

The Mental Time Traveller: Considering the Future Consequences of Present Day Behaviours

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We must use time as a tool, not as a couch. (John F. Kennedy)

Time cannot be outwardly intuited. These are the words of Immanuel Kant, an 18th century philosopher renowned for his contemplations of the fundamental concepts underlying the entire human experience. Central to Kant's reasoning is the concept of subjective time, the idea that time is not only an entity to be quantified in the physical sciences, but a subjective experience which can differ across each person, rooting the individual in his or her own mental reality. We all have unique experiences of time. Two individuals can attend the same event, a concert or a party perhaps, and for one of them, time can move extremely quickly, but for the other it can drag on for what seems like an eternity. Time flies when we are having fun and enjoying ourselves, yet feels endless when we are bored or afraid. It is the lens through which we view and experience the world around us. We are constantly planning and organising our time; often making efforts to save, and sometimes deliberately waste this precious resource. Indeed, we speak more often about time than anything else there is to speak about; the word 'time' is most commonly used noun in the English language.

The experience of personal time is a fundamental component of conscious awareness. In the early 1980's, psychologists became fascinated with the cognitive abilities of an amnesic patient who had suffered a closed head injury. Although the individual did not exhibit impairment in the ability to recall the concept of chronological time, the units of time or how these units relate to each other, he demonstrated severe impairment in the awareness of subjective time, wherein the concepts of yesterday or tomorrow were perplexing and unknown. This highlights a fundamental distinction between the abstract knowledge of objective time, and the psychological perception and influence of subjective time. This distinction constitutes the basic premise on which temporal psychology originated.

Central to the field of temporal psychology are two important concepts which form the foundation on which my PhD research programme has been constructed: Time Orientation (TO) and Mental Time Travel (MTT). The concepts are inter-related in that both are concerned with the personal time experience of the individual and both can exert profound influences on decision-making as an individual goes about her or his daily life. It is also the case however that one is predominantly explored from a purely psychological

perspective, as a stable personality characteristic (TO), whereas the other is largely explored from a cognitive neuroscientific position, as a mental ability which is unique to human beings over other species (MTT). The overarching aim of my doctoral research is to explore the role of both concepts with regards to every day decision-making and behaviour. Specifically, my research focuses on decision-making around behaviours which could potentially impact our immediate or long term physical health such as cigarette smoking, excessive alcohol consumption and drug use (behaviours predominantly known as health risk behaviours), and regular exercise, healthy diet and seatbelt use (behaviours predominantly known as health protective behaviours).

Time orientation and health behaviours

Throughout our childhood, we begin to develop personality traits which ultimately become stable across individuals and across time. These personality characteristics form the very essence of who we are as individuals. They dictate how we behave towards others and how we will react and respond to certain stimuli or situations. An orientation towards a particular time frame is considered to be one important aspect of personality which develops throughout our childhood and becomes solidified as a stable personality characteristic according to our early experiences, our familial environment and other social experiences and interactions. It represents the level of cognitive involvement we devote to the past, the present and the future. When we make decisions as we go about our daily lives, most individuals exhibit a tendency to orient towards one particular time frame over the others to inform their decision-making. Consider the following scenario:

You are at a friends' party and somebody offers you a portion of your favourite dessert on a paper plate (for this example, let's say it is a slice of chocolate cake). You have already eaten a slice of the cake, along with some party finger food, and although you are not feeling too full or bloated, you know that it is probably not the best idea for you to eat another portion.

At this point, as the person who has offered you the cake awaits a response, most individuals engage in a quick decision-making process. Some may think back to a previous time when they overindulged, remembering the sensation of being over-full and sluggish. Others will only consider the immediate pleasure and gratification they will receive from eating another slice of double chocolate fudge. There are also those individuals who may envision the potential future consequences involved, e.g. feeling guilty or gaining weight.

This habitual gravitation towards considering past, present or future outcomes of a particular behaviour can exert a profound influence on our decision-making. The TO concept has been explored in studies across many different life domains (e.g. academic performance, career trajectories and financial management). However, my doctoral research is rooted in health psychology, and how TO can influence our engagement in health risk behaviours and health protective behaviours. To date, research suggests that an orientation

toward the present time frame is typically associated with engagement in health risk behaviours which are potentially damaging to physical health. Individuals who are present oriented are theorized to only consider the immediate consequences of their behaviours, thus engaging in behaviours which illicit and immediate reward (e.g. overindulging in sweet or fatty foods), over those behaviours which are associated more with long term gain (e.g. maintaining a balanced, healthy diet). Alternatively, an orientation to the future has been associated in the literature with maintaining a healthier lifestyle. Individuals who are future orientated have been found to be more likely to engage in behaviours which are protective of their physical health (e.g. regular exercise). Theoretically, this is due to their greater ability to plan, organise and work towards clear, specific goals, as well as their persistent regard for their continued health and safety or strive towards greater health and safety. However, it is also the case that the research to date has been limited in quality, producing a number of contradictory results, which renders the findings difficult to interpret and moreover difficult to apply to enhance or reduce engagement in particular health behaviours. Such limitations include:

