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# Taking the sweetness out of the 'Share a Coke' marketing campaign: the influence of personalized labelling on elementary school children's bottled drink choices

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## Summary

**Background:** Drink personalization (featuring names on bottle labels) has been used by soft drink companies to make their drinks attractive to children, potentially increasing consumption. To date, no publically available research has evaluated the influence of personalization on children's drink choices.

**Objectives:** To determine (i) whether personalizing bottled drinks influences children's drink choices; (ii) whether it is comparably effective in promoting healthy and unhealthy drinks and (iii) whether drink choices are affected by self-esteem, body mass index and parental factors.

**Methods:** Children aged 8–13 years ($N = 404$) were randomly assigned to one of three drink labeling conditions: Prime Healthy, Prime Unhealthy and Control. All participants selected one beverage from 12 options, comprising six healthy and unhealthy drinks.

**Results:** Personalizing healthy drinks increased choice of healthy drinks (OR, 2.21; 95% CI, 1.24–4.00), and personalizing unhealthy drinks reduced choice of healthy drinks (OR, 0.35; 95% CI, 0.15–.0.75). Higher self-esteem predicted choosing own-named drinks (OR = 1.08, 95% CI, 1.00–1.18; $p = .049$).

**Conclusions:** Children's drink choices are influenced by personalizing drink bottles. Tighter regulation of this marketing strategy for soft drinks may reduce children choice of these drinks. Personalization may also be used to encourage children to choose healthy drinks.

**Keywords:** Children, marketing strategies, obesity, personalization, soft drink choice.

Marketing strategies influence children's food and drink preferences and consumption (1). These strategies are a likely causal factor in the rising prevalence of childhood obesity (2), because the majority of food and drinks promoted to children are energy dense and nutritionally poor (3). In addition, unhealthy food and drink are increasingly marketed towards children (4), using marketing techniques (e.g. celebrity endorsements, bright colours and cartoon graphics on packaging) that are specifically appealing to children (5–7).

One highly successful marketing strategy in recent years was the 'Share a Coke' campaign by Coca-Cola, where coke bottle labels were personalized with popular first names (8). Little is known in the public domain about the influence that product personalization (seeing one's name on a product) has on drink choice. Published studies in this area have been small scale and examined the effect people's name-letters have on product preference (9,10). Although it is unclear whether this strategy was aimed at children, in Ireland, the 'Share a Coke' campaign featured almost all of the one hundred most popular names of 7 to 8-year-old children (11). The current study assessed the effects of product personalization on children's bottled drink choices.

Nuttin (12) demonstrated that individuals tend to like their names and initials over other's names and

initials, calling this the 'name–letter effect'. The extent to which individuals demonstrate this preference reflects the extent they perceive themselves favourably. For example, a study by Joubert (13) found that students scoring high in self-esteem liked their names more than students scoring low in self-esteem. Consequently, the current study also investigated whether self-esteem predicted choosing a bottled drink personalized with one's own name.

Finally, we assessed the effects of certain demographic predictors on drink choice. Children's body mass index (BMI), greater parental consumption of soft drinks and soft drink availability within the home have been associated with greater soft drink consumption by children (14,15).

We hypothesised that (i) children would be more likely to choose a bottled drink (healthy or unhealthy) featuring their name than those not featuring their name; (ii) children with higher self-esteem would be more likely to choose a drink featuring their name than children with lower self-esteem and (iii) overweight/obese children, whose parents regularly consume soft drinks and report soft drinks to be frequently available within the home, will be more likely to choose an unhealthy versus healthy drink.

# Methods

## Participants

Children, aged 8–13, were recruited from six elementary schools in Ireland between April and June 2015. Children aged 8 and up were recruited because they were likely to have sufficient literacy and computer skills to self-complete a written questionnaire and computer task. Schools were purposively selected to ensure representation from urban/rural schools and schools of differing socio-economic levels, determined by identifying schools who receive additional supports/resources from the government because of high levels of disadvantage in the surrounding community.

