

## The Sugar Tax Challenge Experimental Study

### Extended Work Package 2

#### **Overview:**

This study aims to inform adolescents and parents about the risks associated with SSB consumption, while also providing information on how to identify the condition and reduce consumption of SSBs. Previous research suggests that family norms and school environments influencing consumption behaviours (van der Horst, et al., 2007; Ezendam, et al., 2010; Verzeletti, et al., 2010; Hebden, et al., 2013; Macdiarmid, et al., 2015; Riebl (a), 2015; Hamilton & Wills, 2017; Scully, et al., 2017; van der Gaar, et al., 2017; Zahid, et al., 2017; Lundeen, et al., 2018; Timmermans, et al., 2018), while the use of health messages have been found to reduce consumption in a previous study (Rauba, et al., 2017). Therefore, we will test this intervention between three groups; on both parents and adolescent (group 1), adolescent on their own (group 2), and a control group (group 3 – no intervention), while identifying the socio-environmental influences of consumption at home (home availability, family beliefs, parental attitudes, parental practices, food control) and in school (peer normative behaviour, peer normative beliefs, peer normative expectations, peer modelling) and whether these can be changed through and educational messages, targeted at both parents/guardians and adolescents.

Furthermore, this intervention is designed to be utilised within the school environment, where students will be able to be directly involved in educating and influencing their peers, with minimum outside resources required. To do this, we have designed a piloting study, to test the information provided to the students and their comprehension of this information, as well as an additional 13-week programme called the Sugar Tax Challenge Experimental Study. The study will link with the Gaisce challenge areas, personal skill and community Involvement.

**Stages of development: Piloting the creation of the experiment (established before the conducting study).**

#### **Stage 1: Understanding the literature**

**Objective:** Test the comprehension of the literature used to create health messages.

**Method:** As part of the piloting process, have potential PALs present students with literature that will be used in the development of health messages on the association between SSB consumption and type 2 diabetes. Create an awareness questionnaire for students to fill out to gauge comprehension.

#### **Stage 2: Understanding the Protection Motivation Theory constructs**

**Objective:** Test the comprehension of the literature items selected in comparison with the components of the theory.

**Method:** As part of the piloting process, show potential Gaisce participants imagery and messages based on the components of protection motivation theory – severity of threat, probability of occurrence, response efficacy, and self-efficacy. Have them link each piece of imagery to one of the components. For example – “Those who consume SSBs twice weekly are 2.4 times more likely to develop type 2 Diabetes (probability of occurrence <- will not be shown on question). Please select which of the components of PMT this is linked to – give four options. Select the imagery that is most associated with each component and have participants create new (finalised) posters with this imagery.

### **Stage 3: Testing the creations**

**Objective:** Have students create posters for piloting

**Method:** Provide students with the information needed to create health messages. Have them distribute these messages to the pilot groups, and analysis outcome.

### **Experimental Study**

#### **Objectives, Methodology & Deliverables:**

Under the guidance of experienced researchers, participants in this programme will act as citizen scientists, creating educational/persuasive messages encourage a reduction of SSB consumption, as well as administering surveys designed to capture the socio-environmental information at a micro level (at home and in school) and psychological factors that influence the consumption of SSBs. However, this study will also aim to educate parents of students about a specific health issue associated with SSB consumption, type 2 diabetes, while providing information on how to respond to the treat of this condition and reducing consumption.

Participants will be randomly assigned into different treatment groups and exposed to messages designed in conjunction with Protection Motivation Theory (designed by the Gaisce researchers), that highlight the health-related issues of SSBs consumption (type 2 diabetes). Several psychological studies have found that socio-environmental determinants of SSB consumption, particularly parental influence. Therefore, we would like to investigate the influence of these messages on individual's intentions to reduce SSB consumption and check for signs of prediabetes (Boots free check), in three separate exposure groups; no exposure (control), adolescent exposure, and parents/guardian and adolescent exposure. Several psychological mechanisms will be measured in each group, for both adolescents and parents/guardians.

Finally, we will track and evaluate the attitude and behavioural changes in adolescents and their parents/guardians, measuring intention to consume SSBs and intention identifying signs of prediabetes. Below is a list of tasks citizen scientists will need to complete. See figure 3 for example of a poster with messages combining PMT components

#### **Task 1: Informing the citizen scientists**

**Objective:** The objective of the first task in the Gaisce programme is to inform the citizen scientists about the negative consequences of SSB consumption, specifically the association with type 2 diabetes, which will allow them to create anti-SSB consumption messages.

