*Toothbrushing is not a 'mindless habit': it is part of a young person's lifestyle.*

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& David Regis

# Young people and tooth-brushing: when and why?

Why do young people differ in their toothbrushing regimes? Numerous surveys have studied the 'bare facts' about toothbrushing (frequency, and links with dental health), but very little is known about the psychology of personal dental care, and whether greater awareness of why young people brush their teeth as they do could assist dental health care professionals in their work.

## The sample

The report summarised in this article describes the results of a questionnaire survey of toothbrushing behaviour and other health-related behaviours in 7,770 young people aged 14-15 years, conducted in 1990 (1). Males and females were equally distributed within the sample. The data was obtained from the individual surveys carried out during that year by 131 secondary schools in England that used the Unit's Health-Related Behaviour Questionnaire. This questionnaire, developed by John Balding, is used by schools wishing to obtain information abut 'lifestyle' profiles of their pupils in order to support health eduation. The processed data, returned to the respective schools, makes for more effective and relevant curriculum planning.

Table 1. Percentage distribution of toothbrushing frequency in boys and girls aged 14-15.

| *Frequency* | *Male* | *Female* | *All* |
|---|---|---|---|
| Nil | 2.0 | 0.5 | 1.3 |
| Once | 25.5 | 13.1 | 19.4 |
| Twice | 65.0 | 69.4 | 67.2 |
| 3 or more | 7.5 | 17.0 | 12.2 |
| *Sample* | *3758* | *3652* | *7410* |

The questionnaire covers a wide range of social, behavioural and lifestyle variables. In this article, we briefly examine aspects of dental health with respect to other variables present in the data.

## The questions

There are four principal aspects of dental health recorded in the questionnaire:

*Frequency:* How many times did they brush their teeth yesterday (0, 1, 2, 3+)?

*Schedule:* When did they brush their teeth yesterday (before or after breakfast, before bed)?

*Motivation:* What was their main reason for brushing their teeth (avoid false teeth, avoid toothache, freshen breath, make teeth look nice, make mouth feel clean)?

*Dentistry:* When did they last visit the dentist, and what happened (fillings, advice on brushing, check-up only)?

## Gender differences

There is a marked gender difference in brushing frequency, females brushing much more frequently than males (Table 1). There are also more males than females in the once-a-day brushing group. Table 2, under 'motivation', shows other gender differences: males are motivated more by good appearance and avoidance of bad breath, females more by a need for the mouth to feel clean.

## Once or twice a day?

We can immediately see from Table 1 that there are more males than females in the once-a-day group. Once a day is considered inadequate to avoid the build-up of plaque, and so the advice to the once-a-day brushers must be to brush once again.



| | Males | | | | Females | | | |
|---|---|---|---|---|---|---|---|---|
| | Brushing schedule | | | | Brushing schedule | | | |
| | *Before b'fast* | *After b'fast* | *During day* | *Before bed* | *Before b'fast* | *After b'fast* | *During day* | *Before bed* |
| ***Frequency*** | | | | | | | | |
| Once | 21.0 | 18.8 | 7.7 | 8.2 | 10.9 | 9.6 | 1.6 | 2.9 |
| Twice | 65.3 | 70.9 | 18.5 | 82.0 | 60.6 | 70.4 | 12.4 | 77.6 |
| Three or more | 13.6 | 10.3 | 73.8 | 9.7 | 28.4 | 19.9 | 20.7 | 19.5 |
| *Sample* | *1270* | *2276* | *260* | *2916* | *1200* | *2573* | *501* | *3179* |
| ***Motivation*** | | | | | | | | |
| Teeth look nice | 21.8 | 20.2 | 26.3 | 16.2 | 16.4 | 16.2 | 25.0 | 10.0 |
| Avoid false teeth | 10.5 | 9.8 | 10.5 | 16.2 | 3.1 | 6.4 | 0.0 | 5.6 |
| Like fresh breath | 16.0 | 15.9 | 42.1 | 10.3 | 8.6 | 9.8 | 25.0 | 8.9 |
| Avoid toothache | 24.9 | 26.1 | 15.8 | 38.9 | 19.5 | 23.8 | 12.5 | 42.2 |
| Mouth feels clean | 26.8 | 28.0 | 5.3 | 18.4 | 52.3 | 43.8 | 37.5 | 33.3 |

Table 2. The percentage of young people within each of the four toothbrushing schedules that recorded different daily frequencies and motivations for toothbrushing.