## Design

A between-subjects experimental design was employed. Participants were randomized to one of three groups: 'Prime Healthy', 'Prime Unhealthy' and Control. All children were presented with a choice of six healthy (water, milk, fruit juice) and six unhealthy drinks (Coke, Fanta, 7up). Two bottles of each drink type were offered, so that the presence of the child's name or a random name could be manipulated on one of the bottles of each type. Although some fruit juices are high in sugar (16), we used a low sugar fruit juice (Robinson Fruit Shoot apple and blackcurrant low sugar), which contained 1.6-g sugar.

In the *Prime Healthy* group, three of the healthy drinks featured the child's first name on the bottle label and the other three healthy drink labels featured three random names. The unhealthy drinks retained their original labels. The *Prime Unhealthy* group was identical to the *Prime Healthy* group except children's names appeared on the unhealthy drinks only, with the healthy drinks displaying the original label. In the *Control* group, all healthy and unhealthy drinks displayed the original labels.

## Measures

### *Culture Free Self-Esteem Inventory – Third Edition (CFSEI-3)*

The CFSEI-3 (17) self-report inventory was used to measure children's self-esteem. In the present study, the 29-item Primary Form (including 10 items measuring defensiveness), designed for children aged 6–8 years was used with all children, regardless of age, to allow for comparison of scores between age and class on self-esteem. It consists of a single scale measuring 'Global Self-Esteem' and asks pupils to tick 'yes' or 'no' to questions on the scale. The CFSEI-3 has been proven to be reliable and valid for use in a multi-cultural context (17), as was the case with the current study sample. The Cronbach's $\alpha$ value for the current study was .77.

### *Parental questionnaire*

A short, single-sheet questionnaire was administered to children's parents and included three demographic items (child's date of birth, sex and school class) and two soft drink-related questions. Soft drink availability to children was assessed by asking parents if soft drinks were available for consumption by their children at home, while parental consumption of soft drinks was examined by asking parents how often they consumed soft drinks per week. Questions were assessed on a 5-point scale ranging from 'Always' to 'Never' for soft drink availability, and 'Everyday' to 'Less than once a week or never' for soft drink consumption.

### *Height and weight measurements*

Children were weighed on digital scales, and height was measured using a portable stadiometer, stabilized against a wall. Shoes and heavy outdoor clothing were removed prior to children's height and weight. BMI was calculated by dividing the individual's weight in kilograms by their height in metres squared. Weight

status (levels of overweight and obesity) of the sample was calculated using Cole's international cut-off values (18), as recommended by the International Obesity Task Force (IOTF).

### Procedure

Ethical approval for this study was granted by the Research Ethics Committee of the School of Psychology at NUI Galway. Completion of both guardian's consent and children's assent forms was required for participation in the study.

All children filled in the CFSEI-3 in their classroom, after which each child was brought one at a time to a private room in the school, where the study was conducted. Once children's physical measurements were taken, they were invited to take a seat at the laptop and complete a short computer task. This task consisted of the classic colour–word Stroop task (19) and was employed to prevent children being aware of the purpose of the study. While engaged in the task, the selection of drinks on the table located behind the child was set up. Each child was told that, as a reward for taking part in the study, they could choose 1 drink to take with them from the selection of 12 bottled drinks (6 healthy and 6 unhealthy) on the table. After children had made their selection, the table with the drinks was cleared, and the next child was invited in.

A number of measures were employed to minimize the likelihood of the researcher's presence impacting on children's choices. First, left–right orders of drink bottles in the bottle array presented to children were random permutations of the set of 12 drinks. Second, to prevent researchers cuing a child's drink choice, once the child moved to the bottle array, the researchers turned their backs to the array (in the guise of completing a computer task). It was therefore clear to the child that their drink choice could not be seen by the researchers. Finally, to avoid contamination of other children's drink choices, once the child had chosen their bottle, they were informed that drinks were not allowed in the next room but that they would receive their chosen drink at the end of the school day. The researchers then returned the bottle to the array without comment and children were given their drink at the end of the day.

### Analyses

Data were analysed using the R statistics package (R Core Team; (20)). All hypotheses were tested using logistic regression analyses. For the primary hypothesis personalization and healthy drink choice, the effects of the two experimental groups – *Prime Healthy* and *Prime Unhealthy* – were contrasted with the *Control* group using simple coding. The dichotomous outcome variable was chose healthy drink, coded as true or false. A second regression controlled for significant effects of soft drink availability on healthy drink choices. 'Seldom' availability and 'sometimes or more' availability were compared to 'never' availability using simple coding.

