Integrated Models of Behaviour Change

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Overview

- What are the health issues
- Social cognitive theories in health behaviour
- Prediction of health behaviour
- Theory integration
  - »Motavational, Volitional, and Implicit
- Application through intervention
- Summary and way forward

WHAT EACH COUNTRY LEADS THE WORLD IN

MOST COUNTRIES LEAD THE WORLD IN SOMETHING--SOMETIMES GOOD THINGS, SOMETIMES NOT SO GOOD THINGS, AND SOMETIMES FUNNY THINGS. THIS MAP SHOWS WHAT EACH COUNTRY DOES BEST COMPARED TO ALL OTHER COUNTRIES. DATA SOURCES: HTTP://THEDOGHOUSEDIARIES.COM/MAPLESYRUP.

DOGHOUSEDIARIES / 2013

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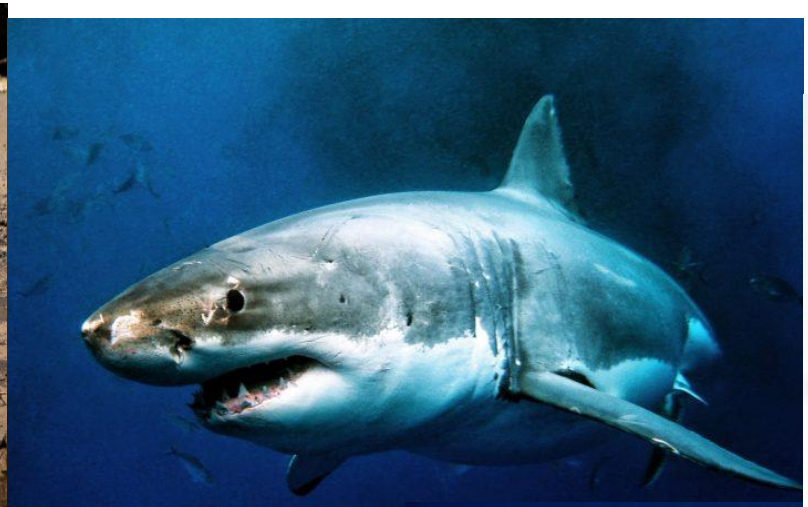
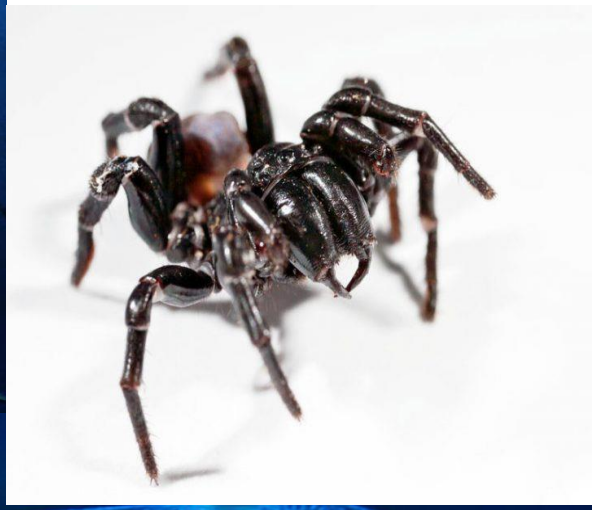
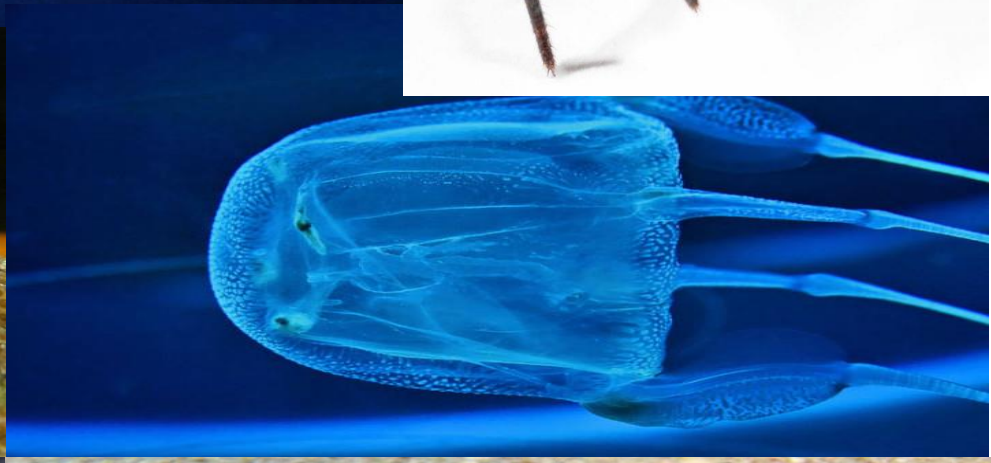