Table 2 also suggests that the once-a-day brushers are most likely to do it in the morning, either before or after breakfast. The 'motivation' data in this table also shows that morning brushing is associated with making the mouth feel clean, which makes sense — we read so much about people doing things that are out of keeping with their reported attitudes that it is reassuring to see this link!

Dentists advise us to brush at night, because salivation is less active during sleep. Those brushing before bed who do so to avoid toothache are thus in acting in keeping with this advice.

Therefore, on the basis of Table 2, we might compose a health education message: *You brush your teeth every morning, which keeps your mouth feeeling fresh and clean all day. But do you always remember to clean at night? While you're asleep, you might not care much how your mouth feels, but it's then that the bacteria that can cause bad breath and tooth decay are most active. So do give your teeth another brush just before you go to bed — you never know who you may meet in your dreams . . .*

Table 3. Interconnections between dental health data . (**m** = males only; **1** & **2** refer to brushing once or twice a day)

| **Frequency** | **Schedule** | **Motivation** |
|---|---|---|
| *Brush less often:* had fillings | *Brush before breakfast:* had fillings (**m2**) | *Brush for mouth to feel clean:* check-up only |
| *Brush more often:* more recent dental visit | *Brush at night:* brush for fresh breath | *Brush for teeth to look nice:* brushing advice |
| | *Brush at night:* brush for teeth to feel clean | *Brush for teeth to look nice:* fillings |
| | *Brush at night:* brush for teeth to look nice | *Brush to avoid toothache:* check-up only |
| | *Brush before bed:* brush to avoid toothache (**1**) | |

## Dental links

There are many associations between the dental health variables, as shown in Table 3. There is too much here to comment on individually, but an example will show how the analysis should be approached.

From the first column we discover that those who brush less often are more likely to have had fillings on their last visit to the dentist. Parents of children that are casual about their toothbrushing may be tempted to say "Told you so" after a painful visit to the dentist, but the link shown in Table 3 does not necessarily mean that the lack of toothbrushing was the direct or indirect cause of the need for fillings. *X is associated with Y* does not necessarily mean *X leads to Y.*

To illustrate this important point, consider the following scenario. Suppose that despite regular brushing, some of the young people in the sample had fillings on their last visit. If their main reason for brushing was dental rather than cosmetic, they might become disillusioned and begin to brush less often. In this case, it would not follow that toothbrushing frequency had any effect on the likelihood of fillings — in fact, the fillings would have had an effect on the toothbrushing! The reader may be able to think of other, more likely explanations to make the same point.

In addition to this possible reversal of cause and effect between any two linked variables, the complex nature of cause and effect in human affairs must always be borne in mind. Research into Health Related Behaviour Questionnaire data,

*The following topics in the Health Related Behaviour Questionnaire were examined for links with dental health data*

**Sex** (male, female)
**Region of country** (Northern, Southern)
**Newspapers available at home** (broadsheets, tabloids)
**Time of getting up** (early, late)
**Time of going to bed** (early, late)
**Neighbourhood** (town, country)
**Parents at home** (both parents, single parent)
**Family size** (1, 2–3, 4+)
**Birth order** (first child, later birth order)
**Dating** (current boyfriend/girlfriend)
**Sports involvement** (score of 13+ on aggregate sport measure)
**Breakfast** (nothing/drink, more solid food)
**Smoking** (non-smoker, wants to give up, committed smoker)

which records a very wide range of behaviours, has uncovered numerous statistically significant links between them. However, so many factors operate within the complex web of human behaviour that these individual 'markers' are just single items in clusters of linked behaviours. In the present example, it is impossible to consider frequency of toothbrushing in isolation. Toothbrushing technique, available facilities, parental control, reasons for brushing, and of course dietary factors, may all contribute to the relationship between frequency of brushing and reported dental treatment.

## Only connect . . .

We also looked for connections between responses to these dental questions and other topics in the databanks (Table 4). There are over 400 to choose from, from which we picked the ones shown in the accompanying box.

We composed tables such as Table 5 and ran a statistical test on the figures to see if any differences we saw were 'statistically significant', that is, probably not just due to chance. All differences referred to below were statistically significant on testing.

More detail of these variables, and how the tables were composed, is available in the report.

