R U Different? A Social Norms Approach to Positive Intervention Impacting on Young People’s Tobacco Usage

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Abstract
A fundamental principle behind Social Norms theory is that reducing misperceptions can measurably affect the attitudes, perceptions and behaviours of young people. Further evidence suggests that some interventions may be more effective than others for achieving change. The main aim of this research was to assess whether or not increasing the number of interventions per programme can increase the level of impact. Another aim was to identify which interventions were the most effective overall. Data from 57 past programmes across two years was analysed. Each programme consisted of zero to fourteen interventions and baseline / repeat survey data. The area of focus for this research was the misperception of tobacco usage in Year 9 students. Baseline and repeat survey data was used to calculate the perception changes for each programme and the data was extracted from the question:

What percentage of students in your year group do you think don’t smoke at all?

The analysis consisted of the following methods:

- Comparison of Weighted Intervention Quantity vs. Perception Change
- Comparison of Low, Medium and High-Tier Programme Perception Changes
- Data Mining using Clustering

The study reveals two main findings: (i) Weighted Intervention Quantity and Perception Change were positively correlated indicating that a higher level of intervention results in higher impact. and (ii) Clustering the data provides visual confirmation that interventions which combine greater interaction and also engage parents tend to have the greatest impact on changes in perception.
**Introduction and Background**

In recent decades there has been a significant change in perceptions of and attitudes towards smoking and smokers within the UK, which has originated from a growing realisation of its negative impact on the individual and society (Fry et al., 2008). This reduced tolerance is in part due to the government adopting a more stringent position in respect of regulation and legislation (DH, 2011) and according to Amos et al., (2009) a more active approach in respect of prevention and cessation interventions. There is evidence that this active approach to control and management is reaping its rewards with a year on year decline in the smoking rates among adults (Milton, 2008) and despite the ‘drip down’ approach there has also been a similar pattern in the number of young people smoking (Amos et al., 2009; Croghan and Bromley, 2015; Milton, 2008 and NICE, 2010).

There is little doubt this is an encouraging trend that should be applauded, however, we should not lose sight of the daunting statistic that over 200,000 young people still embark on a smoking career every year (Health and Social Care Information Centre, 2013 and Hopkinson, 2013). This figure continues to be a worry as there is a significant body of evidence that highlights the fact that the vast majority of adult smokers started and established their pattern of smoking in their adolescence (Jackson et al., 2012 and Office for National Statistics, 2013) and as a multitude of writers such as Fry et al. (2008) and more latterly Croghan and Bromley (2015) state, the earlier this habit was established the greater the health risks are for the individual and the more resistant the addiction is to change later in life (Royal College of Physicians, 2010). The route young people follow to becoming what Chassin et al. (2000) describe as ‘stable smokers’ is
varied as the habit can be established in a few weeks or may take several years (Amos et al., 2009), but as both Jackson and Dickinson (2004) and Fidler et al. (2006) state, just one cigarette increases the risk of young people becoming addicted in later adolescence or even in adulthood compared to those who never experimented.

It is not only the route to becoming a smoker that is complicated but the reasons why young people become smokers also consist of a myriad of interrelated factors including self-efficacy (Ogden and Nicoll, 1997), attitudes and self-esteem (Goddard, 1990 and Pfau and Van Bockern, 1994). While others see socio-demographic and socio-economic factors (Ogden and Nicoll and Conrad et al., 1992) compound the picture with both gender and a need to look ‘cool’ (Conner et al., 2006; Owen and Bolling, 1995 and Plumridge et al., 2002). This complex picture relating to early onset and the reasons behind why young people become smokers lead to the conclusion that there is a need for a fresh approach to enable young people to either avoid smoking or to stop smoking. This view is supported by writers such as Crogan and Bromley (2015) who highlight the fact that there are only a handful of programmes worldwide that can evidence any impact on young people’s smoking behaviour.

