It’s the REAL Thing: Contested Media Discourse and the UK Sugar Tax

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It’s the REAL Thing:
Contested Media Discourse and the UK Sugar Tax

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Abstract
Purpose
Health policies often require individuals to limit behaviours deemed enjoyable or suffer other burdens. This leads to considerable and contested discourse often played out in the popular media. The aim of this study is to determine the effects of such contested media discourse on viewers’ perceived attitude change towards the target behaviour.

Methodology
Combining concepts from discourse analysis and marketing-psychology elaboration models, we undertook an online survey in which a large sample of the public (N=855) watched parts of a real daytime news debate on the UK Sugar Tax. They then evaluated the effects of this discourse on their perceived understanding of the tax and perceived attitude change to the consumption of sugary drinks.

Findings
Participants differentiated between parts of the discourse related to facts and arguments (termed argument-related discourse devices) and parts related to the format and tone of the debate (termed debate-/speaker-related discourse devices). Contrary to what might be expected, debate-/speaker-related discourse devices, which might be thought of as subjective, appeared to effect positive perceived attitude change through a cognitive processing route that
involved perceived improved understanding. The argument-related discourse devices, which
may appear objective or rational, were not associated with perceived improved understanding
but were directly associated with positive perceived attitude change.

**Originality**

Given our interest in the relationship between discourse and perceived attitude change, we take
the novel step of linking concepts from discourse analysis with models of attitude change
taken from the marketing-psychology domain. Furthermore, our large-scale survey
‘democratises’ discourse analysis, allowing non-expert participants to reflect upon discourse.

**Key words:** health policy, contested discourse, discourse devices, perceived attitude change,
Sugar Tax, news debate, structural equation modelling, SEM

**Introduction**

Government policies seeking to improve health, such as smoking cessation and anti-obesity,
rely on changing public attitudes to health behaviours deemed to be harmful (e.g. Basu and
Wang, 2009; Mulderrig, 2017). This often requires individuals to forgo or limit behaviours
deemed enjoyable or suffer other burdens, such as increased prices, taxes or reformulations.
In consequence vociferous ‘for and against’ arguments are often played out in popular media,
exposing the public to unresolved debate on issues which have profound consequences for
their health (Thussu, 2015). Health policy therefore provides a rich and important context for
the study of contested discourse, and in particular, the relationships of such discourse on
perceived attitude change towards the target behaviour.
The aim of this study was to determine the effects of contested discourse in the media coverage of a health policy, the UK Sugar Tax, on participants’ perceived improved understanding of the tax and their perceived attitude change towards the consumption of sugary drinks. We undertook an online survey in which a large sample of members of the public (N=855) watched parts of a real daytime TV news debate on the Sugar Tax with one speaker arguing for the tax and one against it. Participants were asked to evaluate the effectiveness of the discourse devices used by the two speakers and the effects on their perceived understanding and perceived attitude change toward the tax.

The study makes a number of contributions. Firstly, discourse analysis tends to be the domain of experts, with discourse studies, particularly critical discourse studies, asserting what lay-readers, listeners or viewers will, or should, take away from a particular discourse. In contrast, in this study we allow the non-expert participants to evaluate both the perceived effectiveness and perceived impact of discourse devices, albeit we recognise that we limit the range of devices that are considered. In doing so, we respond to Ihlen’s (2020) call for empirical research to understand how best to communicate health related messages. Our conclusions include practice implications for health communicators in a ‘post’ pandemic world tasked with countering the threat of new, and re-emerging, viruses and the burdensome, and contested, measures such as repeated vaccinations and wearing face masks, required to counter these. Given our interest in the relationship between discourse and perceived attitude change, we take the novel step of linking notions from discourse analysis with models of attitude change taken from the marketing-psychology domain. We explore the relationship by means of quantitative statistical testing of hypotheses, culminating in a structural equation model (SEM). Hence this study is consistent with the recent call to blend
the interpretive, qualitative tradition of much discourse analysis and the positivistic approach found in areas of social and cognitive psychology (Wang, 2021). Our study shows that participants recognised different elements of discourse. In particular, they were found to differentiate ‘argument-related discourse devices’ and ‘debate-/speaker-related discourse devices’ and that these two types of discourse device had different and unexpected relationships with perceived attitude change.

In the following sections we review literature relating to discourse analysis and models of perceived attitude change, and provide background on the UK Sugar Tax. We develop a set of hypotheses that guide the empirical stage of our study. We describe the methods employed in the study and present the analysis and findings. In the discussion section we draw on concepts from the models of attitude change previously discussed to provide an interpretation of our findings, including our novel finding that different discourse devices have distinct relationships with perceived attitude change. Finally, we discuss the contributions of the study to theory and practice, research limitations and opportunities for future research.

Literature Review

Discourse and Health Policy

Going beyond a model of language as a transparent medium for transmitting meaning, discourse analysis seeks to reveal how discourse devices, such as rhetorical and lexical choice, interruptions and tone of voice, establish relations of power, credibility and empathy with audiences and which work to include or exclude meanings (Tannen et al., 2015; Taylor,
Some schools of discourse analysis, such as Critical Discourse Analysis argue that such relations reflect and reinforce wider social and political structures (Fairclough, 2013; Ravazzani and Maier, 2017), while others, such as Conversation Analysis, analyse communicative situations as social interaction in themselves (Stivers and Sidnell, 2014). In this study, we follow the former premise, that discourse both reflects and shapes social structures through the meanings it promotes or excludes, and hence we study the impact of media discourse on perceived attitude change to health policy.

