

Enhancing the effectiveness of the Health Star Rating via presentation modifications

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A sound evidence base exists relating to the ability of front-of-pack nutrition labels to assist consumers to identify healthier foods and make healthier food choices, along with encouraging food reformulation.¹ This has resulted in countries all around the world implementing some form of front-of-pack label (FoPL), including in Australia and New Zealand where the Health Star Rating (HSR) system was introduced in 2014. While there is general consensus about the benefits of FoPLs, there is less agreement about the most effective form of FoPL.

Interpretive FoPLs that provide an assessment of a product's healthiness have been found to be more effective in increasing consumers' understanding and influencing their product choices than reductive FoPLs that replicate nutrient and energy information provided in the Nutrition Information Panel on the back/side of the pack.^{2,3} Hybrid FoPLs, such as the HSR and the Multiple Traffic Lights (MTL), have both interpretive and reductive elements in recognition of the superior ability of interpretive nutrition information to facilitate rapid comparisons across products⁴ and consumers' stated desire for nutrient-specific information on the front of pack.⁵

A recent study of FoPL effectiveness across 12 countries found that of five FoPLs the highly interpretive Nutri-Score (that features only the letters A to E shown in colours ranging from green to red) produced the largest increase in understanding of product healthiness, followed by the MTL.² The dominance of the Nutri-Score held across the total sample and within the Australian sub-sample, despite Australians' greater familiarity with the HSR. The HSR ranked second among

Abstract

Objective: Research demonstrates the superiority of highly interpretive front-of-pack nutrition labels. The aim of this study was to assess the potential to enhance the Health Star Rating (HSR) by increasing its 'interpretiveness' through the addition of colour and the exclusion of the nutrient icons.

Methods: An online survey was administered to 1,033 Australian adults who were randomly allocated to one of four conditions: black and white (B&W) full HSR, colour full HSR, B&W star rating only, and colour star rating only. Each respondent viewed four packs of breakfast cereal of varying levels of healthiness as indicated by the displayed HSRs. Respondents nominated the product option they would prefer to buy and then the one they understood to be healthiest.

Results: Coloured HSR variations scored better than their B&W counterparts and the star-only versions scored better than the corresponding versions displaying nutrient icons. Overall, the coloured star-only HSR performed significantly better than the B&W full HSR for both choice and understanding.

Conclusions: Increasing the interpretive nature of the HSR could enhance its effectiveness.

Implications for public health: Policy makers should consider the evolution of the HSR towards a more interpretive presentation that includes colour and excludes the nutrient icons.

Key words: front-of-pack labels, nutrition labelling, health star rating, presentation

Australians, followed by the MTL, then the warning labels, and lastly the Daily Intake Guide (DIG). The overall superior performance of the Nutri-Score and MTL across countries was attributed to the effective use of colour (for both) and a summary indicator (for the Nutri-Score).

Calls have been made in Australia for consideration to be given to adding colour to the HSR to enhance its effectiveness.^{6,7} In addition, the international study results² suggest that the HSR may be more effective if confined to the summary indicator (star rating) with the nutrient icons removed. The aims of the present study were, therefore, to assess whether the HSR would perform better if colour was used to provide additional interpretive information and the nutrient-

specific information was removed to enable consumers to focus on the interpretive component.

Method

An ISO-accredited web panel provider (PureProfile) administered an online survey to 1,033 Australian adults who were nationally representative according to age, gender and state. The survey instrument included demographic items and two items depicting an array of four cereal products from which respondents were first asked to select the product they would most prefer to buy (to prevent priming from the following understanding item) and then to nominate the healthiest product.

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Cereal was selected as the focal product category because it is commonly consumed and has wide variability in nutritional quality, despite being generally perceived as healthy.³ As shown in Supplementary Figure 1, the same product image was used in each array, with variation in terms of FoPL rating (each array included a pack showing 1.5 stars, 3 stars, 4.5 stars, or no FoPL) and FoPL type (respondents were randomly assigned to one of four FoPL conditions: black and white (B&W) full HSR, colour full HSR, B&W star rating only, and colour star rating only). Nutrient profiles were created based on real cereals found in Australian supermarkets. In the two coloured HSR conditions, the 1.5-star rating was coloured red, the 3-star rating was coloured orange, and the 4.5-star rating was coloured green. The nutrient icons remained B&W across all conditions and only the HSR graphic was coloured in the colour versions to replicate the high-performing Nutri-Score that provides a colour representation of overall healthiness.² The star rating was the same size regardless of condition, meaning that the footprint of the full HSR versions was considerably larger. As per previous research,³ other than the test variables, the images were identical to enable determination of FoPL effects with all else being equal.

