

Coca-Cola – Brain tonic or poison?

Ludy T. Benjamin Jr on a fascinating trial and a psychologist's role in it

On the evening of 20 October 1909, agents of the United States government waited in the darkness in a stakeout on the Tennessee state line. They were watching for a truck coming from Atlanta, Georgia. When the truck crossed the border, the agents intercepted it and seized its cargo – 40 barrels and 20 kegs of Coca-Cola syrup. The seizure was made under the auspices of the recently passed Pure Food and Drug Act by which the US government charged the Coca-Cola Company with marketing and selling a beverage that was injurious to health because it contained a deleterious ingredient. Most readers hearing this part of the story would assume that the harmful ingredient was cocaine, a popular myth about the contents of Coca-Cola early in its history (a trace of cocaine existed in the 1890s because of the manufacturing process but was eliminated by 1898). However, it wasn't cocaine. It was caffeine. The government administrator who authorised the seizure could be described as a zealot, intent on ending the sale of Coca-Cola or at least ridding the beverage of its caffeine.

The federal suit against the Coca-Cola Company

was entitled *The United States Government vs. Forty Barrels, Twenty Kegs Coca-Cola*, specifying the contents of the seized cargo. It culminated in a trial beginning in March 1911 in Chattanooga, Tennessee, the location of the bottling plant that had been the final destination of the seized Coca-Cola syrup. In the suit, Coca-Cola was described as a beverage that produced serious mental and motor deficits.

The impetus behind the lawsuit was Harvey Washington Wiley, head of the Bureau of Chemistry of the US



Harvey Washington Wiley in his laboratory

Department of Agriculture. Wiley had long been a vocal opponent of caffeine and was especially critical of its role in the popular beverage. At the beginning of the 20th century, the Coca-Cola Company marketed the beverage as 'the ideal brain tonic', emphasising the stimulant properties of the drink, noting in its advertising that it 'invigorated the fatigued body and quickened the tired brain'. Wiley had testified before Congress that caffeine was a poison and a habit-forming drug. He was not fond of coffee or tea but was less critical of those drinks because the caffeine was an indigenous ingredient. But he opposed the sale of Coca-Cola on two grounds: the caffeine was an added ingredient, and the beverage was marketed to children.

As the Coca-Cola Company prepared to go to trial, its attorneys realised that the extant research on the effects of caffeine was mostly animal research; they needed research that spoke to the effects on humans. They asked famed psychologist James McKeen Cattell of Columbia University if he would do the

work, but he declined. Accepting money from a corporation to do research that the company hoped would be favourable to its legal and commercial needs raised concerns about scientific integrity. No doubt senior academics, such as Cattell, would have been reluctant to take on that kind of project. After Cattell, others were asked; how many is not known. Eventually Coca-Cola found a willing participant in one of Cattell's recent doctoral students, Harry Hollingworth, an instructor at Barnard College who needed the money that the research would provide. Looking

back on his life he wrote that he accepted the offer from the Coca-Cola Company because at his young age he 'had as yet, no sanctity to preserve'.

Because the trial was about to begin, the results were needed in a matter of weeks. Hollingworth planned a series of three studies that were completed in 40 days. The studies were masterfully designed and are still cited today because of their methodological sophistication. The laboratory for the study was a six-room Manhattan apartment rented

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specifically for the research. Subjects were selected based on good health, who represented a range of caffeine consumption from 'abstainers' to 'regular users'. The caffeine was administered in a variety of doses that bracketed the amount of caffeine a moderate drinker of Coca-Cola might consume in a day. Nearly 20 tests were involved in the three experiments including tests of cognitive, sensory, and motor abilities (e.g. hand steadiness, reaction time, mental calculations, colour discrimination, speed in a cancellation task). The first week of the study involved no caffeine in order to get baseline data on the subjects and the dependent measures. When the caffeine administration began, it was given by capsule. Some subjects got a placebo, also by capsule so that no differential taste cues were present. The design was double blind meaning that neither the experimenters nor the subjects knew who was receiving caffeine. The final study, which lasted a week, used Coca-Cola syrup, some with caffeine and some without. The studies were run during the day by Leta Stetter Hollingworth (Harry's wife, who would use the Coca-Cola money to pursue her doctorate in psychology at Columbia, finishing in 1916). Harry, after completing his teaching duties at Barnard College, joined her in the evenings for data analyses in preparation for the trial.

