

# The Caffeine Culture: Is it Ethical to Market Caffeine as an Innocuous Cup of Coffee?

Jinyue Liu

In August last year, 17-year-old Jasmine Willis from County Durham was hospitalized with heart palpitations and a high temperature after downing 14 shots of espresso. She was diagnosed with caffeine intoxication [1]. Fortunately, she survived the incident. 19-year-old James Stone from Connecticut fared much worse. He passed away after overdosing on 30 caffeine pills, the equivalent of 30 cups of coffee [2]. Following cases such as these, debate has begun on whether caffeine levels in coffee warrant further attention from producers, government regulators and coffee consumers themselves. While action has been taken by independent groups to highlight the dangers of excessive caffeine, more could be done to promote awareness among coffee drinkers.

Caffeine is probably the most widely used drug in the world today, with 90% of Americans consuming it habitually [3]. Coffee is one major source, making up 70% of the average American's total caffeine intake [4]. Global consumption has increased by 20% in the last decade to 116 million bags or seven billion kilograms of coffee in 2006 [5]. Coffee drinking has also developed into a trendy social habit made popular by cafe chains such as Starbucks, which serves forty million customers a week at more than 13 000 stores [3]. The widespread popularity of coffee stems from the effects of caffeine. Moderate consumption of this stimulant has been associated with increased alertness, decreased fatigue, better work capacity and improved mood [6]. Even the US Army uses caffeine gum, aptly named as "Stay Alert", to keep its

troops vigilant on the field [7].

Excess caffeine intake, on the contrary, can be harmful to the body, with symptoms such as cardiac arrhythmia, anxiety, insomnia and increased diuresis (excessive urine discharge) [6]. These dangers could become imminently more widespread as global coffee consumption grows. There has already been a rise in the number of teenagers visiting poison control centres for caffeine overexposure from high-caffeine energy drinks [8]. Coffee itself is now so commonplace that consumers do not realise the potential health risks of

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excessive consumption. Furthermore, keeping tabs on one's caffeine intake is a challenge. Not only do people consume a variety of caffeinated beverages in addition to coffee, most coffee retailers also do not disclose the amount of caffeine contained in their drinks. Although the US Food and Drug Administration (FDA) requires companies to list caffeine as an ingredient on their products, they do not have to state the amount [9] so long as it does not contain more than 0.02% (by weight) of caffeine [10]. Furthermore, this requirement is made compulsory for cola-type beverages only.

Opponents to the excessive use of caffeine have petitioned for the FDA to enforce new labelling requirements that mandate a quantitative disclosure of the caffeine content in food [11]. Consumers have the right to know what is in their cup of coffee to make an educated decision about how much to consume. Conversely, coffee retailers have a duty to inform their customers. Labelling is not difficult to implement; already, Starbucks cafes display the calorie content of each drink served. A search on Starbucks' website does bring up caffeine levels but few consumers would check a website before buying a coffee [12]. Companies need to be open with such information to help the individual stay responsible for their decisions.

