive to the real-world influences on alcohol behaviours, which have also assisted the charity to enhance the quality of its Dry January behaviour change campaign, especially those aspects of the campaign that run from February onwards, as we convert people from a 'challenge' to a longer-term shift in behaviour"* [S1]. Dry January is undertaken by millions of individuals across the world (4 million UK participants in 2020 alone), and month-long alcohol abstinence significantly improves insulin resistance, weight, Blood Pressure and cancer-related growth factors [S1i] and Dry January participation is associated with longer-term beneficial changes that are not observed in the general population [S1ii].

Second, our research findings on psychosocial influences on alcohol behaviours [R1-R4] and resultant expertise were used by the national charity Drinkaware to shape their annual large-scale surveys to establish drinker typologies based on psychosocial drivers of alcohol consumption. These data were then used to inform the development of large-scale national campaigns targeting specific risky alcohol drinking styles and encouraging more moderate forms of consumption. In the words of the Drinkaware Director of Evidence and Impact, SUML research *"...on psychological and social drivers of harmful alcohol consumption ... has been of particular value"*. He added that, *"Professor Heim's valuable expert contribution was formally recognised in the acknowledgement sections of the reports published in 2015, 2016, 2017 and 2018 ... The Drinkaware Monitor findings ... helped to identify risky groups of drinkers that have subsequently been targeted in Drinkaware campaigns 'Have a Little Less, Feel a Lot Better' (2016-2018) and, since September 2018, 'Drink Free Days' run in collaboration with Public Health England. Alone in 2017, our campaign reached 5.2 million men aged 45-64, and one in four (27%) agreed that the campaign prompted men in their age group to cut down"* [S2]. These were large scale campaigns that ran twice per year between 2016 and 2020 over extended periods of time. For example, the 2016 'Have a Little Less, Feel a Lot Better' campaign ran for four weeks in May and for 12 weeks from September and the 'Drink Free Days' 2018 campaign alone had a media budget of £1.1 million [S2i]. Over the five consecutive years these campaigns therefore reached many millions of alcohol drinkers in the UK and supported action towards moderate drinking. An independent evaluation of the 2018 campaign found that it *"was well received by its intended audience (IHR [increasing higher risk] male and female drinkers aged 40 to 64) and delivered an improvement in levels of engagement ... Perhaps most importantly, Drink Free Days was successful in driving action with 1 in 5 (20%) IHRs reporting they took an action as a result of the campaign and 10% reporting they had taken or tried to take more drink free days"* [S2ii]. During the autumn 2019 campaign alone more than 55,000 people



pledged to reduce their drinking by 726,259 units of alcohol and of almost 12,000 drinkers who created a personal action plan to take more drink-free days, close to 6000 signed up for a tailored newsletter programme to help them achieve their goals [S2iii].

## **2. Contributed internationally to public understanding and debate concerning substance use behaviours through indirect and direct public engagement activities.**

Through direct and indirect public engagement, SUML research and expertise has enhanced public understanding of substance use behaviours globally. Our novel research into how the smell of alcohol may lower inhibitory control [R3] featured widely in international media, including *BBC*, *ITN*, *The Guardian*, and the *Daily Mail* (daily circulation one million+) in the UK and notable international outlets such as *Time Magazine*, *Times of India*, *Frankfurter Rundschau*.

Consequently, there was a shift in public discourse and understanding surrounding smell as a potential risk factor when seeking to exercise inhibitory control (restraint) over consumption. Our work, for example, features in the online knowledge sharing platform Quora (6.9k views of posts mentioning our research) regarding whether individuals in recovery should drink alcohol free beverages [S3]. Likewise, our research on how alcohol impacts interpersonal attraction [R4] received substantial international coverage (e.g., *Malay Mail*; *The Standard*, Kenya; *GQ Australia*; *Nettavisen*, Norway) in more than 30 countries. Illustrating the wide demographic spread of media engagement, articles about the study featured in online outlets catering to different audience outlets, (e.g., *yahoo.com*; *medicalxpress*; *neurosciencenews*) notable (inter)national tabloid newspapers (e.g., *Daily Mail*; *Daily Mirror*; *The Sun*), along with a front page spread in the *Daily Star* (daily circulation 250k+), coverage in the *Bild Zeitung* (Germany's largest tabloid), as well as television (e.g., *BBC Breakfast*, *NBC*, USA) and a featured article in *Hustler Magazine* (USA). Our research also featured extensively in broadsheet outlets (e.g., *The Guardian*, *The Independent* and *The Telegraph*), and in radio interviews (inter)nationally, including by *BBC radio*, *Newstalk* (Ireland) and *Westdeutscher Rundfunk* (Germany). As such, a wide spectrum of lay audiences engaged with our novel research outcomes, including via outlets with readerships that are perhaps, comparatively, less routinely exposed to (psychological) research findings. In addition to significantly influencing public understanding of why the 'beer goggles' phenomenon may occur; this recent work is already shaping professional understanding of how alcohol impacts perceptions of attractiveness [S3i]. Reflecting our approach to public engagement, Murphy engaged large audiences regarding his research findings in relation to dangers of high strength ecstasy (MDMA) tablets. This included interviews for *The Sun* (daily circulation one million+) as well as *BBC Radio 1 Newsbeat* and the Victoria Derbyshire programme on *BBC 2*. He has also contributed an article the psychological effects of cannabis use to *The Conversation*, based upon the findings of SUML cannabis related research [R5], which by the end of 2020 had more than 330k reads [S3ii].