1. Uniformity with regards to TO assessment: There is a lack of consistency within the field of health psychology with regards to the most appropriate means by which to assess an individuals' TO. As such, it is difficult to determine whether any contradicting findings are the results of such diverse measurement, or whether there are legitimate gaps in our theoretical understanding of the construct.
2. Research participants: The continuous use of student samples in research ultimately renders the findings only representative of the student population, and limits our ability to generalise research findings to other populations, e.g. older adults.

In order to address these limitations effectively, my PhD research programme incorporates the collection of data from a number of diverse populations, including adolescents and older adults, as well as the development of a new psychological measurement tool which to be used to assess TO specifically for research in health psychology and health behaviours. This will allow us to differentiate people according to their individual time orientations, and explore how this relates to the health behaviours that these individuals engage in. It is hoped that this measure will become the dominant means by which to assess TO specifically within health psychology.

Mental time travel

As our brain evolved, it developed a capacity that is unique to our species, a capacity whereby it can stretch weeks, months and even years into an infinite future, without us ever having to step outside our front doors. This ability is typically referred to in research as mental time travel (MTT). Although it involves the activation of many different regions within the brain, a crucial component involved in MTT lies right the centre, and it is called the hippocampus. This tiny structure is responsible for retrieving specific details,

thoughts and knowledge gained from our memories of past experiences, and using them to construct creative and scenarios in our minds, effectively allowing us to design our very own imagined future.

My PhD research also focuses on how we can harness this amazing ability, so that we can live longer and feel better while doing so. Imagine a moment of temptation, whether this is food temptation or a cigarette craving, the temptation to binge drink or to stay on that comfy couch watching endless hours of TV instead of getting some fresh air and exercise. These are the moments when MTT could be utilised to our advantage. If individuals could take a moment to not only consider, but to immerse themselves in an imagined future where they make the healthier choice and actively envision the associated benefits, it is likely that this process could result in changing one's behaviour for the better in the present. Likewise, vivid imagining of the adverse consequences associated with persistent unhealthy or risky behaviour may be an effective deterring factor for continued engagement in these kinds of behaviours. For my PhD research I am conducting a project which explores brain activation patterns involved in MTT using electroencephalograph EEG equipment. This equipment enables the detection of the location and magnitude of brain activity during specifically designed temporal tasks, i.e. participants will be asked to imagine themselves and others in past, present and future scenarios.

Research applications

Increased public spending on health care since the late 1990s indicates a growing awareness of societal challenges in physical health. However, despite decades of research in health psychology, we are still a long way from understanding exactly why it is that individuals continue to engage in or withdraw from behaviours which are known to directly affect physical health. The reasons underlying why some people persist in engaging in unhealthy behaviours despite being aware of the potential consequences are not fully recognised. Likewise, the reasons why some individuals (but not others) consistently engage in health protective behaviours and maintain a healthy lifestyle are not wholly understood. My PhD research posits that TO is a key explanatory factor in models of health behaviour. By testing associations between this concept and a variety of health behaviours, we can advance theory and understanding in health psychology, and employ this understanding to design low-cost educational and goal oriented intervention techniques. By devising strategies by which an orientation towards future thinking and imagined future consequences (specifically around health behaviours) can be increased, then more individuals will be successful in making healthier choices which will be beneficial for their long and short term physical health. Inventions designed around TO and MTT would therefore be constructed on the basis of a number of primary objectives:

1. To educate people on the power of MTT and future thinking,

2. To train individuals in techniques by which it can be actively applied and regularly practised in order to assist them in making healthier choices,
3. To reduce engagement in a health risk behaviour (e.g. overeating),
4. To enhance engagement in a health protective behaviour (e.g. regular exercise).

My research overall holds the potential for the incorporation of TO and MTT into specialised approaches to public health care, i.e. smoking cessation and other addiction treatment programmes, as well as for the development of mobile apps and self-help books. In particular, I am designing an online TO intervention, specifically tailored to smoking behaviour with the aim in assisting successful smoking cessation.

Understanding the role of TO and MTT in the subjective time experience and applying this understanding to facilitate behaviour change would hold immense implications for health psychology as a whole and for addressing societal challenges in health care and health protection.

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