The tussle between ethics

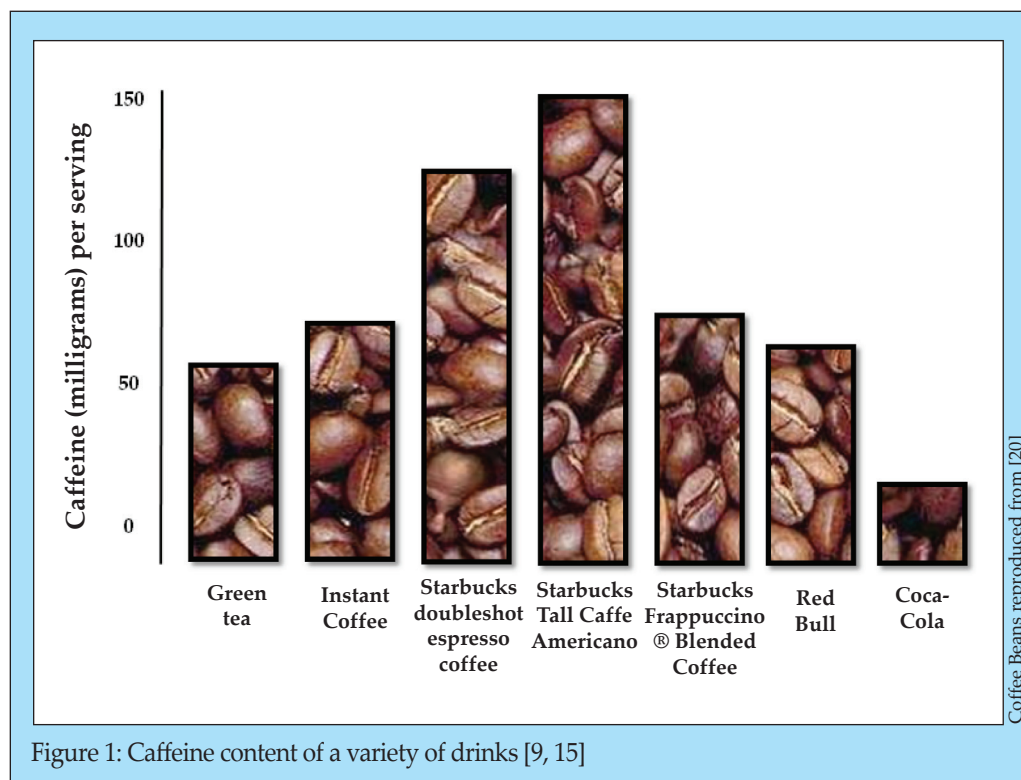


Figure 1: Caffeine content of a variety of drinks [9, 15]

and commercial business may explain why corporations are hesitant to openly acknowledge the potential negative effects of excessive caffeine consumption. By doing so, they would be subjected to falling revenue from the bad press their caffeinated products receive. However, companies like Coca Cola have shown that caffeine labelling does not necessarily drive consumers away. Coca-Cola, which produces the world's most popular caffeinated soft drink Coke [13], has implemented quantitative caffeine labelling without suffering decreased sales. On the contrary, the company enjoyed a third quarter net revenue growth of 30% in North America following the introduction of caffeine labelling in May 2007 [14]. While some consumers are nonchalant towards caffeine intake, others recognise that moderation, not abstinence, is the formula for keeping healthy while enjoying their favourite beverage. In fact, promoting healthy levels of coffee drinking could be the key to sustainability in the coffee industry; it improves corporate image, increases the social responsibility of the retailer and mitigates the negative publicity of caffeine intoxication.

There have also been public efforts to raise caffeine awareness among coffee drinkers. US states such as Minnesota have proclaimed March to be a 'Caffeine Awareness Month' with the aim of educating their citizens about the health threats of excessive caffeine [15]. However, the ultimate decision whether to drink coffee or not lies with the individual. According to the American Dietetic Association, the recommended daily caffeine limit is 300mg [16] and it is the individual's responsibility to restrict their intake. Furthermore, individuals respond differently towards caffeine, depending on their gender, age and physical well-being. Pregnant women are particularly at risk as their caffeine tolerance is decreased due to lower caffeine metabolism. [17]. Diabetics are also urged to reduce coffee consumption when it was found to raise their blood sugar levels by 8% [18]. These cases are just two examples of the many situations where only an individual can assess one's own caffeine tolerance.



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As government agencies like the FDA have the authority to require caffeine labelling of foods [11]; legislators could help promote the cause by enforcing these regulations. Besides labelling, legislation could encourage coffee retailers to incorporate educational campaigns into their businesses by rewarding them with tax rebates. The government could also provide more grants for accurate, well-supported research into the effects of caffeine. This is already proving effective,

## “ Consumers do not realise the potential health risks of excessive consumption ”

such as the grant from the National Institutes of Health which funded Johns Hopkins researchers in their discovery of a significant link between caffeine dependence and alcoholism [19]. In the long term, this tripartite partnership between the government, consumers and coffee retailers will help to maintain a wholesome caffeine culture in an increasingly health-conscious society. ■

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# Physics Education: What's Wrong?

Caroline Sandford

Secondary school physics, already condemned by many universities as inadequate preparation for a degree, has recently been further compromised by changes to the GCSE syllabus.

Originally three separate subjects, declining interest in sciences prompted the introduction in the early 1990s [1,2] of less rigorous 'double' and 'single' science GCSEs. Then

## “ The Applied Science curriculum avoids most quantitative calculations ”

in 2006, a new 21st Century Science GCSE was piloted by OCR, completely replacing the old system in 2007 [3–5]. The new suite of examinations comprises a single Science GCSE, Applied Science, worth two GCSEs, and three separate science syllabi [3].

These qualifications were designed to address the declining numbers of post-GCSE scientists, particularly in physics [6,7], where A-level intake has fallen from 46607 in 1985 to only 27466 last year [8]. To this end, the Applied Science curriculum avoids most quantitative calculation, focusing on discussion around more 'exciting' topical issues: in physics, for example, nuclear energy [9]. The courses also aim to meet the needs of students who will not continue with sciences at A-level [10,11], preparing them for informed debate on a variety of scientific issues without burdening them with the analytical detail traditionally taught at this level.

Unfortunately, the attempt to compromise between these aims and the need adequately to prepare interested students for higher education may create as many problems as it solves. Whilst the new curriculum may provide the qualitative appreciation of science required for everyday life, it does not have the same focus on problem solving that was present in Double Award. The analytical methods that are left out form an integral part of all science at post-GCSE level. Particularly in physics, with its tiered structure and heavy reliance on mathematics, coverage of this basic content at A-level will take time directly from the advanced topics that pave the way for a university education. Ironically, then, in trying to persuade more teenagers to continue with science, we are depriving

them of the very skills they will require to do so.