Discourse analysis is well-suited to investigation of social issues such as health policy because of the centrality of language in how such issues are formulated and communicated. For example O’Sullivan (2007) examines rival discourses from activists and industry apologists around the problem of children and advertising. Other examples include Raftopoulou and Hogg (2010) who question the effect of discourses that frame citizens as consumers, Svendsen and Svendsen (2018) who problematize discourses that promote university attendance as essentially a route to a social life, and Mulderrig (2017, 2018) who explores the discourse in a UK anti-obesity campaign that promotes individual, rather than societal, responsibility.

Since public health policies are frequently newsworthy or controversial, they often receive considerable coverage in a wide range of media. Hence, the public may be subject to considerable mediated replaying and reinterpretation of the original communications about the policy that may influence their understanding and attitude. Since the publication of ‘Bad News’ by the Glasgow University Media Group (1976), the topic of news media as an object of discourse analysis has rapidly developed. This has occurred alongside the proliferation of the news media themselves, from a limited range of channels transmitting to apparently
passive audiences, into today’s interactive multi-directional and multi-platform services. Clayman and Heritage (2002) pioneered the formal study of the news debate in broadcast media in both the UK and the US. Hutchby (2006, 2011) built on their work to examine a number of broadcast genres (including varieties of news debates) showing how various participants enact their roles as hosts, phone-in callers, advice-givers and politicians through varied discourse devices.

**Attitude Change**

Rokeach’s classic definition of attitude as ‘a relatively enduring organization of beliefs around an object or situation predisposing one to respond in some preferential manner’ (Rokeach, 1968, p. 112) underlines the interaction of content (beliefs) and structure (organization of those beliefs). This informs his definition of attitude change as ‘a change in predisposition, the change being either a change in the organization or structure of beliefs or a change in the content of one or more of the beliefs’ (Rokeach, 1968, p. 135).

The domains of communication and marketing psychology have produced a number of models of attitude change that seek to explain why and how information provided to individuals is processed and interpreted by them and how this may change their attitudes (Dillard and Shen, 2012). Further models seek to explain the complex links between attitude and behaviour change, but this is beyond the scope of this study. Whilst the origin and application of many models have been in the area of advertising, they have also been applied in areas of health promotion including the promotion of breastfeeding (e.g. Hussein et al., 2014) and exercise (e.g. Arora et al., 2006).
One of the best-known models is the Elaboration Likelihood Model (ELM) (Petty and Cacioppo, 1983, 1986a; Petty et al., 1997). As shown in Figure 1, this model postulates two routes to attitude change, central and peripheral. The central route, which requires greater elaboration or cognitive effort, is linked with high involvement products or services, and is associated with more enduring attitude change. The peripheral route is more likely to use cues, such as speaker credibility, to minimise cognitive effort, and is associated with a temporary change in attitudes. Elaboration is often described simply as thinking about or processing the focal message. However, Petty and Cacioppo (1981) stress the importance of understanding as well as thinking, particularly for the central processing route. As they argue, without some level of understanding little meaningful thinking can occur and reliance on cues will be more likely. Understanding can be described as ‘grasp[ing] how a constellation of facts relevant to that subject are related to one another....in such a way as to be able to make new connections or draw new inferences with novel information’ (Huxster et al., 2018 p.759). What is a fact is often not clear to those listening to messages. Indeed, what may appear as fact may change for example over time or in different contexts. Similarly, in debates on challenging topics, experts may seek to refute what other experts present as facts. However, even with this caveat, the description of understanding suggests the need for a number of believed facts and a relationship between these.
Demonstrating its empirical robustness, many communication studies have been based on the ELM or have refined and added to its core constructs (e.g. Bergan, 2021; Molina and Jennings, 2018; Schroeder, 2005). This has resulted in a wide range of constructs including involvement, argument quality, message framing, and source and medium credibility, with differential inclusion of these variables across different studies (for example, Carpenter, 2015; Le et al., 2018; Dhanesh and Nekmat, 2019). While a wide range of constructs have been included in the ELM, explicit consideration of the panoply of discourse devices is conspicuously absent. Although the ELM has also received criticism including questioning the dual process it is based upon (Lord et al., 1995; Crano and Prislin, 2005; Kitchen et al., 2014) and ambiguity of constructs and relationships, it is widely accepted and has withstood significant empirical testing (McDermott and Lachlan, 2020).
The UK Sugar Tax

Sugar taxes, also termed soda or sugar sweetened beverage (SSB) taxes, are of global interest. As of 2020, approximately 40 countries had introduced sugar taxes (Obesity Evidence Hub, 2021). The UK Soft Drinks Industry Levy (SDIL), referred to colloquially as the Sugar Tax, was first announced in March 2016 and came into effect on 6th April 2018. The tax imposes a levy on drinks manufacturers and importers based on the amount of sugar in their drinks, with the amount levied varying by the amount of sugar. Fruit juice with no added sugar and milk-based drinks are exempt. Supporters of the sugar tax view it as a pragmatic approach to our toxic food environment that recognises the systemic rather than individual nature of the obesity challenge (Roache and Gostin 2017). Those opposed view it as an assault on personal freedoms and highlight the regressive nature of consumption taxes (Tselengidis and Ostergren, 2019).

In the period between the tax’s announcement and introduction, many drinks manufacturers adopted approaches to reduce the amount of tax due including reformulation and ‘shrinkflation’ (The Grocer, 2018; BMI Research, 2018). Evaluation of the tax one year after its introduction found a reduction in sugar purchased in sugar sweetened beverages (SSBs), but no reduction in overall volumes of SSBs sold (Pell et al., 2021). The different ways of measuring the impact of the tax, and varying outcomes in other countries, have led to contested debates about effectiveness (Scarborough et al., 2020).