They go further by stating that the majority of these programmes and services are off putting and lack relevance. Scholly (2005) adds further evidence to this view, suggesting that the majority of programmes adopt an approach that aims to “scare the health into people” or as they term it, use ‘health terrorism’. They suggest that programmes that focus on negative behaviours actually reinforce the perception that people are engaging in risky behaviours, which in turn encourages people with low-risk practices to escalate their behaviour. Scholly et al. (2005) advocate for health educators to adopt models of practice that take a polar view by reinforcing
low-risk practices rather than focusing on policies and actions to reduce the rate of high-risk behaviours in those people who are engaging in high-risk behaviours. This view is strengthened by Stigler et al. (2011) who have identified that the most effective programmes that aim to prevent and reduce young people's use of alcohol focus on; addressing social norms and develop resilience through interactive approaches.

There is a growing body of evidence that highlights the important role social norms play in the development of our behaviour (Dohnke et al., 2011; Echeverria et al., 2015; Elsey et al., 2015; Haines & Spear, 1996 and Scholly et al., 2005). Social Norms Theory (SNT) states that how we perceive the behaviour of others, which is often incorrect, influences how we behave (Berkowitz 2004 and Perkins 2003). Lapinski and Rimal (2005) explain that SNT relates to what they describe as ‘descriptive norms’, which are beliefs about what is actually done and ‘injunctive norms’ that relate to what ought to be done. The difference between actual and perceived behaviour is described as ‘pluralistic ignorance’ and it is as a result of this that we change our behaviour (Berkowitz, 2004; Brown et al. 2010; McAlaney et al., 2011 and Perkins 2003). When this relates to a misconception of our peers’ engagement with ‘risky behaviours’ there is a significant risk that we will engage in that behaviour.

Approaches that draw on this theory address this ‘pluralistic ignorance’ through the provision of positive health messages that depict the true norm (Scholly et al., 2005). SNT gained popularity during the late 1980’s and 90’s through the work of Perkins and Berkowitz (Berkowitz, 1997; Perkins, 1995, 1997; Perkins and Berkowitz, 1986; Perkins et al., 1999 and Perkins and Wechsler, 1996). The vast majority of this work focused on college students’ use of alcohol in the USA. Its application has since been extended to other risky behaviours such as sexual
health (Scholly, 2005) and smoking (Elsey et al., 2015 and Echeverria et al., 2015). Despite this growing body of evidence there is little work that explores the effectiveness of different SNT strategies on young people’s engagement with risky behaviours such as smoking. This paper represents a starting point in that journey.

In summary there is evidence showing that SNT can have an impact in changing the perception and behaviour of young people, primarily with regards to alcohol consumption. We have also found that some interventions can have more or less impact than others, for example web-based feedback has been shown to be more successful in positively changing behaviour in alcohol consumption compared to other intervention programmes such as: group or individual face-to-face feedback (Cochrane 2009).
Study Aims and Objectives

Social Sense’s R U Different? programme uses the Social Norms approach to help reduce misperceptions and positively change behaviour with a primary focus on Alcohol and Tobacco usage. The programme is the largest of its kind in the UK and its target audience is 13-18 year olds. Each intervention programme usually consists of a combination of one or more interventions. A typical programme includes a baseline survey, followed by interventions and repeat survey. Typical interventions include:

- Interactive Feedback Assemblies
- Bespoke Message Posters
- Enterprise Day / Sessions

The primary aim of this study is to explore the impact of the R U Different? programme on changing young people’s perceptions, attitudes and behaviours in relation to smoking. Given this aim, the objectives are:

- To clarify if young people misperceive their peer’s use of cigarettes
- To evaluate the extent of positive impact of multiple interventions on young people’s perceptions
- To identify if certain types of combinations / higher levels of Interactivity are likely to result in higher impacts versus control / low intervention samples
Methodology

Developed by Social Sense, the R U Different? programme is a novel approach to engaging with young people through a fusion of established Social Norms methods and modern Social Marketing techniques. Since its inception, the R U Different? programme has received over 700,000 responses across schools in the UK (Long, et al. 2012). Like many other Social Norms programmes before it, R U Different? consists of three main phases: initial baseline survey, intervention(s) and repeat survey. Below, each phase is expanded on in further detail. As the programme has developed, the focus has been refined in respect of the level of consultation, interaction and engagement with young people. This paper will explore the different levels of intervention across 57 programmes from 2013 to 2015.

