



The Prochaska model for behaviour change

Where are we now?

James and Janice Prochaska share some of their latest work into their **Transtheoretical Model of Behaviour Change (TTM)**, and look at how it is relevant to teenagers wanting to change their behaviours

When we asked health coaches what behaviours account for the majority of chronic diseases, disabilities and premature death, they immediately shouted out the correct answers. Smoking! Alcohol abuse! Unhealthy eating! Not enough exercise! But when we asked why these four risky behaviours were so critical to our health

and wellbeing, they did not have adequate answers.

The correct answer here is that these four behaviours are based on the fundamental functions of life: breathing, drinking, eating and moving. If we breathe toxins, we poison our bodies. If we drink alcohol to toxic levels, we do damage to both our minds and bodies. If we eat toxins, we seriously compromise our general wellbeing. And, if we don't move it, move it enough, we don't move toxins out of our bodies. A fifth behaviour drives much of the big four and leads to relapse when trying to recover from them:

stress that is not managed effectively drives us back to the big four health risks.

Developing a healthy lifestyle

A healthy lifestyle includes:

- abstinence from smoking (0)
- eating five servings of fruits and vegetables each day (5)
- adequate physical activity (for example walking 10,000 steps a day = 10)
- doing effective stress management for 20 minutes a day (20)
- striving to maintain a body mass index (BMI) of less than 25 (= 25)

FOLLOWING A LIFESTYLE THAT GIVES A COUNT OF 0, 5, 10, 20 AND 25 HAS BEEN AN ELUSIVE GOAL FOR 97% OF THE POPULATION IN THE USA

Signposts



health psychology, obesity

THE TTM REFRAMED THE NOTION OF CHANGE FROM 'EQUALLING ACTION' TO 'EQUALLING PROGRESS' VIA A SERIES OF STAGES

Such a lifestyle has been shown to increase life expectancy by 14 years. However, following a lifestyle that gives a count of 0, 5, 10, 20 and 25 has been an elusive goal for 97% of the population in the USA.

To have a significant and sustainable impact on attaining these healthy behaviours a model of behaviour change was considered necessary to address the needs of entire populations, not just the minority who are motivated to take immediate action for better health. The Transtheoretical Model of Behaviour Change (TTM) reframed the notion of change from 'equalling action' to 'equalling progress' via a series of stages:

- precontemplation (not ready) — not intending to take action in the foreseeable future
- contemplation (getting ready) — intending to change in the next 6 months
- preparation (ready) — intending to take action in the next month
- action — change is typically overt and observable
- maintenance — free from risk or problem for more than 6 months

TTM programmes need to communicate that they are tailored to the needs of each student. One way we explain this is illustrated in Figure 1.

Critical assumptions of the TTM

These are the assumptions of the model which predict when behaviour change will happen:

- 1 The majority of 'at-risk' populations are not *prepared* for action and will not be served effectively by action-oriented behaviour change programmes.
- 2 Behaviour change is a process that *unfolds* over time through a series of *stages*.
- 3 Stages are both *stable* and open to *change*. Progress can be motivated by awareness and appreciation of the pros of changing and decreasing the value of the cons of changing.
- 4 Helping individuals set *realistic* goals, such as progressing to the next stage, will facilitate the change process.
- 5 Specific principles and processes of change need to be *emphasised* at specific stages for

progress to continue. Figure 2 (on next page) outlines which principles and processes to emphasise at each stage.

Interventions based on the TTM principles can produce individualised and interactive programmes for treatment of both individuals and entire populations. Programmes include computer-tailored interventions delivered through various modalities such as counsellor guidance, telephonic coaching, mobile devices and texting, including interventions for multiple behaviours. We have also recently adapted our model to make it especially relevant for teenagers like yourselves.