Forget spiders and snakes, horses are more likely to kill you, study of Australian coronial data shows

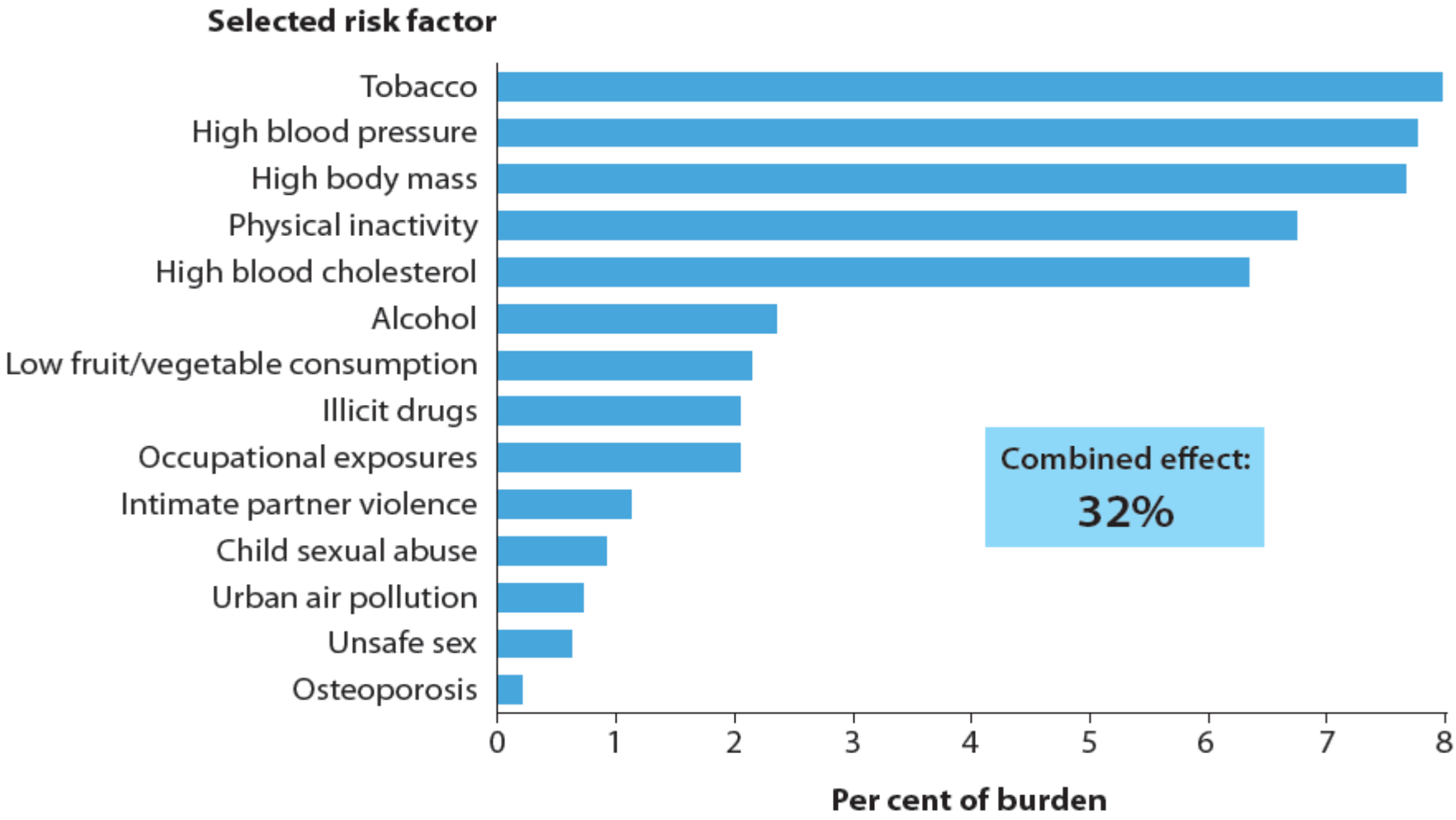
ABC News, 13 Mar 2017

http://www.abc.net.au/news/2017-01-17/horse-more-likely-to-kill-you-than-bees-wasps-snakes-spiders/8188842