Hypotheses Development
Speakers in a debate will draw on a range of discourse devices in order to convey information. These include lexical choice; analogy or metaphor; framing (e.g. constructing the issue of obesity as concern for children’s health); the discursive format (in our study, a television news debate); and self-presentation (e.g. tone of voice, conciliatory or confrontational style). The active use of discourse devices, including the juxtaposition of contrasting ideas, suggests the audience will be exposed to a vivid interplay of facts (or beliefs), ideas and issues allowing them to consider how these relate to each other (Ravazzani and Maier, 2017). Consistent with the description of understanding (Huxster et al., 2018) presented previously, this may be expected to increase their understanding of the topic. As discussed in the methods section, participants in our survey were not pretested on their understanding of the sugar tax. Rather they were asked if they thought the debate helped their understanding. We therefore cast our hypotheses in terms of perceived improved understanding:

\[ H_1: \text{The perceived effectiveness of discourse devices will be positively associated with perceived improved understanding by viewers.} \]

Extant studies based upon the ELM and other attitude change models identify the important role of message and speaker credibility in influencing attitude change (e.g. Arora et al., 2006). Message credibility, measured by items such as being believable, complete and accurate may also contribute to changing the understanding of a topic, since these factors may suggest that the message is correct or reliable and can therefore be accepted (Petty et al., 1997). We might expect a similar contribution from source (speaker) credibility, since if there is a ‘belief that the source of a message is an expert [it] can reduce motivation to
scrutinize messages (develop counterarguments, elaborate)” (Stephenson et al., 2001 p.326).

This leads to our second hypothesis:

H2: Message and speaker credibility will be positively associated with perceived improved understanding.

As discussed previously the ELM predicts how information provided to individuals is processed or elaborated by them and how this results in attitude change (Petty, and Cacioppo, 1983; Lord et al., 1995), with more significant attitude change associated with greater cognitive effort. Such cognitive effort involved in elaborating arguments may be expected to help a person achieve understanding of the issue being considered (Petty and Cacioppo, 1986b); hence perceived improved understanding is expected to be associated with attitude change. Participants in our survey were not tested after the survey on actual attitude change, rather they were asked if they would be more careful buying or drinking sugary drinks. We therefore cast our hypotheses as perceived attitude change:

H3: Perceived improved understanding will be positively associated with perceived attitude change by viewers.

Consistent with Petty and Cacioppo (1984) who reported that effects of characteristics of the speaker and message, termed source effects, were complex and that cognitive effort is determined by a variety of factors. We therefore posit that discourse devices and message and speaker credibility are not sufficient themselves to effect perceived attitude change. Rather it is necessary that these are subject to processing or elaboration that will manifest as perceived improved understanding and which will in turn lead to perceived attitude change.
We therefore hypothesise that perceived improved understanding will mediate the relationship between both discourse devices and perceived attitude change and between message and speaker credibility and perceived attitude change, leading to our fourth and fifth hypotheses:

H₄: The relationship between discourse devices and perceived attitude change by viewers will be mediated by perceived improved understanding.

H₅: The relationship between message and speaker credibility and perceived attitude change by viewers will be mediated by perceived improved understanding.

Our hypotheses are combined to produce the proposed model shown in Figure 2.

![Figure 2: Proposed model](image)

**Method**
**Research Design**

Consistent with our intention to incorporate an interpretive approach, we wished to explore reactions of the public to a real-world news debate, rather than undertake a comparative multi-experimental design with an artificially constructed discourse. We therefore undertook a single, large-scale online survey with a balanced sample of the public based around a single embedded video extract from a real news debate about the UK Sugar Tax.

**Video Extract**

The video extract was taken from a Sky News programme broadcast on 17th March 2016 (Sky_News, 2016). The format is a topical debate between two speakers with opposing views on the Sugar Tax that had been announced by the then UK Chancellor on the preceding day to come into effect in 2018. One speaker was a male economist who opposed the tax (hereafter termed speaker 1) and the other, a female nutritionist who supported the tax (hereafter termed speaker 2). Both were experienced in news debates. The debate was moderated by a female presenter. Whilst the focus for this analysis is primarily verbal, visual organisation is essential to how the programme legitimised and interpreted by its participants. The presenter and speaker 2 were in the studio, while speaker 1 appeared on a large screen between them, linked from another location. The researchers checked that the extract was visually realistic (Yorke and Alexander, 2013), balanced in its interactions with both speakers, and that speaker 1 maintained eye contact with the camera, communicated with energy and was able to put his points across (Fisher, 2018), so was not hindered in any discernible way by not being in the studio. Our intention was not to compare directly the effectiveness of the two speakers. Rather, the involvement of two speakers with significantly different views and with different genders and contexts, which is often found in real-world
news interviews, met our interest in contested discourse. It also allowed a wider range of discourse devices (e.g. lexical choice, tone of voice, rhetorical devices) to be included. The extract was 1 minute 32 seconds and was a single, continuous extract from the full item which lasted 9 minutes 32 seconds.

Survey Instrument

The instrument consisted of a brief introduction including stating the topic of the survey as ‘attitudes to sugary drinks’. Explicit mention of the Sugar Tax was not made at this stage to avoid priming participants. The survey started with demographic and introductory questions, including their attitudes to sugar and calorie intake and their frequency of buying and consuming sugary soft drinks. They were then asked if they were aware of the Sugar Tax and if they supported it (yes/not sure/no).