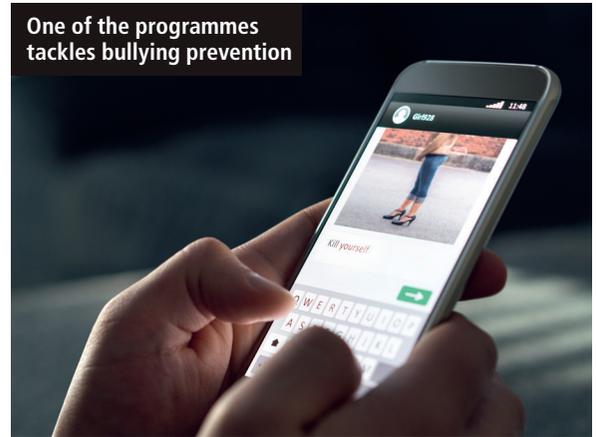
Programme for teenagers

To provide interventions specifically for secondary school students, a youth lifestyle management suite has been developed with five online programmes that provide education, assessment and individualised guidance to help students develop healthy skills and behaviours for smoking cessation, obesity prevention, bullying prevention, teen dating violence prevention and substance-use cessation. The programmes have been used by schools, youth groups and healthcare centres.

All the programmes:

- are online and self-administered, freeing up teacher and staff time
- take into account individual differences in students' prior experience and level of risk
- take into account students' intentions to change
- are designed not only to educate, but to change behaviour

One of the programmes tackles bullying prevention



Obesity prevention programme

Health in Motion is the name of the obesity prevention programme. It provides early prevention on a population-wide basis. The goal is to help all youth to either adopt or maintain healthy energy balance behaviours: physical activity (at least 60 minutes of activity every day), fruit and vegetable intake (eating at least five servings of fruits and vegetables each day) and limiting screen time (watching screens no more than 2 hours per day).

Health in Motion is accessed via an internet connection and is compatible with tablet and mobile devices. Participants control the pace of the programme and have opportunities to type in responses and select strategies they wish to use. The TTM was designed with student focus groups, individual interviews with teachers, school administrators,



Figure 1 Presentation slide designed to explain TTM to students

Precontemplation	Contemplation	Preparation	Action	Maintenance
	Consciousness raising (get the facts)			
	Dramatic relief (pay attention to feelings)			
	Environmental reevaluation (notice your effect on others)			
	Social liberation (notice public support)			
		Self-reevaluation (create a healthier self-image)		
		Self-liberation (make a commitment)		
			Counter-conditioning (use substitutes)	
			Helping relationships (get support)	
Pros of changing increasing			Reinforcement management (use rewards)	
	Cons of changing decreasing		Stimulus control (manage your environment)	
		Self-efficacy increasing		

Figure 2 Principles and processes of change that moderate progression between the stages of change

SURPRISINGLY, DIGITAL TTM PROGRAMMES HAVE BEEN FOUND TO BE AT LEAST AS EFFECTIVE AS HEALTH COACHES AND COUNSELLORS

healthcare providers and content experts. A pilot test shaped the final programme. *Health in Motion* is stand-alone and takes 30 minutes or less to complete each of three sessions spaced at least 1 month apart. Surprisingly, these digital programmes have been found to be at least as effective as health coaches and counsellors (Prochaska et al. 2001).

Once a user logs on, the TTM provides on-screen and bespoke guidance to individual users in terms of the benefits and costs of their behaviour change that is also matched to their current stage of change (see Figure 3). It also enables them to make comparisons with their peers in terms of who is progressing the most (normative comparisons) and also how their progress compares to their previous session (ipsative comparisons). This combination of different types of guidance allows multiple risks to be addressed within a class time period while also still producing significant behaviour change across *all* behaviours.

Success of the TTM applied to teenage health

Two separate randomised clinical trials demonstrated the effectiveness of *Health in Motion* to positively impact the health behaviours of middle and high school students (Mauriello et al. 2010, Velicer et al. 2012). Together the trials included 28 schools and 4,158 young people. Long-term follow-ups over 36 months offer strong evidence of sustainable change. In both trials, the treatment group outperformed the control group on: number of days doing 60 minutes or more of physical activity, daily consumption of fruits and vegetables, initiating and maintaining all three of the behaviours, reducing the number of behavioural risks, acquiring fewer behavioural risks, and progressing on multiple behaviours. In the middle school trial, the *Health in Motion* group also was less likely to initiate smoking or alcohol consumption by 36 months.

