

Two Studies on the Effects of Visual Cues of Portion Size on Consumption of Snack Foods

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Introduction

Since 1950, many snack foods have doubled in size.¹ The increase in portion sizes of modern day packaged food is estimated to be equivalent to a 12-16% increase in energy intake per adult per day.² This may be one contributor to the current global crisis in obesity. Obesity rates are projected to rise to 18-21% of the population by 2025.³ The health effects of this now represent a major public health challenge. Tackling large portion sizes of packaged food may be one means through which public health policy can intervene in the obesity crisis.

Previous proposed policy interventions have included voluntary commitments by industry to reduce portion sizes of high fat salt sugar (HFSS) foods (as in the United Kingdom) and legislation to restrict the sale of large portions (as in New York).¹ Both have so far been met with opposition and have been unsuccessful at reducing the availability of large portions.¹ Surveys have suggested that labelling is a more palatable policy intervention,⁴ but research suggests that consumers are largely unaware of portion sizes, and that labelling, at least in a written format, does not reduce consumption.^{5,6} However, some empirical tests have suggested that highly salient labels, and those that use images instead of text, may be effective at drawing attention to portion sizes and reducing consumption of HFSS foods.⁶ Most of the research has consisted of small lab studies in which participants consumed the food during the experiment.⁶ If effective on a larger scale, such labelling could form the basis for a public health policy on packaging. This paper reports on the results of a study that was funded by the Government of Ireland Department of Health. Two studies, one of which was a large, nationwide RCT, tested the effects of a salient visual cue of portion size on consumption of HFSS foods.

Methods

We carried out two studies to test the effects of a visual cue of portion size on consumption. The first (N = 369) was a feasibility study and the second (N = 800) was a nationwide randomised control trial. We designed new labels for popular brands of two HFSS foods and had them printed by a professional label company. Half of the labels were control labels and nearly identical to the normal packaging. They contained portion size information as usual in the nutritional table. The other half of the labels were identical to controls but had an additional visual cue to portion size. This consisted of dashed white lines around the packaging marking the boundary of each portion inside and text reading '1 serving'. An additional aspect of the label in the second study, was a bright yellow circle with a message inside it, drawing attention to the new portion size labels.

In the feasibility study, participants came to the lab to take part in other, unrelated studies. During a refreshment break, participants were offered the HFSS food. Half of the participants saw the food with the control labels and half with the cue. We compared consumption across groups by weighing the remaining food left in the packaging. In the larger randomised control trial, participants were sent the HFSS food as part of a gift package to say thank you for taking part in another, unrelated study. We assessed consumption two to four days later by asking participants to take photographs of the remains. Two independent raters assessed each photo. We also asked participants what they thought

the aims of the study were and whether they noticed portion size information on the packaging. Hypotheses and methods were pre-registered prior to data collection.

Results

No participant guessed the aims of either study, meaning that the labels were realistic, and the consumption measures reflect real behaviour. Participants in the cue condition were three times more likely to have noticed portion size information on the packaging. We found no main effect of the cues on consumption in the total sample, but we found an interaction between condition and gender. Women in the cue condition were less likely to open the packets and ate fewer portions when they did. Interestingly, consumers were largely unaware as to how recommended portion sizes are determined, with most mistakenly thinking they are a health recommendation from the manufacturer or the Government.

Discussion

One problem with the increase in portion sizes of snack foods is that people have a tendency to eat more of larger portions. This is known as the portion size effect (PSE) and is thought to be influenced by multiple factors, one of which is visual cues.⁷ We hypothesised that providing packaging that clearly demarcated portions might act as a visual cue that could reduce consumption. Previous work in this area suggested that if portion sizes are noticed, they may be adhered to. We found an effect of the cues on consumption, but only for women. It is not clear why this occurs in this sample but previous research has shown differential effects of gender on use of nutritional labels. There was also a general misconception as to where portion size recommendations come from. These two studies suggest that a policy to put demarcated portion sizes on snack food packaging may be effective for at least half of the population. Further research is required to determine the moderating factors of this effect.

References

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