Creature	Deaths (2000-2013)
Hornets, wasps, bees	27 (25 bees, 2 wasps)
Snakes	27
Spiders	0
Ticks and ants	5
Marine animals	3 (box jellyfish)
Centipedes, millipedes	0
Scorpions	0
Unknown	2

Health-risk Behaviour

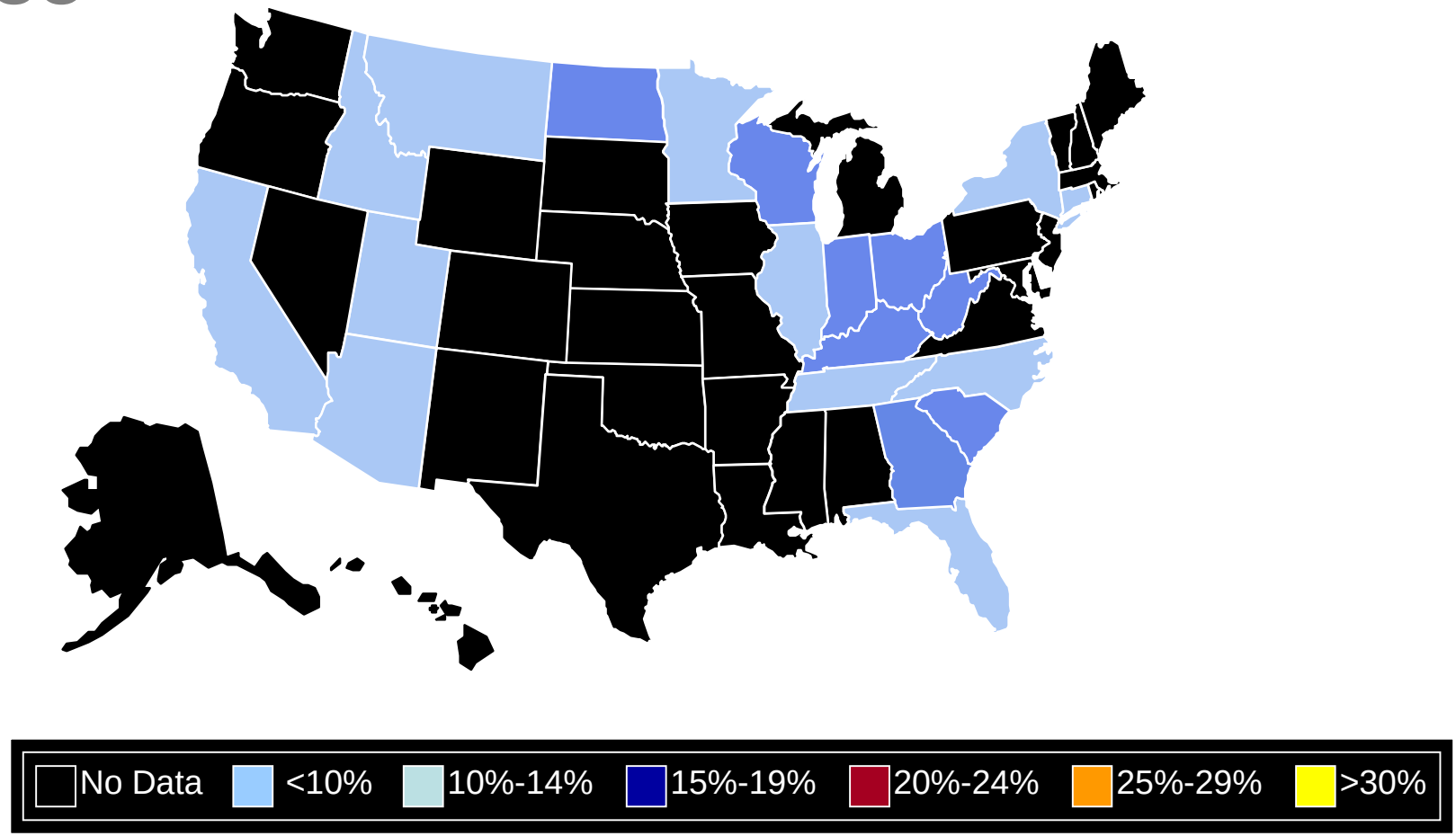
Burden attributed to 14 selected risk factors, 2003