Participants were then asked to watch the video extract. A test question was administered to ensure that only those that had watched the video were able to proceed. Those proceeding were asked to rate multiple items relating to discourse devices, message and speaker credibility, how the video had helped their understanding of the issue, and impact on their attitude to buying and consuming sugary drinks. More details of these are provided in the Measures section below. Those not answering the check question correctly were not included in the sample count or in the analysis. Pre-testing of the survey instrument was undertaken iteratively by eight individuals with a spread of gender and ages.

Measures

All items used are shown in the Appendix. Where possible, scales from extant studies were used to measure variables.
**Discourse Devices.** An initial discourse analysis of the video extract was undertaken by the research team. This identified a wide range of discourse devices such as the use of metaphor, standard or ‘known’ arguments which Aristotle calls *topos* (Kennedy, 1991 p. 45) and presentational cues to create persuasive meaning such as adopting a louder or softer tone of voice. Eight devices (see Table A in the appendix) spanning the range of those observed were presented to participants who were asked to rate how effective each one was in helping them understand or think more about the Sugar Tax on a 5-point Likert scale (1=very ineffective, 5=very effective).

**Message credibility** of two messages from the extract, pre-identified by the research team, was measured using five items (see Table B in the appendix) and five-point semantic differential scales from a previous study (Roberts, 2010). Consistent with debates about the effects of message framing (Keller et al., 2003), message 1 was positively/gain-framed: ‘Government intervention can reduce obesity’ and message 2 was negatively/loss-framed: ‘Government should not tell us what to eat and drink’.

**Speaker credibility** was rated separately for speakers 1 and 2 and measured with five items, such as ‘knowledgeable/unknowledgeable’ (see Table C in the appendix), from pre-existing scales (Roberts, 2010) using five-point semantic differential scales. We are aware that the speakers differed according to a number of characteristics including gender, attitude to sugar tax and location (in studio/remote) that cannot be separated in our study. This intersection reflects the real-world nature of such debates and the complexities that viewers must typically process.
**Perceived Improved Understanding.** For parsimony participants were not pretested on their understanding of the sugar tax. Instead they were asked if they thought the debate helped their understanding, leading to a measure of perceived improved understanding. This was measured by presenting three items on five-point semantic differential scales (see Table D in the appendix), for example ‘disagreement between experts helps/does not help me understand the issue’.

**Perceived Attitude Change** was cast as positive when the intention was to reduce the consumption of sugary drinks. Similar to perceived improved understanding, for parsimony, participants were not tested on actual attitude change. Rather their perception of attitude change was measured by presenting two items (see Table D in the appendix), for example ‘I will/will not be more careful about drinking sugary drinks’ on five-point semantic differential scales. The intentional tone of the wording such as ‘will be more careful’ was chosen to capture the nature of attitude as a ‘predisposition’ (Rokeach, 1968, p.112)

A number of control variables were included in the analysis. **Involvement** was measured as a 3-category variable, support for the Sugar Tax (yes/not sure/no), which was asked prior to watching the video extract. Demographic information controls included gender (male/female) and age (18-30 years, 31-60 years, over 60). Testing using other control variables: education and having children under 18 was undertaken but these were not significant.

**Sample**

The survey was administered by a commercial online consumer research panel company similar to the approach used by recent studies (Mason and Suri, 2012; Buhrmester et al.,
In contrast to other studies it did not rely on student participants (e.g. McDermott and Lachlan, 2020) and hence reflects a range of ages and other socio-demographic factors more representative of the UK population. Participants were financially compensated based upon the estimated time that was required (12 minutes). Selection criteria required that participants must be resident in the UK (since we were exploring a UK health policy) and be over the age of 18. Two outline quotas were included: the sample should be approximately balanced between males and females and across three age groups (18-30 years, 31-60 years, over 60).

Measurement of non-response bias is difficult when using such commercial panels. In total 1,870 people started the survey. Of these 855 watched the video, answered the check question correctly and answered the majority of the rest of the questionnaire. This corresponds to a completion rate of 47%. A statistical comparison of those who dropped out of the questionnaire at the video compared to those who completed the questionnaire was undertaken and showed a small difference across gender and age. However, the quotas included in the sample design ensured that there was an acceptable balance across these categories in final completions (see Table 1). For the non-quota category, support for the Sugar Tax (chi-square=13.542, df=2, p=0.001) more of those that supported the Sugar Tax completed the survey. Differences from expected counts were small at about 15 participants, suggesting that the data were acceptable for further analysis. Descriptive statistics of the sample that completed the survey are provided in Table 1.

There were slightly more females (57%) than males (43%) in the sample. There were slightly more participants, aged 18-30 years (41%), with the remainder split evenly between the older categories of 31-60 years (30%) and over 60 years (29%). More participants were educated to degree level (40%) than to lower educational levels. Even this may underrepresent a graduate-like demographic as the largest age category was 18-30 years, and some participants
in this category would not yet have completed a degree. The majority of participants did not have children under the age of 18 (74%), likely reflecting the larger younger aged category and that children of older participants would be over 18. Just over half of participants supported the Sugar Tax (54%), with the remainder split between not supporting it (26%) or being unsure (20%).