Table 4. Connections between dental questions and other topics. (**m** = males only; **f** = females only; **1** & **2** refer to brushing once or twice a day)

**Frequency**

*More often*
Female
Eat more breakfast (**m**)
Sporty
Want to give up smoking
*Less often*
Smoker
Comes from larger family
Later in birth order
Goes to bed later
*Once only*
Male
Northern location
*Three times*
Northern location
Town dweller

**Schedule**

*Before breakfast*
Northern location (**2**)
Late riser (**f1, 2**)

*After breakfast*
Female (**1**)
Southern location
*Before bed*
'Quality' newspaper household
Southern location
Late riser (**m1**)

**Motivation**

*Avoid false teeth*
Tabloid newspaper household
Comes from larger family
*Avoid toothache*
'Quality' newspaper household
Southern location
First or only child
Lives with both parents
Has no boyfriend (**f**)
Less sporty (**m**)
*Mouth feel clean*
Female
'Quality' newspaper household (**m**)
Southern location (**m**)

Only child (**f**)
Lives with single parent
Early riser
Sporty (**m**)
*Teeth look nice*
Male
Tabloid newspaper household
Northern location
Only child (**m**)
Late riser
Late bedtime (**f**)
Little or no breakfast
Sporty
Committed smoker
*Breath smell fresh*
Male
Comes from large family
Committed smoker

**Dentistry**

*Had fillings*
Tabloid newspaper household
*Received brushing advice*
'Quality' newspaper household



| | Males | | | Females | | |
|---|---|---|---|---|---|---|
| | Readership group* | | | Readership group* | | |
| | *I* | *II* | *III* | *I* | *II* | *III* |
| ***Frequency*** | | | | | | |
| Once | 22.0 | 26.1 | 30.4 | 11.3 | 13.6 | 15.6 |
| Twice | 68.9 | 68.1 | 61.3 | 72.0 | 68.1 | 67.1 |
| Three or more | 9.2 | 5.8 | 8.3 | 16.7 | 18.3 | 17.4 |
| *Sample* | *896* | *994* | *1316* | *905* | *.984* | *1302* |
| ***Motivation*** | | | | | | |
| Teeth to like nice | 16.2 | 17.1 | 21.1 | 11.2 | 13.4 | 15.3 |
| Avoid false teeth | 8.0 | 9.8 | 10.8 | 3.6 | 3.8 | 5.8 |
| Like fresh breath | 10.1 | 12.4 | 12.3 | 6.8 | 6.8 | 7.3 |
| Avoid toothache | 32.0 | 30.3 | 24.5 | 31.7 | 26.9 | 24.2 |
| Mouth feels clean | 33.7 | 30.4 | 31.2 | 46.7 | 49.1 | 47.4 |
| *Sample* | *845* | *951* | *1231* | *886* | *951* | *1248* |

*Derived from newspapers reported to be in the household as follows: Group **1** *Guardian, Independent, Telegraph, Times*; Group II *Daily Express, Mail, Today*; Group III *Mirror, Star, Sun*

Table 5. Toothbrushing and newspaper readership group: an example of the data compiled for each of the variables listed on the opposuite page.

Three of these variables need further comment:

*Region:* we divided the country conventionally between North and South, by drawing a line between the River Severn and the Wash. Perhaps a better description would be 'North and Midlands' and 'South'.

*Newspaper readership group:* subjects were asked to report national daily newspapers that were regularly in the home, and were categorised according to readership of broadsheets (I), tabloids (II) or popular tabloids (III). There are some associations between newspapers read and socio-economic group (2). Table 5 shows dental data by newspaper readership group.

*Sporting index:* the Health Related Behaviour Questionnaire offers respondents a list of sporting activities such as rugby, squash and swimming, and asks the pupils to state for each sport the frequency of the activity. A score is given to each pupil, at least once a month being recorded a score of 1, once a week scoring 2, and more than once a week scoring 3 (Table 6). Sedentary sports on the list, for example pool and darts, are excluded. Thirteen points or more qualifies a person as 'sporty'.

## Previous research

Data collected by the Unit over the last five years or so has led to the identification of several social and personality variables that seem highly associated with toothbrushing frequency as well as other health-related behaviours. Summarising, young people who brush their teeth more often tend to be characterised by:

- 1. Higher self-esteem
- 2. A feeling of being more in control of their own health
- 3. Greater confidence with members of the opposite sex
- 4. Pay more attention to other hygiene practices (e.g. have more baths a week)
- 5. Belong to the 'quality' newspaper readership group (3)

One of the authors (David Regis) has for a long time been interested in the notion of perceived control over personal health (health locus of control), believing it to be a potentially powerful filter of health education messages. The second association in this list suggests that people who feel in control of their health (internal health locus) brush their teeth more often than those who do not feel in control of their health (external locus).

