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# The risks of misclassifying addictive food substances as non-addictive

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*There is evidence that the rise of ultra-processed foods has been associated with an increase in addictive eating, diet-related disease and preventable death. As with tobacco, misclassifying these food substances as non-addictive or para-addictive leaves consumers ill-informed and is an obstacle to developing more innovative solutions.*

Important points were raised in the commentaries written in response to our manuscript outlining the case that certain food substances can be addictive [1]. First, Monteiro & Cannon provide compelling evidence that the conceptualization of ultra-processed foods (UPFs) best captures the food substances that are addictive [2]. We agree that UPFs are the overwhelming source of addictive food substances in the modern world. The vast majority of UPFs are high in rapidly absorbed refined carbohydrates and added fat and many contain artificial sweeteners that chemically mimic sweet taste. This clearly fits with our proposed profile of addictive food substances. Interventions should focus upon reducing the addictiveness, convenience, affordability, accessibility and marketing of the ultra-processed versions of addictive food substances to have the greatest public health impact. While we agree broadly with Monteiro & Cannon, we will use ‘highly processed’ foods (HPFs) to remain consistent with the commentary that generated this discussion.

In their commentary, West suggests that a new concept of ‘para-addictions’ should be applied to HPFs that acknowledges that the core attribute of addictive behaviors is present, but not to a degree

that warrants the label addiction [3]. We disagree. At a surface level, tobacco products appear distinct from ‘classic’ addictive substances (e.g. heroin and cocaine). For example, tobacco products are not highly intoxicating and rarely trigger overdoses. The tobacco industry used these differences to obscure the addictive nature of their products for decades. For example, pro-tobacco scientists stated: ‘Labeling smoking as an addiction “just like heroin or cocaine” not only minimizes the tragedy of hard-core drug addictions but may also provide people with a convenient excuse not to quit and may even provide young people with an inaccurate perspective that could actually encourage experimentation with hard-core drugs’ [4]. This strategy was highly effective, and the scientific community adapted alternative terms, such as ‘habit-forming’ rather than addictive, to describe tobacco. This left society ill-informed about the threat of an addictive substance that was killing millions. The application of a new term, such as ‘para-addictions’, to capture the addictive nature of HPFs may be repeating history. Although HPFs exhibit many surface-level differences (e.g. non-intoxicating and no overdose) from ‘classic’ addictive substances, they are contributing to levels of suffering and illness akin to other addictive substances. If HPFs are addictive, then people deserve clear information about this risk.

The level of harm associated with HPFs is high. Excessive intake of HPFs is associated with levels of preventable death on a par with tobacco and alcohol [5, 6]. In adults, 14% meet for a clinically significant addiction to HPFs based upon the same criteria used to identify substance use disorders [7]. This is similar to the prevalence of addiction to other legal and easily addictive substances (e.g. alcohol and nicotine). Meta-analyses find that 12% of children meet the clinical

threshold for addiction to HPFs [8], which far exceeds the prevalence of any other addiction this early in development. In adults, HPF addiction is associated with poor mental health, worse physical health and lower quality of life across all domains [9]. In children, greater symptoms of addiction to HPFs are associated with higher levels of obesity, worse mental health and greater use of alcohol, cannabis and cigarettes [8, 10, 11]. If a novel substance implicated in this level of harm was being evaluated for its abuse liability, it would never be released into the market-place (especially to children), as the costs so clearly outweigh potential benefits. The familiarity and comfort with HPFs obscure the ability to see the magnitude of harm caused by these substances.

Another question raised by West was whether classifying HPFs as addictive would be clinically beneficial [3]. Addiction models are currently becoming integrated into treatment for excessive intake of HPFs. Addiction-focused medications (i.e. bupropion/naloxone) are prescribed for the treatment of obesity and binge-eating [12]. Addiction-focused psychosocial treatments are in high demand. For example, 12-Step-based treatments for compulsive eating (e.g. Overeaters Anonymous) were founded in the 1960s, and there are more than 6500 groups that meet each week in more than 75 countries. While these programs have received little scientific evaluation, the demand for addiction-focused treatment for HPF intake is clearly there. As Rogers [13] pointed out in their commentary, the ability of addiction treatments to address over-eating is consistent with the parallel mechanistic overlaps between the self-administration of food and other addictive substances. The development of empirically supported interventions for HPF intake that targets addictive mechanisms would probably increase if the addictive nature of HPFs was recognized.

The lack of distinction between minimally processed, nourishing foods and addictive, ultra-processed, food substances makes it challenging to navigate the modern food environment. To effectively address this public health crisis, it is essential to target environmental, structural and industrial practices that promote excessive intake of addictive food substances.

#### AUTHOR CONTRIBUTIONS

Ashley N. Gearhardt: conceptualization (equal), writing-original draft (lead) and writing-review and editing (equal). Alexandra G. DiFelicantonio: conceptualization (equal), writing-original draft (supporting) and writing-review and editing (equal).

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#### DECLARATION OF INTERESTS

There is evidence that the rise of ultra-processed foods has been associated with an increase in addictive eating, diet-related disease

and preventable death. As with tobacco, misclassifying these food substances as non-addictive or para-addictive leaves consumers ill-informed and is an obstacle to developing innovative solutions.

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