## **3. Shaped the strategies and activities of major organisations and how they use and gather research evidence.**

SUML expertise and research insights have influenced the strategic direction and ways of working of national organisations in the UK and France. Or expertise resulting from our underpinning research [e.g., R1-R4] was used by Alcohol Change UK and Drinkaware to help ensure that their activities are evidence-based. These charities are leading UK organisations aiming to curb alcohol-related harms through direct engagement with the UK population, including via social media, as well as indirectly via policy mechanisms. Both organisations are evidence-based, and their activities are informed by research that they undertake or commission. Heim contributed SUML research expertise to facilitate this as an invited advisor to Drinkaware and as a Trustee (2014-2020; including chairing the Research and Policy sub-committee) of Alcohol Change UK to shape their strategic approach to use of research to underpin activities as well as gathering and using evidence. The Drinkaware Director of Evidence and Impact evidenced this as follows, "Professor Derek Heim has made a significant contribution to ensure our research is robustly evidence-based by providing voluntary and unpaid expert guidance and advice" [S2] while the CEO of Alcohol Change UK summarised his contributions as "Heim's research output, knowledge and expertise have to a real extent driven changes in both our organisation's strategic direction and in the salience, appropriateness and effectiveness of our various interventions" [S1]. Drinkaware has a large social media presence

(65k social media followers in 2019) and had more than nine million visits to their website in 2019 alone, with more than one million people using their tools to better understand the impact of alcohol on their daily lives [S2iii] while Alcohol Change has close to 20k Twitter followers. The (online) resources developed by these organisations are used by many individuals across the UK and beyond who seek information regarding concerns about alcohol consumption for themselves and their loved ones. Heim was also invited to contribute SUML research evidence to the Scottish Government to inform development of the Scottish National Research Framework for Problem Drug Use and Recovery [S4] which identifies high level priorities into problem drug use and recovery in Scotland to guide research, evaluation, data collection, analysis and quality improvement activities. In France, Murphy worked with Alcooliques Anonymes (the French counterpart of Alcoholics Anonymous) to provide information and support for people seeking help with alcohol addiction problems with lay summaries (in French) of the findings of SUML studies on alcohol [S4i].

In addition, Murphy's research [R6] informed the BPS campaign 'From Poverty to Flourishing' (2020-ongoing). This promotes the use of psychological knowledge in tackling poverty and its long-term consequences. Evidencing Murphy's contribution, the BPS Head of Policy and Public Affairs stated: *"Given the complex and synergistic relationship between addiction and poverty, it is particularly relevant to highlight Prof. Murphy's contribution to the campaign regarding the importance of self-efficacy and personal agency in overcoming problems of addiction and poverty (...) [t]hese insights draw directly upon his research findings. The BPS has, therefore, been a beneficiary of the findings of Prof. Murphy's research concerning addiction by the incorporation of these insights into its work associated with policy change through the 'From Poverty to Flourishing' campaign".* [S4ii]

#### 5. Sources to corroborate the impact

S1 Factual Statement by the Chief Executive Officer, Alcohol Change UK

S1i Mehta, G., et al (2018). Short-term abstinence from alcohol and changes in cardiovascular risk factors, liver function tests and cancer-related growth factors: a prospective observational study. *BMJ open*, 8(5). DOI: 10.1136/bmjopen-2017-020673

S1ii de Visser, R. O., & Piper, R. (2020). Short-and Longer-Term Benefits of Temporary Alcohol Abstinence During 'Dry January' Are Not Also Observed Among Adult Drinkers in the General Population: Prospective Cohort Study. *Alcohol and Alcoholism*, 55, 433-438. DOI: 10.1093/alcalc/agaa025

S2 Factual Statement by the Director of Evidence and Impact, Drinkaware

S2i Report: Drinkaware (2017). <https://www.drinkaware.co.uk/media/292934/drinkaware-impact-report-2017.pdf>

S2ii Report: Public Health England (2019). <https://www.gov.uk/government/publications/drink-free-days-2018-campaign-evaluation>

S2iii Report: Drinkaware (2019). <https://www.drinkaware.co.uk/media/dadpotkg/drinkaware-impact-report-2019-final.pdf>

S3 Online Resource: <https://www.quora.com/Is-alcohol-free-wine-okay-to-drink-if-you-have-been-alcoholic>

S3i Swami, V. (2021). *Attraction explained: The science of how we form relationships*. Routledge: Oxon. [Manuscript completed in 2020]

S3ii <https://theconversation.com/everything-you-need-to-know-about-the-legal-high-ban-59925>

S4 Report: Scottish Government (2015). <https://www.gov.scot/publications/scottish-national-research-framework-problem-drug-use-recovery/>

S4i Media Report: Le Publicateur Libre Jeudi 16 janvier 2020 actu.fr/le-publicateur-libre: Une assistance en ligne pour éviter de replonger dans l'alcool

S4ii Factual Statement by the Head of Policy and Public Affairs, BPS