The Real Issues: Overweight and Obesity

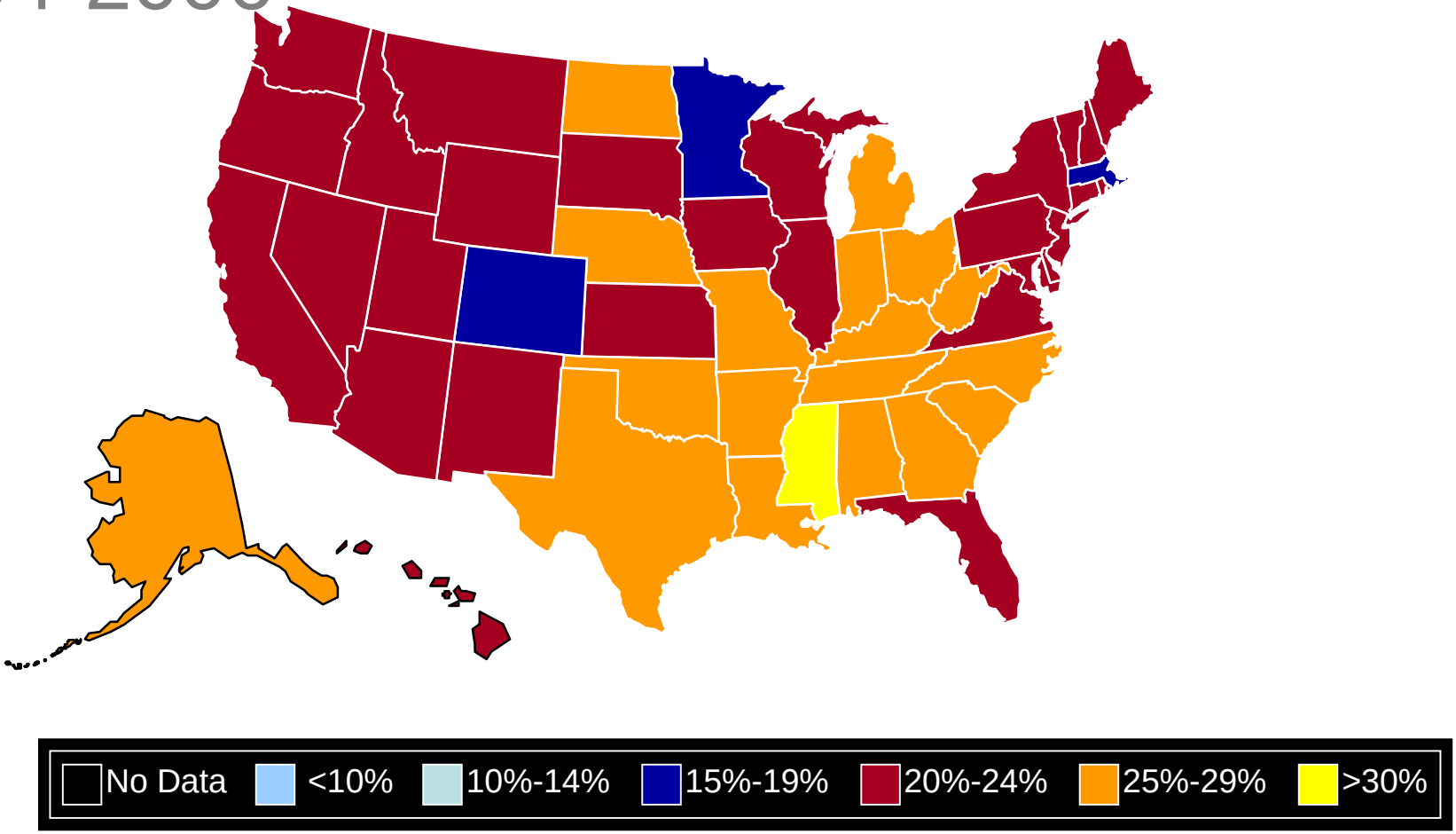
- 63% of Australian adults (11.2 million people) were overweight or obese in 2014–15. Of these, 4.9 million were obese.
- Just over 1 in 4 (26% or 750,000) children aged 5–14 and nearly 4 in 10 (37% or 1.1 million) young people aged 15–24 were overweight or obese.
- 37% 15-24 years
- More common in low SES