Table 1: Descriptive statistics of the sample (N=855)

<table>
<thead>
<tr>
<th>Gender</th>
<th>Male</th>
<th>43%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Female</td>
<td>57%</td>
</tr>
<tr>
<td>Age</td>
<td>18-30</td>
<td>41%</td>
</tr>
<tr>
<td></td>
<td>31-60</td>
<td>30%</td>
</tr>
<tr>
<td></td>
<td>Over 60</td>
<td>29%</td>
</tr>
<tr>
<td>Highest Educational Qualification</td>
<td>University degree</td>
<td>40%</td>
</tr>
<tr>
<td></td>
<td>College or Further Education</td>
<td>22%</td>
</tr>
<tr>
<td></td>
<td>A levels/vocational level 3</td>
<td>17%</td>
</tr>
<tr>
<td></td>
<td>GCSEs/ vocational level 1 &amp; 2</td>
<td>21%</td>
</tr>
<tr>
<td>Have children under 18</td>
<td>Yes</td>
<td>26%</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>74%</td>
</tr>
<tr>
<td>How often do you drink fizzy or sugary soft drinks (excluding fruit juice)</td>
<td>Never</td>
<td>11%</td>
</tr>
<tr>
<td></td>
<td>Occasionally</td>
<td>38%</td>
</tr>
<tr>
<td></td>
<td>Few times a month</td>
<td>23%</td>
</tr>
<tr>
<td></td>
<td>Every day</td>
<td>14%</td>
</tr>
<tr>
<td></td>
<td>Only drink diet or zero sugar varieties</td>
<td>14%</td>
</tr>
<tr>
<td>Support for the Sugar Tax</td>
<td>Yes</td>
<td>54%</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>26%</td>
</tr>
<tr>
<td></td>
<td>Not sure</td>
<td>20%</td>
</tr>
</tbody>
</table>

Statistical Analysis
Exploratory factor analysis (EFA) using SPSS was undertaken on the whole sample to explore item loadings on latent variables. Extraction method used was principal component analysis and rotation method was Oblimin with Kaiser Normalization, with rotation converging in 5 iterations or fewer (see Appendix). Identification of number of factors in EFA is recognised as a balance of statistical, theoretical and pragmatic judgement (Pallant, 2013). The number of factors was therefore not fixed, but was based on a balance of criteria that included (in approximate order of precedence): Kaiser’s criterion, examination of scree plot and % of total variation explained, loading of at least 2 items on each factor. This resulted in 2 factor solutions for Discourse Devices (Appendix: Table A) and Outcome Measures (Appendix: Table D) and single factor solutions for Messages 1 and 2 (Appendix: Table B) and Speaker 1 and 2 Credibility (Appendix: Table C). Percentage of variation explained was high (between 50-60%) for all factors except Message 1 and 2 (20%). The two factors for Discourse Devices were termed a) argument related and b) debate/speaker related discourse devices (discussed further in the Findings section). These were tested separately for H1 (reported as H1a and H1b) and both were included, but as separate factors in the SEM to test H4 (reported as H4a and H4b).

Prior to undertaking the main SEM, hypotheses H1 – H3 of direct effects were tested separately using simple linear regression in SPSS (version 27) (Pallant, 2013). Factors created from the EFA were used as the independent and dependent variables. The mediated hypotheses, H4 and H5 were tested together in a single mediated structural equation model (SEM) using MPlus (version 8) (Geiser, 2012; Kelloway, 2014). Guided by the item loadings from our EFA, the original items, rather than the composite factors, were included in the SEM in order to eliminate item-specific measurement error (Stride, 2020). Latent variables were allowed to correlate with each other. Control variables of support for Sugar
Tax (represented by two dummy variables) age and gender were applied to all factors in the model. For the structural model Chi-sq=1657 df=479 p<0.000, RMSEA=0.053, CFI=0.912 and SRMR=0.119, which are consistent with guidance for good model fit (Hu and Bentler, 1999).

Findings

**Distinction between types of Discourse Devices**

The effectiveness of discourse devices produced two distinct factors indicating that participants recognised them as distinct. The first factor included 2 items: providing examples (such as the introduction of the Sugar Tax in other countries) and ‘known’ arguments (such as consumption taxes impact poorer members of society more). We term this first factor ‘argument-related discourse devices’. The second factor included 5 items: the tone of voice adopted by each speaker (two items), that opposing views were presented, that the presenter challenged the speakers and that they had different areas of expertise. These are more related to the debate format and the personal performance and characteristics of the speakers and hence we term these ‘debate-/speaker-related discourse devices’. These two types of discourse devices are consistent, respectively, with the Aristotelian distinction between inartistic and artistic proofs used by classical orators (Kennedy, 1991) and with Alaszewski and Brown (2012)’s authoritativeness and authenticity as sources of legitimacy.

As shown in Table 2, when tested separately both argument-related discourse devices and debate-/speaker-related discourse devices are positively associated with perceived improved understanding (H1a,b). Similarly, message and speaker credibility, for messages 1 and 2 and speakers 1 and 2 (H2a,b,c,d) are positively associated with perceived improved
understanding. Also, perceived improved understanding is associated with perceived attitude change (H3).

Table 2: Summary of regression analysis and support for hypotheses H1 – H3

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Beta</th>
<th>Sig</th>
<th>R squared</th>
<th>F</th>
<th>Sig</th>
<th>Support for Hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Direct Effects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H1a</td>
<td>Effectiveness of argument-related discourse devices → Perceived improved understanding</td>
<td>0.349</td>
<td>&lt;.001</td>
<td>0.121</td>
<td>117.938</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>H1b</td>
<td>Effectiveness of debate-speaker-related discourse devices → Perceived improved understanding</td>
<td>0.454</td>
<td>&lt;.001</td>
<td>0.207</td>
<td>222.640</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>H2a</td>
<td>Message 1 credibility → Perceived improved understanding</td>
<td>0.565</td>
<td>&lt;.001</td>
<td>0.319</td>
<td>392.648</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>H2b</td>
<td>Message 2 credibility → Perceived improved understanding</td>
<td>0.258</td>
<td>&lt;.001</td>
<td>0.067</td>
<td>60.411</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>H2c</td>
<td>Speaker 1 credibility → Perceived improved understanding</td>
<td>0.094</td>
<td>0.006</td>
<td>0.009</td>
<td>7.605</td>
<td>0.006</td>
</tr>
<tr>
<td>H2d</td>
<td>Speaker 2 credibility → Perceived improved understanding</td>
<td>0.412</td>
<td>&lt;.001</td>
<td>0.17</td>
<td>175.094</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>H3</td>
<td>Perceived improved understanding → Perceived attitude change</td>
<td>0.378</td>
<td>&lt;.001</td>
<td>0.143</td>
<td>142.368</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