Baseline Survey

Every school received a baseline survey consisting of 50 questions (of a possible 150) exploring young people's actual behaviour and their perception of other people’s behaviour in respect of alcohol, smoking and sexual health. The results of the baseline are shared with the school and a strategy of intervention is agreed based on the opportunities for improvement. The range of interventions (see Appendix 1) agreed is based on several factors including timing, budget and baseline results. Following the interventions phase, a requirement of the project is that all schools should repeat the survey. The aim is to measure change (or delay) in perception and behaviour as a result of the actions undertaken during the intervention phase. In terms of ethical clearance, parents are given the right to decline the involvement of their children from the programme.
Students are also advised that they have the right to reject the invitation to be involved. It is explained that the survey is totally anonymous and all data collected is stored on a secure database.
Data Analysis

To assess if interventions had an impact, the change in perception and a measure reflecting the combined level of interventions are computed and then plotted to see if there is a positive trend.

The measure used to assess the change in perception is simply the relative difference between the pre and post interventions:

\[
Change = 100 \cdot \frac{Perception_{New} - Perception_{Old}}{Perception_{Old}} \quad \text{eq. (1)}
\]

Different types of intervention have been used, varying from passive interventions such as posters to more engaging (active) interventions including interactive assemblies and enterprise days. To reflect this, the measure used to compute the total level of interventions takes the weighted form:

\[
Intervention \, Level = \sum_{k=1}^{n} w_k i_k \quad \text{eq. (2)}
\]

Where \( w_k \) is the weight associated with the kth intervention and \( i_k \) is either 0 or 1 depending on whether the kth intervention was used. In assessing the weight, it seems reasonable to assume that active interventions should carry a greater weight than passive interventions. Hence, for simplicity we adopt a weight of 1 for passive interventions and a weight of 2 for active interventions. Figure 1 plots the level of intervention against the difference in perception, showing that there is positive trend.
To examine if there was a pattern in terms of low, medium and high levels of interventions and their resulting impact, we first needed to attempt to quantify these terms. Although different definitions are possible, it is reasonable to suggest that one active intervention or two passive interventions could be classed as low, and interventions totalling eight points or more could be classed as high, with the rest considered medium level intervention. For the purpose of this study, schools receiving no interventions are in the low category. Table 1 summarises the category of intervention based on the cumulative value of the intervention.
<table>
<thead>
<tr>
<th>Category</th>
<th>Boundary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Points &lt; 3</td>
</tr>
<tr>
<td>Medium</td>
<td>3 &lt;= Points &lt; 8</td>
</tr>
<tr>
<td>High</td>
<td>Points &gt;= 8</td>
</tr>
</tbody>
</table>

Table 1. Boundaries for categorising predicted low, medium and high-impact programmes

Given these definitions, we can compute the average difference in perception for each group, resulting in Table 2. These results show that there is a positive correlation between the level of intervention and improvement in perceptions. Even the low level of interventions shows some evidence of delay in the face of rising awareness of peer behaviour associated with growth in adolescence. Overall, the results show that there are step improvements in perceptions as one progresses from low to high levels of intervention.

<table>
<thead>
<tr>
<th>Intervention Level</th>
<th>Average (%)</th>
<th>Instances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>-0.31</td>
<td>10</td>
</tr>
<tr>
<td>Medium</td>
<td>2.44</td>
<td>23</td>
</tr>
<tr>
<td>High</td>
<td>4.29</td>
<td>24</td>
</tr>
</tbody>
</table>

Table 2. Average perception change for predicted low, medium and high-impact programmes

As a final exercise, we attempted to use various data mining methods, including decision tree induction, association rule mining and clustering methods to see if they could reveal interesting patterns. Of these, the use of clustering produced the most interesting results for visualising patterns. The method of clustering used is known as Self Organising Maps (SOMs), which are a type of neural networks first developed by Kohonen (1990, 2001) and can result in mapping of data onto a two-dimensional space of nodes that are typically organised in a rectangular or
hexagonal grid. The specific version of SOMs that we use is a variation known as X-Y fused maps that clusters the features X and relates them to clusters that represent the dependent variable Y (Wehrens, 2011). Given the aim of this study, the interventions correspond naturally to the features X and the change in perception corresponds to the dependent variable.

Figure 2 presents the resulting clusters in a visual form, with the clusters on the left showing the characteristics (X) and the clusters on the right showing the level of impact made (Y).