Results

The results relating to choice and understanding are presented in Table 1. For both variables, a majority of respondents in each condition selected the healthiest option (i.e. the pack showing the 4.5-star rating) and frequencies were roughly evenly distributed across the three other response categories (products featuring 1.5 stars, 3 stars, or no star: results not shown). Overall, coloured variations scored better than their B&W counterparts and the abbreviated star-only versions scored better than the

corresponding versions displaying nutrient icons. The differences between the B&W full HSR and colour star-only labels reached statistical significance for both outcome variables.

Discussion

The results provide preliminary support for the proposition that the effectiveness of the HSR could be enhanced if traffic light colours are applied and a star-only variant is used. This is consistent with previous research showing that highly interpretive and colour-coded FoPLs are most effective for improving understanding and choice,² but is somewhat at odds with consumers' stated preference for nutrient-specific information on the front of packs.⁵

The selection rates for the healthiest product option were substantially higher than those in previous similar research.^{2,3} This is likely attributable to the inclusion in those studies of a greater number of independent variables (e.g. price, flavour variations, health claims) that were potential distractions from the health information provided via the FoPL. In the present study, such stimuli were excluded to ensure the resulting selections could be attributed to the differing forms of the HSR label. While this is likely to have artificially inflated the salience of the FoPLs, it also reduced the potential to observe variation in effects between FoPL types. However, at a population level, the improvement in food choices resulting from changing the current B&W full health star rating label to the coloured star-only label translates to many millions of better dietary choices when extrapolated across the food supply. Furthermore, there is the potential for greater effects if the colour star-only version is enlarged to match the footprint of the current full HSR.

The limitations of this study include the use of an experimental study design that may not be generalisable to the real world due to the limited number of product options, the lack of other observable product attributes, absence of time pressure, and reliance on a sample of web panel respondents. As a result, the findings should be considered preliminary but are likely to be indicative of the relative effectiveness of varying forms of the HSR label.

References

1. Kanter R, Vanderlee L, Vandevijvere S. Front-of-package nutrition labelling policy: Global progress and future directions. *Public Health Nutr.* 2018;21(8):1399-408.
2. Egnell M, Talati Z, Hercberg S, Pettigrew S, Julia C. Objective understanding of front-of-package nutrition labels: An international comparative experimental study across 12 countries. *Nutrients.* 2018;10(10):1542.
3. Talati Z, Norman R, Pettigrew S, et al. The impact of interpretive and reductive front-of-pack labels on food choice and willingness to pay. *Int J Behav Nutr Phys Act.* 2017;14(1):171.
4. Newman CL, Burton S, Andrews JC, Netemeyer RG, Kees J. Marketers' use of alternative front-of-package nutrition symbols: An examination of effects on product evaluations. *J Acad Mark Sci.* 2018;46(3):453-76.
5. Dana LM, Chapman K, Talati Z, et al. Consumers' views on the importance of specific front-of-pack nutrition information: A latent profile analysis. *Nutrients.* 2019;11(5):1158.
6. Jones A, Thow AM, Ni Mhurchu C, Sacks G, Neal B. The performance and potential of the Australasian Health Star Rating system: A four-year review using the RE-AIM framework. *Aust N Z J Public Health.* 2019;43(4):355-65.
7. Pettigrew S, Talati Z, Miller C, et al. The types and aspects of front-of-pack food labelling schemes preferred by adults and children. *Appetite.* 2017;109:115-23.

Supporting Information

Additional supporting information may be found in the online version of this article:

Supplementary Figure 1: Examples of each version of the HSR label.

Table 1: Choice and understanding outcomes for different HSR label formats (n=1,033).

	Sample per condition	Making the healthiest choice ^b (n=766) ^c			Demonstrating correct understanding ^b (n=1,033)	
	n	OR [95%CI]	p	OR [95%CI]	p	
Full HSR – Black & White ^a	258	ref	ref	ref	ref	
Full HSR – Colour	262	1.29 [0.78, 2.14]	0.328	1.22 [0.78, 1.92]	0.378	
Star rating only – Black & White	257	1.08 [0.66, 1.77]	0.755	1.20 [0.76, 1.88]	0.435	
Star rating only – Colour	256	1.75 [1.02, 2.98]	0.041	2.13 [1.28, 3.54]	0.004	

Notes:

a: Reference condition for the logistic regression analyses

b: Those selecting the 4.5 star option

c: Respondents could opt out of making a choice