**Impact of Discourse on Perceived Attitude Change**

Table 3 shows that the SEM analysis with all variables included at the same time produces a more nuanced pattern of mediated and direct influences of discourse on perceived attitude change. These findings are summarised in Figure 3.
Argument related discourse devices are found to have only a direct relationship with perceived attitude change (H4a). In contrast, debate/speaker related discourse devices are found to have no direct relationship with perceived attitude change; rather the relationship is fully mediated by perceived improved understanding. This indicates that these two groups of discourse devices appear to act very differently, which will be explored further in the Discussion section. Perceived improved understanding is found to partially mediate the relationship between message 1 credibility and perceived attitude change (H5a) and speaker 2 credibility and perceived attitude change (H5c). However, perceived improved understanding is found to fully mediate the relationship between message 2 credibility and perceived attitude change (H5b) suggesting a difference in how the messages were elaborated by participants.

Table 3: Summary of SEM coefficients and support for hypotheses H4 – H5

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Constructs</th>
<th>Beta</th>
<th>p-value</th>
<th>Support for Hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mediated Effects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H4a</td>
<td>Argument-related discourse devices → Perceived attitude change (via Perceived improved understanding)</td>
<td>-</td>
<td>0.176</td>
<td>Rejected</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.022</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Argument-related discourse devices → Perceived attitude change (direct)</td>
<td>0.177</td>
<td>0.036</td>
<td>Accepted</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&gt; No mediation, direct effect only</td>
</tr>
<tr>
<td>H4b</td>
<td>Debate-/speaker-related discourse devices → Perceived attitude change (via Perceived improved understanding)</td>
<td>0.077</td>
<td>0.013</td>
<td>Accepted</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Debate-/speaker-related discourse devices → Perceived attitude change (direct)</td>
<td>0.120</td>
<td>0.188</td>
<td>Rejected</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&gt; Full mediation</td>
</tr>
<tr>
<td>H5a</td>
<td>Message 1 credibility → Perceived attitude change (via Perceived improved understanding)</td>
<td>0.032</td>
<td>0.014</td>
<td>Accepted</td>
</tr>
</tbody>
</table>
Message 1 credibility → Perceived attitude change (direct) 0.385 0.000 Accepted
- Partial mediation

H5b Message 2 credibility → Perceived attitude change (via Perceived improved understanding) 0.022 0.047 Accepted
Message 2 credibility → Perceived attitude change (direct) 0.006 0.893 Rejected
- Full mediation

H5c Speaker 2 credibility → Perceived attitude change (via Perceived improved understanding) 0.029 0.030 Accepted
Speaker 2 credibility → Perceived attitude change (direct) 0.135 0.006 Accepted
- Partial mediation

Figure 3: Structural relationships taken from Table 3. Showing significant paths only *p<0.0; **p<0.05; ***p<0.005
Effects of Message Credibility

Whilst effects of both messages were mediated through perceived improved understanding, message 1: ‘Government intervention can reduce obesity’ also had a direct positive association with perceived attitude change, whilst message 2: ‘Government should not tell us what to eat and drink’ did not. The direct relationship between message 1 and perceived attitude change, suggests that message 1 was easily recognised and did not need to be cognitively processed beyond such recognition. Message 2 appeared to be less well recognised and required more explicit processing.

Effects of Speaker Credibility

The credibility of speaker 2 had a mediated relationship with perceived attitude change, but also a larger direct relationship. This suggests that her contributions did not improve understanding much but did influence perceived attitude change. She adopted a calm and measured tone, speaking more slowly than speaker 1, and had a balanced rhetorical style, for example, agreeing with the presenter and speaker 1, despite their repeated challenges. The credibility of speaker 1 was not found to be significantly associated with perceived attitude change, either directly or indirectly. In contrast to speaker 2, he adopted a firm tone, spoke more rapidly and showed no agreement with either the other speaker or presenter in order to purposefully position himself as a contrarian.

Discussion
We first note the difference between the results of the simple individual regressions (H1 – H3), which indicated positive associations between all variables tested. In contrast, the simultaneous inclusion of variables in the SEM to test H4 and H5, which more closely reflects the complexity experienced by viewers of the debate, resulted in more nuanced relationships.

Debate-/speaker-related discourse devices were found to act indirectly through perceived improved understanding suggesting that debate-/speaker-related discourse devices may act in a similar way to the central processing route identified in the ELM. That is, participants processed, or elaborated, the effectiveness of these devices and based upon the outcome of that processing, perceived the likelihood of attitude change. In contrast, the argument-related discourse devices appear more akin to the peripheral route to attitudinal change. That is, rather than require explicit cognitive processing to determine their effectiveness, they appear to be treated as cues that reduce the need for cognitive processing. Control for level of support for the Sugar Tax was applied to predictors, mediator and outcome variables. Hence this effect of the different routes to perceived attitude change of debate/speaker and argument-related discourse devices is independent of levels of support for the tax.