To assess whether self-esteem score predicted choice of drinks displaying one's name, the control group was removed. Self-esteem was employed as a continuous predictor, and the outcome variable was chosen own name, coded as true or false.

Associations between BMI and parental consumption with healthy drinking choices were estimated using Chi-square tests. BMI was recoded into two levels, which combined the categories of underweight and normal weight and compared them to overweight and obese children. Parental consumption was aggregated into two categories: weekly consumption of 'twice or fewer per week' and 'three or more times per week'.

## Results

In total, 418 participants agreed to participate in the study, but, of these, 12 were excluded because of absenteeism on the study days, and 2 more were excluded because of incomplete data. The final sample consisted of 404 children (males 46% and females 54%), with an average age of 10.98 years ($SD = 1.29$). The prevalence of overweight in the total study population was 23.7% (7.4% of these were obese). Weight status did not differ by children's gender ($\chi^2 = .181$, $df = 1$, $p = .670$) or schools' socio-economic level ($\chi^2 = .002$, $df = 1$, $p = .964$). Participants' demographic characteristics are summarized in Table 1. The distribution of these demographic predictors across experimental conditions was balanced except for soft drink availability; Significantly fewer participants in the *Prime Unhealthy* group (23%; residual = −2.04) than in the *Prime* Healthy (34%) or *Control* group (42%) reported that soft drinks were available sometimes or more often. This variable was included as a covariate in the analyses.

### The effect of personalization on healthy drink choices

In the *Prime Healthy* group, 33.6% ($N = 44$) of the children chose a healthy drink (featuring their name or a different name), compared to 16.9% ($N = 24$) in the Control group and 7.6% ($N = 10$) in the *Prime Unhealthy* group. Exposure to the *Prime Healthy*

**Table 1** Demographics and other characteristics of participants

| | % (*N*) | Mean (SD) | Equivalency across conditions |
|---|---|---|---|
| *Age* | | 10.98 (1.29) | $F$ (2, 401) = 0.006, $p$ = .994 |
| *Sex* | | | |
| Male | 45.5 (184) | | $X^2$ (2) = 1.005, $p$ = .605 |
| Female | 54.5 (220) | | |
| *BMI** | | | $F$ (2, 401) = 0.571, $p$ = .566 |
| Underweight | 3.7 (15)[c] | | $X^2$ (4) = 5.37, $p$ = .252 |
| Normal weight | 72.5 (293)[c] | | |
| Overweight | 16.3 (66) | | |
| Obese | 7.4 (30) | | |
| *School location* | | | $X^2$ (4) = 0.575, $p$ = .965 |
| Urban | 34.9 (141) | | |
| Rural | 12.1 (49) | | |
| Town | 53.0 (214) | | |
| *School status* | | | $X^2$ (2) = 0. 082, $p$ = .960 |
| Disadvantaged | 65.1 (263) | | |
| Non-disadvantaged | 34.9 (141) | | |
| *Soft drink availability* | | | $X^2$ (2) = 15.702, $p$ = .003 |
| Never | 36.4 (147) | | |
| Seldom | 30.4 (123) | | |
| Sometimes | 25.7 (104)[c] | | |
| Often | 4.2 (17)[c] | | |
| Always | 3.2 (13)[c] | | |
| *Parental consumption* | | | $X^2$ (2) = 0.443, $p$ = .801 |
| Never to once or twice per week | 84.9 (343) | | |
| Three or more time per week | 14.9 (60) | | |
| *Self-esteem score* | | 15.37 (3.11) | $F$ (2, 401) = 0.516, $p$ = 0.598 |
| *Defensiveness score* | | 3.86 (2.24) | $F$ (2, 401) = 0.906, $p$ = 0.405 |

Note: BMI, body mass index; Soft drink availability, availability of soft drinks within the home to children; Parental consumption, parental consumption of soft drinks per week; Self-esteem score, score on Culture Free Self-Esteem Inventory – 3; Defensiveness score, score out of 10 on defensiveness scale on the CFSEI-3. Chi-square tests ($X^2$) and ANOVAs (F) tested for equivalency across experimental conditions.
*BMI cut-offs reported as IOTF levels.
[c]These categories were combined to allow for Chi-square analyses.

