Couch kids
Myth or reality?

‘The kids of today! Too much telly and texting – it’s making them fat!’ is a common refrain in the media and in general conversation. Indeed, the strong rise in obesity in young people over the past decade is widely reported in the academic and lay media, and great concern has been expressed about the current and future health implications of such trends. Most of the coverage has centred on energy balance – dietary intake versus physical activity output – yet less attention has been given to the actual behaviours undertaken and the choices that young people make. These might include the balance between physically active and inactive behaviours, and when and why such behaviours take place. Psychologists have a role to play in furthering understanding in this important and complex area.

There is also a need to understand the behavioural epidemiology of physically active and sedentary behaviours so that effective interventions to change behaviour can be implemented. However, a focus on traditional intrapersonal psychology and determinants will only yield part of the answer (Sallis & Owen, 1999). Wider social-ecological models, which characterise behaviour as influenced by intrapersonal (demographic, biological and psychological), interpersonal (social), environmental (rural and built), and societal (policy) factors are required.

A key issue in our study of this field is to distinguish between low levels of physical activity and actual sedentary behaviour. Typically, young people are classified as ‘inactive’ or ‘sedentary’ if they fail to meet an agreed level of physical activity – they show ‘activity absence’. We prefer to see actual sedentary behaviours and physical activity as a cluster of different coexisting behaviours from which young people choose. For example, in our study of over 2400 11- to 15-year-olds from both the US and UK (Marshall et al., 2002), clusters of both boys and girls were identified using both sedentary and active behaviours. In both sexes there were groups that displayed above-average participation in some sedentary behaviours, such as TV viewing and playing computer games for boys, but also above-average physical activity. Indeed, in our recent meta-analysis (Marshall et al., 2004), we found that TV viewing and physical activity are correlated in only a very small way for children and youth. This suggests that some key sedentary behaviours, such as TV viewing, might be able to coexist with more physically active pursuits.

One reason is that physical activity, mainly in the form of active play and sport and exercise, are most likely to occur (at least during the week) after school hours and in the early evening, peaking at around 7pm for sport and exercise. TV viewing, on the other hand, peaks much later in the day, suggesting that the two behaviours are not directly competing for the same piece of discretionary leisure time (although at no point in the after-school period does the likelihood of sport and exercise exceed that of TV viewing). We know this from ‘ecological momentary assessment’ diaries that have been completed by over 2000 13- to 16-year-olds. As part of Project STIL (Sedentary Teenagers and Inactive Lifestyles), participants wrote down what they were doing every 15 minutes for one weekend day and for time outside of the normal school day for three weekdays.

This allowed us to estimate the prevalence of various active and sedentary behaviours as well as plot time trends across the day.

What do kids do in their free time?
We have mainly been interested in what

WEBLINKS

British Heart Foundation National Centre for Physical Activity and Health:

National Walking to School Initiative:
www.walktoschool.org.uk/site.htm

Health Development Agency:
www.hda.nhs.uk

Sustrans, for active travel:
www.sustrans.org.uk/

Stuart Biddle and Trish Gorely investigate.
young people choose to do in their leisure time as far as sedentary and active behaviours are concerned. Estimates suggest that about two and a half to three hours a day are taken up with TV viewing. Estimates of other media use in North American youth suggest they spend approximately one hour a day watching videos and between 20 and 50 minutes a day on each of reading books, playing video games, using the computer/internet, talking on the telephone, and reading magazines and newspapers (Biddle et al., 2004).

It is important to note that there is large variation in these incidence estimates. Indeed, the majority of young people are relatively low users of television (66 per cent watch less than two hours a day), although just over one quarter do watch television for more than four hours a day (World Health Organization, 2000), a level twice that recommended by the American Academy of Pediatrics (1986).

However, the key question from the perspective of physical activity and health, and especially obesity, is whether such behaviours are associated with health outcomes. We have already suggested that physical activity and TV viewing may be behaviours that can coexist to some extent. Similarly, we have produced data that show that the associations between body fatness in youth and the behaviours of TV/video viewing \( r = 0.08 \) and playing computer games \( r = 0.13 \) are very small indeed (Marshall et al., 2004). Of course, such small associations may still impact on obesity over time through small accumulations of body fat—the so-called creeping obesity phenomenon. The reported associations also require prospective and intervention studies to test for causal effects.

Perhaps a better way of addressing this issue is not to focus on single behaviours, but rather clusters of active and inactive behaviours. Clearly, across a 24-hour period, the more an individual is inactive, the less time is available for physically active pursuits. But with current recommendations for at least one hour of moderate intensity physical activity on most days of the week for young people (Biddle et al., 1998), this leaves plenty of time for additional physical activity and inactivity. As far as obesity is concerned, however, given how easy it is to be inactive, more than 60 minutes of physical activity may be needed to avoid weight gain. Indeed, the ‘obesogenic environment’ found in Western societies is perhaps contributing to accelerated weight gain (Swinburn & Egger, 2004) because of the ease with which we can engage in less physical activity. Examples include motorised transport to school, mobile phones and electronic communication, and greater availability of TVs and computers in the home.