![Figure 2: Clusters of interventions and their impact on perceptions](image)

Thus the triangle of three clusters on the right (one on the top row and two on the bottom) show the combination of characteristics leading to the greatest improvement in perception while the triangle on the left shows minimal benefits. In all three high-impact clusters there is generally medium to high importance and presence of Interactive Feedback Assemblies as well as both parent-focused activities. The cluster on the bottom right also highlights the importance of bespoke message posters, photography of students, picture links and newsletters to parents.
Discussion

Results have shown that SNT is an effective way to achieve positive perception change within young people. Findings from this study not only further validate the effectiveness of SNT but also demonstrate that using a higher quantity and range of interventions can improve results. The use of clusters also reveals interesting patterns surrounding the importance of engaging parents (see Figure 2). This is supported by several previous studies, including a recent parent perception campaign in Halton (Alcohol Education Trust, 20).

The primary purpose of this study was to explore the impact of SNT on the smoking habits of young people through a range of interventions. The results from the surveys within this study clearly support those of Echeverria et al. (2015) and Elsey et al. (2015) in that there is a measurable misperception between young people’s beliefs of the number of smokers in their peer group against the actual number of young people who identify themselves as smokers. It also appears to support the findings of other studies that explore the impact of social norms on the perceptions of young people on others’ engagement with risky behaviours. Scholly et al. (2005) highlights a similar disparity in perceptions against reality in respect of sexual behaviour and Lightowlers et al. (2009) demonstrates that young people significantly overestimate their peers’ consumption of alcohol compared to their own.

This adds to the growing body of evidence that supports the theories presented by Berkowitz (2004) and Perkins (2003). Berkowitz and Perkins highlight within the theory that the presence of misperceptions leads to an increased risk in behavioural uptake. Having already established that interventions can have an impact on addressing these misperceptions, a key objective was to establish whether it is the quantity or ‘ownership’ of interventions - e.g. whether the message
was delivered peer to peer or by adults - that has the greatest impact. The notion of achieving impact through more active youth-led participation in terms of message formulation and delivery (e.g. Enterprise Days) resonates with the work of Banerjee and Greene (2007) and their study of two different interventions on young people’s intention to smoke.

The intervention group was divided into two different samples. The first were participants discussing and analysing cigarette and antismoking ads and the second group analysed and then created their own anti-smoking ads. The analysis and production workshop was generally the more successful. There was, however, no difference in respect of the young people’s subjective norms with both demonstrating a clear impact on their perception of smoking. An interesting aspect of any intervention is the degree to which an intervention has impacted on the perceptions.

Our final objective was to analyse the effectiveness of the intervention activities in combination, and to determine whether or not if it was possible to identify single or groups of interventions which were more likely to result in a high-impact outcome. To achieve high impact, results generally favoured a healthy balance of activities. Sharing feedback to parents in the form of a newsletter also seemed very effective, suggesting that the intervention had been an effective stimulant for further discussion at home. Demonstrably effective were also activities with a significant interactive component, primarily the Interactive Feedback Assembly and the Enterprise Session. Feedback using the Results! App’ also stood out as significant. Bewick et al. (2008) and Moreira et al. (2009) reported similar findings with regards to reducing alcohol misuse in that Web / Computer feedback was overall the most successful intervention. This is possibly due to the continuing growth of home internet access as well as the smartphone
overtaking the laptop as the most widely owned internet-enabled device (Ofcom, 2015) allowing
for better portability when using the internet on the go.

There is some evidence to support predictive modeling as a viable option for social ROI
however there is clearly further research required. Looking at the dataset it’s clear that there
were some limitations. R U Different? was not designed with ‘control’ schools in mind therefore
we were unable to reliably measure the impact of schools receiving no intervention as the
‘control’ sample only consisted of four programmes. However, the impact was still measured
and the result was approximately -4% which indicates a possible significant negative change in
perception. With that said, a pure ‘control’ sample is near impossible to achieve in such studies
due to the other messages young people receive at schools, via social media and others
offering varied approaches. There is always exposure to messages surrounding risk taking
behaviour. Other limitations included the inability to track participant responses between
surveys, affecting the overall accuracy of the results as well as inconsistent sample sizes
between surveys.
Conclusion