The TTM over the years

The TTM was groundbreaking when we introduced it in the late 1970s and it is more relevant than ever today as society continues to move at lightning speed with all the pressures, challenges and choices that confront us all. In the 1970s, we learned about the stages in the model from smokers who stopped on their own. In the 1980s we focused on the principles and processes of change related to each stage.

In the 1990s we developed the first TTM computer-tailored intervention and applied the TTM to a wider variety of

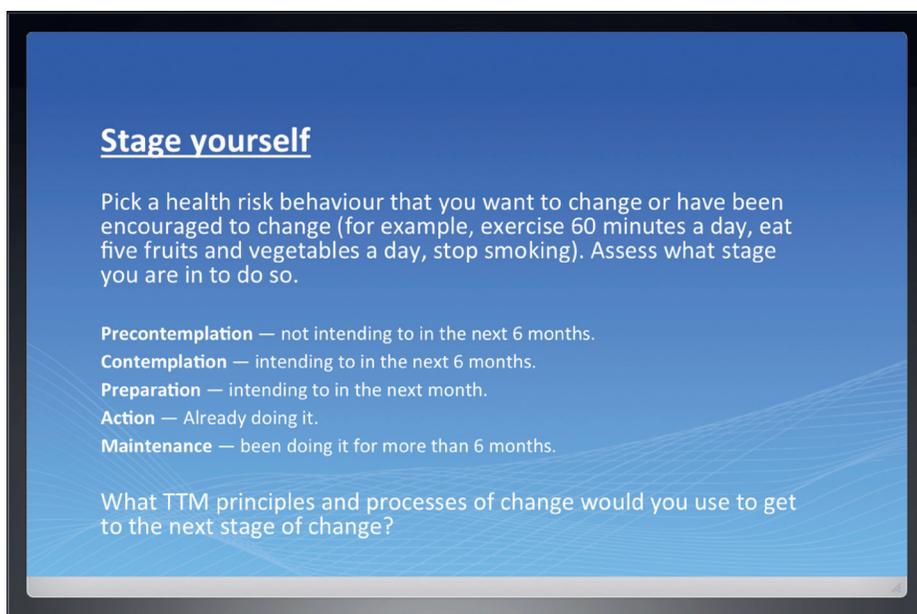


Figure 3 A demo screen of an online multimedia programme designed to help school and college students improve their exercise, eating and stress management habits

Teenagers who completed *Health in Motion* were doing well 36 months after the programme ended



behaviours: stress, medication adherence, healthy eating, sun exposure and exercise. In the 2000s we designed TTM interventions for simultaneous multiple behaviour change and applied TTM to domestic violence, bullying,

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adoption readiness and advancing women scientists.

More recently in the 2010s we developed TTM tailored text messaging, designed a clinical dashboard to assist coaches and clinicians, and applied enhancing multiple domains of wellbeing (physical, emotional, social and work wellbeing). To learn even more about our work, see our latest book, *Changing to Thrive*. It will be interesting to see where our model takes us in 2020 and beyond.

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Psychological effects

You may have heard of the Asch effect or the Stroop effect or the Mozart effect. Psychology has 'discovered' many such effects — in fact Wikipedia lists over 100 of them. Here's one you may not have heard of: the over-justification effect. Like many 'effects', this one is counterintuitive. If you are offered a reward for completing a task you regularly do (such as doing the washing up or doing your homework) this *reduces* your motivation to do the task. The external reward destroys your internal (intrinsic) motivation.

One early study that demonstrated this was conducted by Edward Deci et al. (1971). Participants reported to a lab on three separate days and were asked to solve puzzles. A control group received no rewards on any

of the three days whereas the experimental group was rewarded on day 2 but not the first and last days. On each day participants had a break and the researchers noted how they spent the spare time during the break. The experimental group spent significantly more time than the control group playing the puzzle during their break on day 2 but less on day 3.

The effect has been demonstrated in a real-life setting where people were offered money for donating blood. Donor numbers dropped when offered a financial incentive (Mellstrom and Johansson 2008).

Reference



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So you know what you have to do to be a successful student — refuse any rewards for completing your work.

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