condition significantly increased the unadjusted odds of choosing healthy drinks (OR, 2.49; 95% CI, 1.22–4.55; $p$ = .002) relative to the *Control* condition. Conversely, exposure to the *Prime Unhealthy* condition significantly reduced the odds of choosing healthy drinks (OR, 0.41; 95% CI, 0.18–0.86; $p$ = .024). Of the children choosing a named healthy drink, most (95.5%; $N$ = 42) chose their own name, and 97.6% ($N$ = 118) of children choosing a named unhealthy drink chose their own name.

A second regression controlled for significant effects of soft drink availability; seldom availability (OR, 0.33; 95% CI, 0.16–0.64; $p$ = .001) and sometimes or more availability (OR, 0.40; 95% CI, 0.21–0.72; $p$ = .003) reduced the odds of healthy drink choices relative to never availability. The adjusted odds of choosing healthy drinks remained significantly higher in the *Prime Healthy* condition (OR, 2.21; 95% CI, 1.24–4.00; $p$ = .007), and lower in *Prime Unhealthy* condition (OR, 0.35; 95% CI, 0.15–0.75; $p$ = .01) relative to *Control*. The effect of the *Prime Unhealthy* condition was slightly stronger in the adjusted model than in the unadjusted model, when the effects of the lower concentration of soft drink availability in that group were accounted for.

## Effect of self-esteem on choice of named drinks

The control group was excluded from analyses of the effects of self-esteem on choice of named drinks as children were not exposed to named drinks.

Self-esteem was a significant predictor of choice of own-named drinks across both experimental groups combined (OR = 1.08, 95% CI, 1.00–1.18; $p$ = .049). The above analysis does not take into account

 

children's defensiveness scores on the CFSEI-3. Scores of 7 or higher on the defensiveness scale indicate the extent to which the defensiveness of the child may diminish the validity of the quotient (17). Consequently, analyses were repeated, but limited to children with scores of 6 or less on the defensiveness scale. Based on this cut-off, 10.7% ($N = 28$) of children were excluded from the analyses. The effect of self-esteem increased very slightly (OR = 1.11, 95% CI, 1.02–1.21; $p = .016$) when these 28 children were excluded from analyses.

### Influence of demographic and parental factors on choice of drink

There were no significant associations of BMI, or parental consumption of soft drinks with children's choice of unhealthy or healthy drinks (see Table 2). The effect of parental consumption of soft drinks approached significance ($p = .07$), with higher soft drink consumption (3 times a week or more) associated with lower incidence of choosing the healthy drink (11.4%) relative to lower soft drink consumption (twice a week or fewer; 20.4%).

## Discussion

To our knowledge, this is the first academic study to examine the impact of placing a child's name on a drink on subsequent drink choice. This research is particularly pertinent as personalization of products is becoming a more commonly employed marketing strategy for products targeting children.

Overall, results show children were more likely to choose a bottled drink that featured their name over bottled drinks that did not. Personalizing healthy drink choices considerably increased healthy drink choices and personalizing unhealthy drink choices considerably reduced healthy drink choices. In addition, children with high self-esteem were more likely to choose a drink that featured their name than children low in self-esteem. Prevalence figures for overweight and obesity in our sample are in line with prevalence rates reported nationally and internationally (21,22). Unlike previous research (21,23), weight status did not differ by gender or schools socio-economic level.

Our findings partially confirm those of the ENERGY project (14). The effects of soft drink availability within the home and soft drink consumption by parents, on healthy drink choices were assessed in the current study. Soft drink availability was associated with a lower probability of choosing healthier drinks, with participants who reported never having access to soft drinks twice as likely to choose a healthy drink than those reporting seldom having access or having access sometimes or more often. Soft drink consumption did not significantly affect healthy drink choices, but the effect was in the expected direction (OR = 0.59, 95% CI, 0.25–1.23; $p = .19$) with children whose parents drank three or more drinks per week about 60% as likely to choose a healthy drink as children whose parents consumed fewer drinks. BMI was not found to predict choice of unhealthy drinks.