Obesity Among Adults in the U.S. 1985



Source: Behavioral Risk Factor Surveillance System, CDC

Obesity Among Adults in the U.S. 2004-2006



Source: Behavioral Risk Factor Surveillance System, CDC

The Real Issues: Poor Diet

- **Fruit and vegetable intake**
  - » 92% and 52% of Australian adults in did not eat the recommended serves of vegetables and fruit, respectively.

- **Sugar intake**
  - » Half of Australia's adults and more than 70% of children and young people are consuming too much sugar.
  - » In particular, teenage males consume an average of 23 teaspoons of sugar each day – equivalent to 2.5 cups of sugar per week.

The Real Issues: Physical Inactivity

- Nearly 60% of Australian adults do not engage in recommended amounts of physical activity.
- Only one-third of children engaged in recommended levels of physical activity.
- Globally, around 31% of adults aged 15 years and over were insufficiently active in 2008 (men 28% and women 34%). Approximately 3.2 million deaths each year are attributable to insufficient physical activity (WHO, 2017).

The Real Issues: Alcohol Misuse

- **Daily drinking down from previous years**
  - » Between 2010 and 2013, daily drinking fell from 7.2% to 6.5% in people aged 14 and over.
- **A considerable proportion drink to excess**
  - » In 2013, around 1 in 6 (16%) people aged 12 or older had consumed 11 or more standard drinks on a single drinking occasion in the past 12 months (compared with 17% in 2010).
- **Half of pregnant women still drinking**
  - » In 2013, 47% of pregnant women reported consuming alcohol during their pregnancy (little changed from 2010), but most (96%) consumed only 1–2 standard drinks on that drinking occasion.
- **Harm, hospitalisation and treatment**
  - » In 2013, more than 1 in 5 (21%) of recent drinkers put themselves or others at risk of harm while under the influence of alcohol in the previous 12 months (for example, by driving a vehicle, or verbally or physically abusing someone or undertaking some other risky activity)
  - » More than 1 in 4 (26%) Australians had been a victim of an alcohol-related incident; verbal abuse was the most common incident reported (22%), although this proportion was lower than the 24% in 2010.

The Real Issues: Skin Cancer

- QLD is the skin cancer capital of the world (Queensland Cancer Registry, 2010)
- Exposure to ultraviolet rays the main cause of skin cancer (Australian Institute of Health and Welfare, 2010)
- Two in three Australians diagnosed with skin cancer by the age of 70 (Cancer Council Australia, 2010)
- Most expensive item on Medicare schedule

Bush and Farm Craft

SNAKE BITES.

AVOID WHISKY AND WALKING.

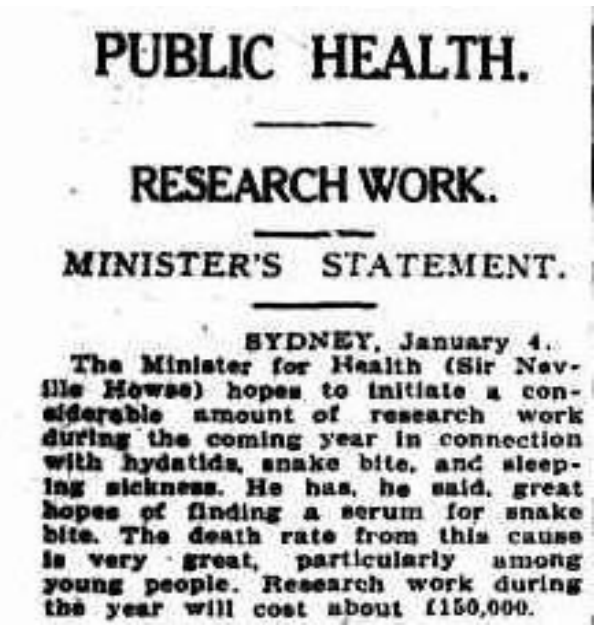
When we read the official reports of the numbers of people in India who are annually killed by the bites of snakes, numbers totalling last year nearly 25,000, and the year before over 30,000, we have reason to be very thankful for the forbearance of the venomous snakes of Australia. Dr. F. Tidswell, M.B., in a most interesting pamphlet on "The Venoms of Australian Snakes (1906)," shows that in eighty seven cases of black snake bites no deaths resulted. The tiger snake was responsible for fifteen deaths in thirty-three cases; the brown snake for fifteen in thirty-two; and the death adder for five deaths in ten cases.