**Method:** Gaisce participants will be provided with carefully selected and pre-tested reading materials. The material will be tailored to the ability of the students, as this study is aimed at students from diverse backgrounds and education. This is followed by class discussions on the socio-environmental influences and health implications of SSB consumption.

#### **Task 2: Message creation**

**Objective:** Citizen scientists will be divided into groups, with each group being designated to create an anti-SSB message regarding its association with type 2 diabetes.

**Method:** In their groups, citizen scientists will each be given a carefully designed and pre-tested appraisal to inform their message by the UCD research team. Based on the provided stimulus material, students are then asked to translate the material into a specific message that highlight the detrimental

risks associated with SSB consumption and the probability of occurrence (Threat Appraisals); steps that can be taken to change SSB consumption behaviours and identify prediabetes (Coping Appraisal); or/motivational information that encourages behaviour change (Coping Appraisal). Posters/displays will be created via the free poster app on postermywall.com. Posters contents will be evaluated regarding message content (i.e. CA or TA focus) and will then be given to parents (hung up in kitchen) and displayed in selected classrooms for a period of two-weeks (group 1), or only displayed in school (group 2).

**Task 3:** Survey distribution and analysis

**Objective:** To gain an understanding of the psychological mechanisms that influence adolescents SSB consumption.

**Method:** Based on a review of the extant literature, a survey has been designed to measure the psychological mechanisms and socio-environmental that influence SSB consumption. Surveys will be administered to Gaisce participant's peers within their school and a second survey will be given for participants parents/guardians to fill out. These will include; Parent and adolescent (P+A) consumption rate, P+A knowledge of health issues and SSB links, P+A attitudes, subjective norms, and PBC, home and school availability of SSBs, physical activity, parental education level, sedentary behaviour and hours of sleep. The effects of the intervention will also be tested, by measuring consumption rates before and after, and intentions to consume SSBs before and after. Surveys will be administered a baseline (before display intervention) and 3-4 weeks after intervention.

**Task 4:** Transfer of data collected.

**Objective:** Allow students to develop their research skills as citizen scientists, in conjunction with the objectives of the Gaisce programme.

**Method:** Transfer observational data from primary data collection materials (paper format) to a digital format (excel). Additionally, depending on ability, citizen science will analyse descriptive data on the changes in the psychological measurements recorded. This information will not be used by UCD but is purely for Gaisce participants skill development.

**Task 5:** Presentation of skills developed.

**Objective:** Have students reflect on the work they have done and how it has benefited them going forward in their lives.

**Method:** Gaisce participants will be asked to keep a diary throughout the programme, documenting each step and the skills they have learned while completing it. At the 11<sup>th</sup>-12<sup>th</sup> week, participants will construct a reflective essay or presentation, highlighting these skills.

### **Impacts & Benefits**

This is an exploratory intervention with the aim of examining the effectiveness informative messages on the health implication of SSB consumption and recognising the environmental and psychological barriers that may affect its success. If initial results from this field study are promising, they can be preceded by more controlled lab-experiments to further verify the results. Additionally, if effective, this study has the potential to establish a citizen science healthy beverage consumption campaign.

For Gaisce participants, this multifaceted study has the potential to develop several key competencies and skills that are transferable to other areas in their lives. For example, some of the skills we envision participants developing are, critical thinking skills (through the creation of their essays, presentations and/or reflective pieces), experience conducting scientific research, team working skills (most aspects

of each project involve team work), problem solving, communication skills (written and presentation), and leadership skills.

### **The Research Team**

Professor Gerardine Doyle, UCD School of Business, Lead investigator.

Assoc Professor Marius Claudy, UCD School of Business, Co-Investigator.

Dr Shane O'Donnell, Post-doctoral Fellow, UCD Insight Centre for Data Analytics, Co-Investigator.

Dr Grace O'Malley, RCSI and Temple Street Children's University Hospital, Co-Investigator.

James O'Connor, Research Assistant UCD School of Business, Co-Investigator.

Sarah Browne PhD RD, RCSI, Snr Post-doctoral Researcher, Division of Population Health Science, Co-Investigator.