The impact of personalization on drink choice was similar for healthy and unhealthy drinks. Our findings suggested a marginally stronger effect for personalized unhealthy drinks promoting unhealthy choices (OR = 2.86; i.e., 1/.35) than personalized healthy drinks promoting healthy choices (OR = 2.2) but the effect was more reliable for healthy drinks. This somewhat counterintuitive outcome was observed, because unhealthy drinks were the preferred choice

**Table 2** Results of Chi-square test and descriptive statistics for BMI and parental consumption of soft drinks by type of drink chosen

| | Drink chosen | |
|---|---|---|
| BMI category (IOTF cut-offs) | *Healthy drink* | *Unhealthy drink* |
| *Normal weight and underweight* | 56 (18.2%) | 252 (81.8%) |
| *Overweight* | 18 (27.3%) | 48 (72.7%) |
| *Obese* | 4 (13.3%) | 26 (86.7%) |
| *Chi-square* | $\chi^2 = 3.625$, $df = 1$, $p = .163$ | |
| Parental consumption of soft drinks | | |
| *Twice or fewer per week* | 70 (20.4%) | 273 (79.6%) |
| *Three or more times per week* | 10 (11.4%) | 78 (88.6%) |
| *Chi-square* | $\chi^2 = 3.215$, $df = 1$, $p = .072$ | |

Note: Numbers in parentheses indicate column percentages.

by the majority of children (83.1%) in the control condition. Consequently there was a ceiling effect on the effect of personalization on choosing unhealthy drinks in the *Prime Unhealthy* group that was taken into account by the statistic in calculating the reliability of the estimate. This effect has also been observed in other research examining the marketing of healthy versus unhealthy food (24)

As hypothesised, high self-esteem predicted choice of drinks displaying ones name. This suggests that self-symbols, such as one's name, may trigger positive associations for children with high self-esteem and increase the attractiveness of drinks displaying their name. The effect of self-esteem on choice became slightly stronger when analyses were repeated on non-defensive children only. It is likely that some children were responding in a socially desirable way and their removal from analysis likely increased the validity of the questionnaire and strength of self-esteem in predicting choice of drinks displaying ones name.

This study has some limitations. Despite efforts, children could not be prevented from discussing their chosen drink with classmates. The soft drink consumption patterns of friends are reported to be strongly associated with children's soft drink consumption (25). It is possible that peer influence could have acted as a confounding variable, impacting negatively on the internal validity of the experiment. A design employing a mixed-methods approach, in which children are asked to give a reason for their drink choice, could be used to screen for the potential effect of peer influence on drink choice.

The primary form of the CFSEI-3, designed for use with children aged 6–8, was used across all ages in the study. One might suggest that this limits generalizability of the effects of self-esteem on choosing a named drink for children aged 9 years and over. However, in a regression including age and the interaction between age and self-esteem, we found that the adjusted odds for self esteem (OR = 1.09, 95% CI, 1.00–1.18; $p = .49$) were effectively the same as the unadjusted odds, indicating that self esteem acted consistently regardless of age. There was no effect of age (OR = 0.99, 95% CI, 0.81–1.20; $p = .91$) or interaction between self-esteem and age (OR = 1.01, 95% CI, 0.95–1.06; $p = .84$).

Finally, children's hunger and thirst levels were not measured. Children's physiological state has been shown to affect their future food and drink preferences, (26) and as such, it would be beneficial to control for this in future research in this area.

### Conclusions

This study demonstrates that the provision of names on drinks increases children's choice of those drinks, with self-esteem positively contributing to this effect. As such, tighter regulations around personalized labelling of drinks may be needed in the marketing of unhealthy drink products to children. However, this study also showed that the placement of children's names on healthy drinks increases their choice of these drinks. As such, this marketing strategy could be used to promote increased consumption of healthier drinks.

## Conflict of interest statement

No conflicts of interest to declare by any of the authors.

## Authors' contribution

FMD and DOS conceived the study idea and FMD collected the data. DOH, FMD and MB contributed to study design and were responsible for the statistical analyses and interpretation of the data. FMD, DOH and MB were involved in writing the paper, and all authors had final approval of the manuscript.

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