At first sight our findings appear contrary to what might be expected from the central/peripheral distinction made by the ELM. As we have discussed, consistent with the notion of authenticity (Alaszewski and Brown, 2012), our debate-/speaker-related discourse devices relate to aspects associated with the debate format and the speakers themselves. However, previous studies have designated attributes of the speakers as cues and linked them to peripheral processing. Our study suggests that the argument-related discourse devices, appear to act more like cues and require less cognitive processing. This apparent
contradiction can be resolved when it is considered that argument-related discourse devices include providing examples and citing known arguments. It would appear that viewers were prepared to accept these at face value. In contrast, the debate-/speaker-related discourse devices including the contested debate format, different areas of expertise and tone of voice required greater cognitive processing. The central processing route has been associated with more lasting behaviour change, due to the cognitive activity involved (Petty and Cacioppo, 1986a; Petty et al., 1997). Drawing on this, our findings suggest that debate-/speaker-related discourse devices will be associated with greater perceived attitude change than argument-related discourse devices, suggesting that authenticity may contribute to more durable perceived attitude change than authority, providing support for proponents of authentic communication (Gass and Seiter, 2018; Cotten, 2017).

One possible explanation for this effect from the present study is that it occurred within the genre of a news debate where part of the cognitive task of an audience member was to judge the relative merits of the two individuals on different sides of the argument, not just the arguments themselves. Most use of attitude change models has been in advertising, which typically features a single line of persuasive communication from a unitary point of view. The need to interpret and use the information provided by cues might well be greater in a debate. A viewer broadly familiar with known arguments, and perhaps taking for granted the validity of examples cited by the speakers, might be expected to expend more cognitive effort on evaluating the information uniquely available to them from the speakers’ self-presentation and the interaction between the two speakers and the interviewer, and hence result in perceived improved understanding and perceived attitude change.
Conclusions

Discourse studies tend to be the preserve of experts trained in specialist techniques such as conversation analysis, interactional sociolinguistics or critical discourse studies (Tannen et al., 2015). Our survey that included discourse devices identified through an interpretive analysis of a real-world contested news debate, allowed a large sample of ‘lay’ participants to evaluate a range of devices, and allowed us to answer a call to bring together interpretive and positivist approaches (Wang, 2021). We show that, despite the complexity of the real-world discourse they were asked to consider, participants distinguished between ‘argument-related discourse devices’ and ‘debate-/speaker-related discourse devices’. We also found that these different types of discourse devices were differentially related to perceived attitude change. Contrary to what might be expected, debate-/speaker-related discourse devices, which might be thought of as subjective or emotional, appear to act through a cognitive processing route that involves perceived improved understanding. In contrast, the argument-related discourse devices, which may appear objective or rational, appear to require less cognitive processing and are directly associated with perceived attitude change.

Our study suggests the following practical implications. Health threats are newsworthy, and frequently polarising, with the global pandemic since 2020 providing some of the most extreme cases on record. Faced with continuing controversies about mask-wearing, social distancing, vaccine uptake and mutations of Covid, as well as new potential threats such as monkeypox, health communicators need to take full advantage of the news media to reach large audiences with their messages. Despite the confusion and misinformation sometimes spread by media in the name of ‘balance’, television news debates offer an indispensable platform. Our study shows that the contested debate format itself appears to aid perceived
improved understanding which is associated with perceived attitude change (here to the sugar tax, but potentially to other salutary 'burdens' such as mask wearing or social distancing). In order to leverage the characteristics of the debate format we recommend that health communicators should:

**R**apidly establish credibility in debates using cues such as tone, demeanour and balance  
**E**ngage with interviewers and other experts in ways that go beyond the adversarial use of conventional wisdom and well-known examples, since these do not appear to aid understanding  
**A**ccentuate positive messages (given the direct association with perceived attitude change we have observed for the positively framed Message 1)  
**L**earn to be comfortable with media debate as an occasion to be their relatable, authentic selves.

Together these precepts form the acronym REAL – boosting their memorability (and thus their usefulness in practice) and distilling the robust evidence our study provides for the importance of authentic communication. Whilst both types of discourse device play a role in attitude change, subjective or authenticity-based discourse devices are associated with the processing route of more enduring perceived attitude change. Similarly, the more measured and balanced discursive style of the speaker 2, which appeared authentic as it seemed to both add to and derive from her expertise, honesty and sincerity, was also directly associated with perceived attitude change. There would therefore appear to be much truth in the adage: *it’s not what you say, it’s the way that you say it*. It also reinforces the importance of *ethos*: ‘*character as it emerges in language*’ (Baumlin, 2001, p. 263) in communications of health messages argued for by Ihlen (2020). There is no simple prescription of what are appropriate
or effective debate-/speaker-related discourse devices. This will vary according to a person’s expertise, demeanour, the specific debate and wider context. However, by highlighting and exploring the role of discourse devices in producing perceived attitude change our research can help practitioners reflect on and explore their own authenticity.

Limitations and Future Research

The discourse studied was a televised debate between experts typical of media coverage of a complex health policy. Analysis of a single video extract cannot encompass the variation that can occur even within this genre, or across different genres. Rather than produce universal knowledge, we seek to generate insights through in-depth analysis of a specific, albeit typical, instance that can guide further analysis, theorising and contribute to a critical exposition of the range and role of discourse devices. We would encourage similar discourse-based analysis of other types of media coverage of real-world, challenging topics such as sustainability and climate change.

In the interests of length of survey instrument, we included only a limited number of discourse devices and outcome measures. Whilst we claim that we are democratising discourse analysis, we recognise that participants were presented with a sample of discourse devices that had been identified through prior analysis and selection by the researchers. This was a pragmatic approach to allow consistent responses from a large sample and statistical modelling. Future studies could allow respondents to identify discourse devices that were personally salient, which would be expected to identify a broader range of devices and may require more inductive, qualitative analysis. We also recognise that our study of a real-world
broadcast meant that there was intersectionality in some of our variables such as those relating to the speakers. Experimental studies would be required to isolate and compare the influences of characteristics such as gender, attitude to sugar tax and speaker location. However, whilst experimental studies are valuable, the scenarios shown to participants are simplified and do not reflect the complexity that viewers contend with in reality, suggesting the complementarity of experimental and real-world studies.