From past evidence we can clearly see that misperceptions exist within young people. They also demonstrate that it is possible to evidence change in perceptions through the presence of social norms interventions. Where this study begins to break new ground is in the almost predictable recording of improvements in perception change based on combined quantity and weighting of interventions. The results clearly demonstrate a correlation of positive perception change with higher intervention scores indicating that higher intervention is likely to result in higher positive impact. Finally, results from clustering the data suggest that certain combinations of interventions are more effective than isolated activities. The characteristics most prominent in the effective clusters include the Interactive Feedback Assembly, Bespoke posters, Enterprise Days, Results! Parents App’ and Newsletter to Parents are key activities for achieving high impact as they all have medium to strong presence in all high-impact clusters.

This implies that involving parents in the intervention process is facilitating conversation with their children and is making a difference. The main limitations of this study included a small ‘control’ sample which made it difficult to reliably measure the impact of schools receiving no intervention and the inability to track participant responses between surveys which would have affected overall accuracy. For future studies, Social Sense is looking at increasing the ‘control’ sample by having more schools take part in the baseline and repeat surveys only. Future work will also study the relationship between reported and intended behaviour and aim to develop a predictive model for perceptions and their impact on behaviours.
References


Appendix 1: Interventions

A meeting is held with the Local Authority / School(s) and based on the findings from the initial survey and budget requirements, a group of intervention activities are chosen to be held at the various schools. The full list of intervention activities are below.

Interaction Feedback Sessions

Most schools engaging the programme use the Interactive Feedback Session as a starting point to feedback results to their students.

Message Posters

Message posters are a simple way of promoting the positive messages from the results and can be displayed anywhere around the school.

Student Photography Posters

Student Photography Posters are a step above the more generic Message Posters as the students are more involved in the process.

Railing Banners

Railing banners are a way of engaging parents and visitors coming in and out of the school.

Enterprise Days / Sessions

The sessions invite students to create campaign ideas to celebrate the results they have received in the survey, specific to their school.

QR Code Posters

Posters that contain QR (Quick Response) codes can be scanned by mobile phones for instant feedback.

The Results! App’
This mobile app' quiz invites parents/carers to challenge their own previously held misperceptions. This can also be used by students to feedback results from their own year's survey.

**Printed Newsletters to Parents**

A traditional alternative to the above, the printed newsletter offers parents the opportunity to discuss results with young people and feeds back to parents the positive messages from the school.

**Digital Signage and Screensavers**

Digital signage is a form of electronic display and allows for 2 messages to alternate on any digital screens you have around the school.

**Roll Up Banners**

A larger version of the message posters, roll up banners can also be utilised to promote apps
Appendix 2: Table of Weightings

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Interaction</th>
<th>Point(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Photography of Students</td>
<td>Active</td>
<td>2</td>
</tr>
<tr>
<td>Bespoke Message Posters</td>
<td>Passive</td>
<td>1</td>
</tr>
<tr>
<td>QR Code Posters</td>
<td>Passive</td>
<td>1</td>
</tr>
<tr>
<td>Results! Student App.</td>
<td>Active</td>
<td>2</td>
</tr>
<tr>
<td>Results! Parents App.</td>
<td>Active</td>
<td>2</td>
</tr>
<tr>
<td>Interactive Feedback Assemblies</td>
<td>Active</td>
<td>2</td>
</tr>
<tr>
<td>Full Enterprise Days</td>
<td>Active</td>
<td>2</td>
</tr>
<tr>
<td>Developed Enterprise Campaigns</td>
<td>Active</td>
<td>2</td>
</tr>
<tr>
<td>Digital Signage</td>
<td>Passive</td>
<td>1</td>
</tr>
<tr>
<td>Screen Savers</td>
<td>Passive</td>
<td>1</td>
</tr>
<tr>
<td>Roll-Up Banners</td>
<td>Passive</td>
<td>1</td>
</tr>
<tr>
<td>Railing Banner</td>
<td>Passive</td>
<td>1</td>
</tr>
<tr>
<td>Website Picture Links</td>
<td>Passive</td>
<td>1</td>
</tr>
<tr>
<td>Newsletters to Parents</td>
<td>Passive</td>
<td>1</td>
</tr>
</tbody>
</table>

Table of Point-Allocations for Interventions