The trial was already underway when the studies were completed. Scientists and medical experts testifying on behalf of the US government offered a lengthy list of the dangers of caffeine, including overstimulation of the heart, overworking of the kidneys, addiction, and sometimes even death. They cautioned that one of the chief problems of caffeine was that it disguised fatigue and thus could lead to dangerous levels of exhaustion, a charge that Wiley often emphasised in his anti-caffeine writings. Some of the expert testimony was questioned by Coca-Cola's attorneys. For example, one physician testifying for the government described how caffeine had produced congestion in the cerebral arteries of his rabbits. When asked, in cross-examination, how he had killed his animals, he admitted that he had hit them on the head with a stick.

Hollingworth testified in the third week of the trial, the ninth scientist called on by the Coca-Cola Company attorneys. His research results were quite favourable for the company. He testified that Coca-Cola appeared to be a mild stimulant both for motor and cognitive performance, and he reported that he found no evidence of the deleterious effects on mental and motor performance alleged by the government. Coca-Cola's other witnesses

testified similarly, acknowledging that even a frequent drinker of Coca-Cola could not consume anywhere near the



quantity of caffeine that could be considered harmful.

The trial lasted another week beyond Hollingworth's testimony, but it never reached the jury. Once all of the testimony had been presented, Coca-Cola's attorneys introduced a motion to dismiss the suit, arguing that the case was based on caffeine being an added ingredient, but the Coca-Cola Company contended that caffeine was one of several ingredients inherent in Coca-Cola. The judge agreed with the company that caffeine was an inherent ingredient, dismissing the suit and arguing in his ruling that 'Coca-Cola without caffeine would not be Coca-Cola as it is known to the public'.

The Coca-Cola Company claimed victory and distributed several pamphlets with titles such as 'The Truth about Coca-Cola' which argued that their beverage had been found to be safe. Of course the Court had not ruled on the issues of the potential dangers of caffeine, but only on the meaning of an 'added ingredient' under the Pure Food and Drug Act.

Wiley would not be defeated so easily. The pamphlets from the Coca-Cola Company that blatantly misrepresented the results of the Chattanooga trial infuriated him. He appealed the decision which led to a new trial before the US Circuit Court of Appeals in Cincinnati, Ohio. That court supported the ruling of

the lower court, prompting the Coca-Cola Company to publish a new series of pamphlets, including one entitled 'Truth, Justice, and Coca-Cola' which stated that 'Coca-Cola emerges with a clean bill of health – in effect the highest and final court decides that Coca-Cola is just exactly what we have always claimed – a wholesome, harmless, and non-habit forming beverage'. Clearly the writer of that pamphlet had been absent from elementary school on the day the American judicial system was described. For there was a still higher court, and it was about to hear the case.

Wiley, who had been 65 years old at the beginning of the first trial, retired shortly after filing the first appeal. But friends in the US Department of Justice carried the fight to the US Supreme Court. That court ruled in 1916 against the interpretations of the lower courts, arguing that caffeine was indeed an added ingredient. The eventual settlement required the Coca-Cola Company to pay all court costs and to reduce the caffeine content of its beverage.

In his retirement, Wiley continued to preach about the dangers of caffeine and other food additives in a variety of public venues including a regular column that he wrote for the popular magazine, *Good Housekeeping*. Hollingworth published the results of his caffeine studies in a lengthy monograph in 1912. He never returned to psychopharmacological work again. But the Coca-Cola research set him on a life course as an applied psychologist of considerable reputation and wealth. His notable research in the field of advertising and other related studies in the psychology of the workplace established him as one of the pioneers of industrial/organisational psychology. Further, his testimony in the Coca-Cola trials numbers among the earliest examples of forensic psychology in America. Neither Hollingworth nor Wiley lived long enough to see the Coca-Cola Company offer the public its beverages (regular or sugar-free) in a decaffeinated option. Perhaps Wiley would have viewed that as a partial victory.

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