References


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Obesity Evidence Hub (2021), Countries that have implemented taxes on sugar-sweetened beverages (SSBs). Available at: https://www.obesityevidencehub.org.au/collections/prevention/countries-that-have-implemented-taxes-on-sugar-sweetened-beverages-ssbs#:~:text=About%2040%20countries%20have%20implemented,sugar%2Dsweetened%20beverages%20to%20date. [Accessed: 16 February 2021]


Sky_News (2016) The Debate: Is the sugar tax the right move? Available at: https://www.youtube.com/watch?v=eP3Ps0ixBOw


Appendix: Survey items and latent variable loadings

Table A: Discourse devices – items rated on 5 point Likert scale (very effective – very ineffective)

<table>
<thead>
<tr>
<th>Item</th>
<th>Loadings</th>
<th>Latent variable interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Being a debate between speakers with different views</td>
<td>.842</td>
<td>Debate-/speaker-related discourse devices</td>
</tr>
<tr>
<td>Presenter challenging the experts</td>
<td>.797</td>
<td></td>
</tr>
<tr>
<td>The experts being from different areas (economics versus nutrition)</td>
<td>.731</td>
<td></td>
</tr>
<tr>
<td>One expert using a soft tone</td>
<td>.728</td>
<td></td>
</tr>
<tr>
<td>One expert using a firm tone</td>
<td>.559</td>
<td></td>
</tr>
<tr>
<td>Speaker giving examples e.g. other countries with a Sugar Tax</td>
<td>.755</td>
<td>Argument-related discourse devices</td>
</tr>
<tr>
<td>The use of known arguments e.g. it will cost the poorest the most</td>
<td>.908</td>
<td>% of variance explained = 10.37</td>
</tr>
<tr>
<td>Mentioning official organisations such as Public Health England</td>
<td>.440 .409</td>
<td>Loaded equally onto both factors – not used in further analysis for parsimony</td>
</tr>
</tbody>
</table>

Total variance explained (%) 60.34

For all tables
Extraction Method: Principal Component Analysis. Rotation Method: Oblimin with Kaiser Normalization. Coefficients below 0.3 not shown

Table B: Message 1: Government intervention can reduce obesity and message 2: Government should not tell us what to eat and drink - items rated on 5-point semantic differential scale

<table>
<thead>
<tr>
<th>Item</th>
<th>Loadings</th>
<th>Latent variable interpretation</th>
<th>Loadings</th>
<th>Latent variable interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accurate</td>
<td>.862</td>
<td>Message1 credibility</td>
<td>.780</td>
<td>Message 2 credibility</td>
</tr>
<tr>
<td>Trusted</td>
<td>.895</td>
<td>% of variance explained =20.14</td>
<td>.836</td>
<td>% of variance explained =20.08</td>
</tr>
<tr>
<td>Believable</td>
<td>.857</td>
<td>.885</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete</td>
<td>.800</td>
<td>.817</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biased</td>
<td>.995</td>
<td>Not used – for parsimony</td>
<td>.998</td>
<td>Not used – for parsimony</td>
</tr>
</tbody>
</table>
### Table C: Speaker 1 and 2 credibility – items rated on 5-point semantic differential scale

<table>
<thead>
<tr>
<th>Item</th>
<th>Speaker 1 Loadings</th>
<th>Latent variable interpretation</th>
<th>Speaker 2 Loadings</th>
<th>Latent variable interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expert on taxes</td>
<td>.858</td>
<td>Not used – for parsimony</td>
<td>0.998</td>
<td>Not used – for parsimony</td>
</tr>
<tr>
<td>Expert on sugar in diet</td>
<td>.799</td>
<td></td>
<td>.807</td>
<td>Speaker 2 credibility</td>
</tr>
<tr>
<td>Knowledgeable</td>
<td>.530</td>
<td>Speaker 1 credibility</td>
<td>.886</td>
<td>% of variance explained=60.41</td>
</tr>
<tr>
<td>Honest</td>
<td>.944</td>
<td>% of variance explained=53.32</td>
<td>.879</td>
<td></td>
</tr>
<tr>
<td>Sincere</td>
<td>.918</td>
<td></td>
<td>.893</td>
<td></td>
</tr>
</tbody>
</table>

### Table D: Outcome measures – items rated on 5-point semantic differential scale

<table>
<thead>
<tr>
<th>Item</th>
<th>Loading</th>
<th>Latent variable interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>I will think more carefully about purchasing sugary drinks</td>
<td>.937</td>
<td>Perceived attitude change % of variance explained=46.59</td>
</tr>
<tr>
<td>I will be more careful about drinking sugary drinks</td>
<td>.919</td>
<td>% of variance explained=19.27</td>
</tr>
<tr>
<td>Disagreement between experts helps me understand the issue</td>
<td>.858</td>
<td>Perceived improved understanding</td>
</tr>
<tr>
<td>Hearing both sides clarifies the issue</td>
<td>.825</td>
<td>% of variance explained=19.27</td>
</tr>
<tr>
<td>Disagreement shows there are multiple solutions to the issue</td>
<td>.669</td>
<td></td>
</tr>
<tr>
<td>Total variance explained (%)</td>
<td></td>
<td>65.86</td>
</tr>
</tbody>
</table>