## How often and why?

We observed systematic differences in motivation for toothbrushing, although contradictory tendencies appear where we attempt to generalise about particular reasons for toothbrushing. The placing of toothbrushing during the daily schedule, whether performed once, twice, or more frequently, far from being a 'mindless habit' as is popularly believed, does appear to be consistent with the most salient reasons for toothbrushing seen by these young people.

In general, better toothbrushing practices are associated with Southerners, broadsheet newspaper readers, and town dwellers.

Those having a more confident and positive outlook on life as measured by their self-esteem and feeling of control over their health, and the more diligent brushers, seem to brush to make the mouth feel clean: that is, for a social or cosmetic reason rather than purely for dental care.

Northerners, readers of popular tabloids and

Table 6. Toothbrushing and sporting activity index: another example of the data compiled for each of the variables listed on page 74.

| | Males | | | | Females | | | |
|---|---|---|---|---|---|---|---|---|
| | Sporting activity index | | | | Sporting activity index | | | |
| | *0* | *1–6* | *7–12* | *13+* | *0* | *1–6* | *7–12* | *13+* |
| ***Frequency*** | | | | | | | | |
| Once | 35.5 | 30.5 | 22.5 | 20.4 | 18.0 | 13.9 | 12.1 | 8.5 |
| Twice | 58.6 | 63.4 | 69.1 | 66.9 | 68.4 | 70.1 | 69.0 | 67.8 |
| Three or more | 5.9 | 6.1 | 8.4 | 12.6 | 13.6 | 16.0 | 18.9 | 23.7 |
| *Sample* | *338* | *1918* | *1003* | *499* | *472* | *2079* | *784* | *317* |
| ***Motivation*** | | | | | | | | |
| Teeth to look nice | 18.2 | 17.3 | 18.3 | 22.6 | 11.3 | 13.7 | 13.8 | 15.8 |
| Avoid false teeth | 10.6 | 9.9 | 10.2 | 8.1 | 4.2 | 4.6 | 4.1 | 5.4 |
| Like fresh breath | 12.6 | 12.1 | 11.3 | 12.5 | 8.4 | 6.1 | 7.6 | 9.1 |
| Avoid toothache | 29.9 | 30.7 | 25.5 | 22.8 | 25.2 | 27.9 | 27.6 | 24.5 |
| Mouth feels clean | 28.7 | 30.0 | 34.7 | 34.0 | 50.9 | 47.7 | 46.9 | 45.3 |
| *Sample* | *341* | *1808* | *939* | *456* | *477* | *2013* | *747* | *298* |

those from larger families, as well as the once-per-day brushers, appear to be motivated more by socially instrumental reasons, such as liking fresh breath and their teeth looking nice.

Preventative dental health reasons for toothbrushing are also associated with a generally more confident, controlling and long-term view of health. But the less socially confident also report this as a reason for toothbrushing, more perhaps because they fear the consequences of neglect rather than seeing a virtue in positive action.

## Recommendations

*Advice for health educators:* We have here a very comprehensive and broad pattern of background factors that are linked to dental health behaviour. Readers might react with "I could have told you that", but in fact this is positive support of the strongest kind for relevance of the otherwise vague notion of 'lifestyle' to health education.

We suggest that these results imply that health education messages need to be carefully crafted for each constituency, with the ideal being one-to-one counselling — such as in a clinical setting.

*Advice for dentists:* Dental health advice needs to take account of this broad pattern of background factors, and at a clinical level toothbrushing advice may need to be couched in terms congruent with the individual patient's own motivation for toothbrushing and perceptions of control.

*Toothbrushing practice:* Our finding that most once-per-day brushers choose to clean their teeth in the morning before school suggests that dental health messages should include advice to brush the teeth before going to bed at night, as well as other times.

These messages should not assume common motivation amongst young people, nor similar perceptions of control.

*Further research:* This should be directed towards investigation of some of these relationships, through, for example, quantitative study using selected personality scales. A qualititative approach using interview techniques would be the best way of examining the cultural placing of these and other hygiene behaviours.

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### References

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