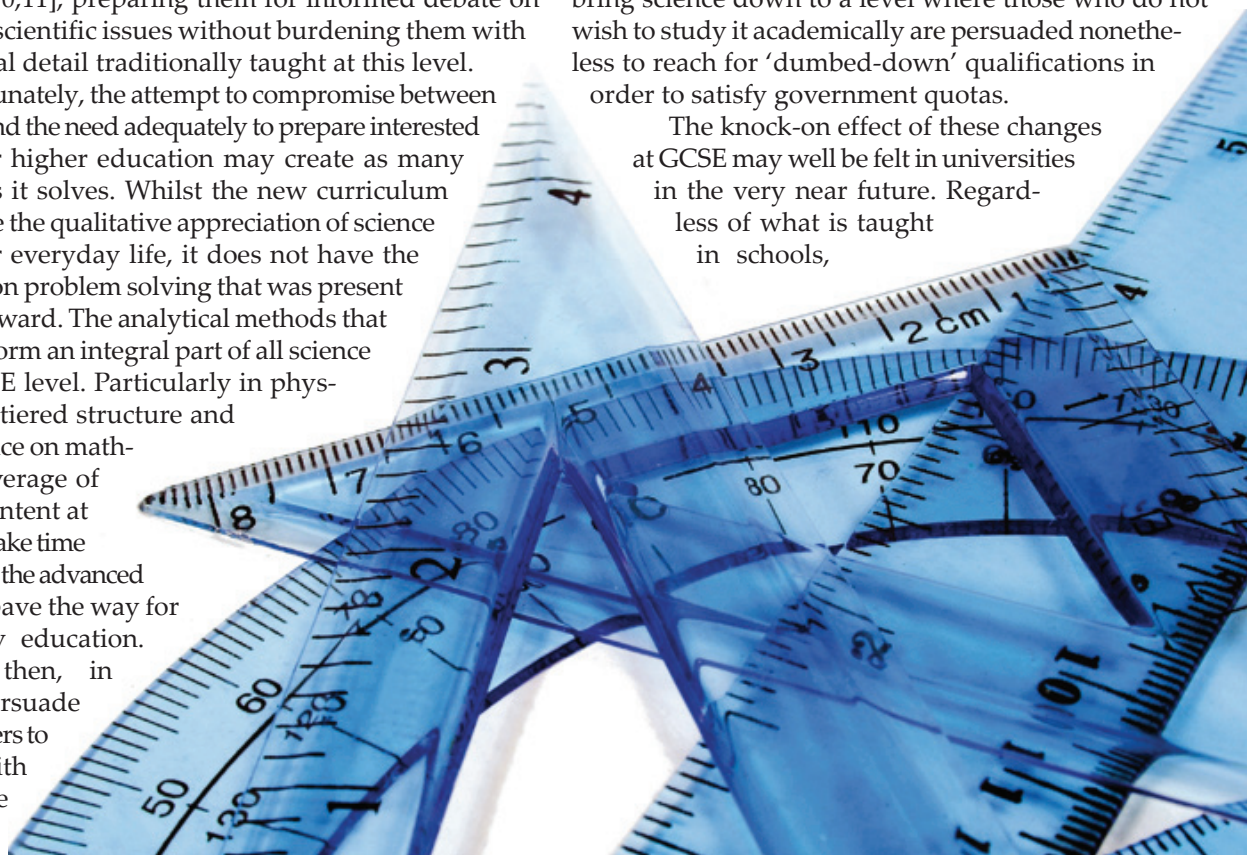
The changes to the curriculum have had a mixed reception. Proponents maintain that it caters much better for the needs of students ending their science education at GCSE, who had previously been considered 'expendable' [12]. Whilst many teachers are enthusiastic about the syllabus, saying it has revived interest and enthusiasm among less able students [3], there has been widespread criticism of the course. Sir Richard Sykes of Imperial College, London, has condemned the new syllabus as "dumbed-down" and warned that students with aspirations to study science at university would be unable to do so without more rigorous qualifications [12]. Baroness Mary Warnock, a philosopher and educationalist, warned that such innovations could lead to a situation where "science will be relegated to the

## “ An extra year at university would represent significant additional debt ”

position of Latin and Greek and will only be taught in the independent schools" [12].

It is clear that in an effort to satisfy irreconcilable aims, it is those who wish to continue their studies who are being let down. It seems that we are unhealthily busy trying to bring science down to a level where those who do not wish to study it academically are persuaded nonetheless to reach for 'dumbed-down' qualifications in order to satisfy government quotas.

The knock-on effect of these changes at GCSE may well be felt in universities in the very near future. Regardless of what is taught in schools,



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