**Can we reduce sedentary behaviours in young people?**

Our argument so far is that single markers of ‘couch potato-ism’, such as TV viewing, may not be good indicators of sedentary lifestyles. We need to look at more complete profiles of behaviours, including physical activity. This is an important message in obesity research. Nevertheless, there are many interesting and easy sedentary pursuits that may contribute to a negative energy balance and weight gain.

As far as young people are concerned, there are rather few intervention studies testing whether reductions in specifically targeted sedentary behaviours can produce weight loss. We recently looked at 11 such studies (Biddle, 2004). Of six interventions with obese children, one made specifically targeted sedentary behaviours conditional on being physically active (for example, playing video games or watching videos on the TV were only allowed after a period of riding a stationary cycle). Results showed an increase in physical activity, a decrease in the targeted sedentary behaviours, but an increase in non-targeted sedentary behaviours. Similar trends were shown across five studies of obese children when the accessibility or reinforcement value of targeted sedentary behaviours was reduced or sedentary behaviours were punished. For example, children were provided with points at the beginning of the study, and...
these were taken away for time spent on sedentary behaviours in a lab setting. Points earned or left at the end of the study earned rewards such as gift cards and sports event tickets. For six studies of non-obese children where the reinforcement value of targeted sedentary behaviours was decreased, physical activity was increased, but there was no change in energy balance. Across three studies of non-obese children using counselling, behavioural and educational interventions, TV viewing was decreased, along with body fatness, but no changes were noted in physical activity or video viewing.

Overall, therefore, it appears that targeted sedentary behaviours can be reduced, but the time will be filled by a mixture of physical activity and substitute sedentary behaviours. Decreases in fatness have been noted in some, but not all, studies. Very few of these studies targeted only TV viewing, supporting our view that TV cannot be claimed as the main sedentary behaviour related to youth obesity. Similarly, Saelens (2003) concluded from his review that ‘given the variability across studies...conclusions regarding the relationship between

DISCUSS AND DEBATE

Given that we have always had sedentary pastimes, such as board games, reading, listening to the radio, etc., should we be focusing on increasing discretionary time for physical activity in youngsters, such as walking more, or should we be more concerned with the apparent increase in tempting sedentary pursuits, such as satellite TV and computers? Or is it simply a combination of the two?

We have focused on sedentary and active behaviours and therefore nutrition has not been discussed. Clearly, energy intake is also important in the obesity epidemic, but has the media over-played the ‘junk food’ card? McDonald’s et al. are only a problem if abused. Are we missing the main point that we simply are not active enough?

What would a ‘weight friendly’ environment look like and how would it be achieved?

To what extent will we solve the problem of inactivity and overweight by focusing on individual (intrapersonal) constructs alone?

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sedentary behavior and adipsity in youth are necessarily tentative' (p.221).

Implications for psychologists
One of the key factors to emerge from our work is the need for continued recognition of the complexity of human behaviour. While at its most basic level being obese or overweight is down to a positive energy balance, understanding and manipulating the behaviours which underpin this is far from simple. As in many issues in psychology, there is a complex answer to a simple question!

There are several highly visible sedentary behaviours (e.g. television and other screen-based media) which have been blamed for low activity levels in young people. However, we would argue that individual behaviours in isolation are likely to have only a small, or no, relationship with health outcomes (such as obesity), or with other behaviours (such as physical activity). Rather, we should take a more sophisticated look and concentrate on the overall pattern of both active and inactive behaviours within an individual. To increase energy output would then be a function of identifying prevalent sedentary behaviours within an individual that occur at a time of day when it is reasonable to try to change them to more active pursuits.

This is similar to our quest to identify modifiable correlates of behaviour for use in interventions. Finding out what appeals to the individual about these sedentary behaviours would be a prerequisite to change. If focusing on decreasing sedentary behaviours in order to increase energy expenditure, it will be necessary to ensure that the targeted sedentary behaviour is replaced by a more active pursuit, and not something equally sedentary, again pointing to the need for a more holistic lifestyle approach.

For young people in particular, psychologists need to study the extent to which attractive sedentary behaviours are habit forming. While those returning from a day at school might be able to be active and then watch TV, when they become adults, and return home much later after work, the evening TV ‘habit’ may make it very difficult to schedule physical activity.

These potential behaviour patterns, and changes across key lifespan periods, have not been investigated. Similarly, there is a need to see what behaviours may be triggered by sedentary pursuits, such as snacking while watching TV or smoking while using the computer, both likely to interact with related issues of weight control and health.

A further level of complexity arises from recognition of the need to look beyond the individual for influences on behaviour. While ultimately it is the individual’s behaviour that is of interest, influences occur at many levels. Taking an ecological perspective (Sallis & Owen, 2002) highlights the importance of ‘behaviour settings’ and how the location we are in facilitates some behaviours and constrains others. For example, one of the strongest behaviour setting characteristics negating physical activity is being indoors, yet parents/caregivers may constrain young people to an indoor environment for reasons of safety, control, or general concern. Equally, being outdoors predicts greater physical activity, yet constraints such as safety and the weather exist here too. Untangling and understanding this level of influence will be important to the work of any psychologist trying to change behaviour with a view to combating modern trends in obesity.

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References