Arranged in order of lethality, the death adder appears as the most lethal snake (50 per cent. of deaths); but close to it comes the tiger snake (45.5 per cent. of deaths); next, but far below, comes the brown snake (fatality, 18.7 per cent.); and lastly comes the black snake, to which no fatality whatever is attached.

The bites recorded were most frequently incurred upon parts of the body which permitted of the application of a ligature. With reference to the administration of alcohol, the doctor says that it may be inferred that the administration of alcohol has no material effect in preserving life after bites by potentially deadly snakes. He also deprecates violent dragging about of the patient, but advises a ligature, thin scarification and sucking of the bite, and the giving of stimulants only if the patient is faint. No more should be done until the arrival of a medical man.

The following article appears in "Grenier's Rubber News":—Avoid two time-honoured tips—alcohol and exercise. It is impossible to push alcohol long enough to prevent its depressing effect, which usually appears at the very time that the system requires every ounce of energy to combat the poison. Coffee has no subsequent depressing action. Give half a cupful every half hour, or ring the changes with thirty-drop doses of sal volatile every second hour. Give a large quantity of fluids; the more fluid that is absorbed into the system the more diluted the poison is supposed to be. Don't walk the patient about. It merely exhausts a man who is about to

The Farmer and Settler (NSW) Tuesday 25 February 1913, page 2



PUBLIC HEALTH.

RESEARCH WORK.

MINISTER'S STATEMENT.

SYDNEY, January 4.

The Minister for Health (Sir Neville Howse) hopes to initiate a considerable amount of research work during the coming year in connection with hydatids, snake bite, and sleeping sickness. He has, he said, great hopes of finding a serum for snake bite. The death rate from this cause is very great, particularly among young people. Research work during the year will cost about £150,000.

Queensland Times (Ipswich, Qld), Thursday 5 January 1928, page 7

TIGER SNAKE BITE.

Antivenin Announced.

The Commonwealth Department of Public Health announces an antivenin against tiger snake bite, claiming that it is protective in high degree against the venom of tiger snakes, but affords practically no protection against the venom of several other varieties of reptiles, including the death adder and brown and black snakes. In the case of the copperhead [illegible] snake antiver[illegible] is al[illegible] one-tenth to one-twelfth as potent as against the specific venom.

The department states that in order to obtain the best results it is essential that a large dose of antivenin should be given as soon as possible after the bite. [illegible] usual first aid measures, such as incision and ligature, should immediately be employed to retard the absorption of the venom. Five persons who have been treated with the serum made complete recovery. Supplies of serum, either for private use or for hospitals, may be obtained from the director of the Commonwealth Serum Laboratories, Parkville, Victoria.

The Sydney Morning Herald (NSW), Saturday 24 January 1931, page 17

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Toxicon 48 (2006) 899–918

TOXICON

www.elsevier.com/locate/toxicon

The pioneers of venom production for Australian antivenoms

Peter Mirtschin*

Venom Supplies Pty Ltd, PO Box 546, Tanunda, South Australia 5352, Australia

Available online 22 July 2006

Abstract

Before the introduction of the first Australian antivenom was the era of the self-styled 'snakemen' and their diverse snakebite remedies. Many received multiple bites from highly dangerous snakes, some of which were deliberately taken to either prove a certain treatment or liven up their show. The mortality rate among these handlers and showmen was high. Production of the first effective Australian antivenom, the tiger snake antivenom, in 1930, began the scientific approach to treating snakebite and opened new frontiers for professional and amateur snake people. Collecting venoms in the development and early production of antivenoms was carried out by a number of professional herpetologists often with little or no reward and in some instances at the ultimate cost of their lives. This paper reviews the most important of those late nineteenth and twentieth century snakemen and their contributions to venom research, antivenom production and current toxinological knowledge.

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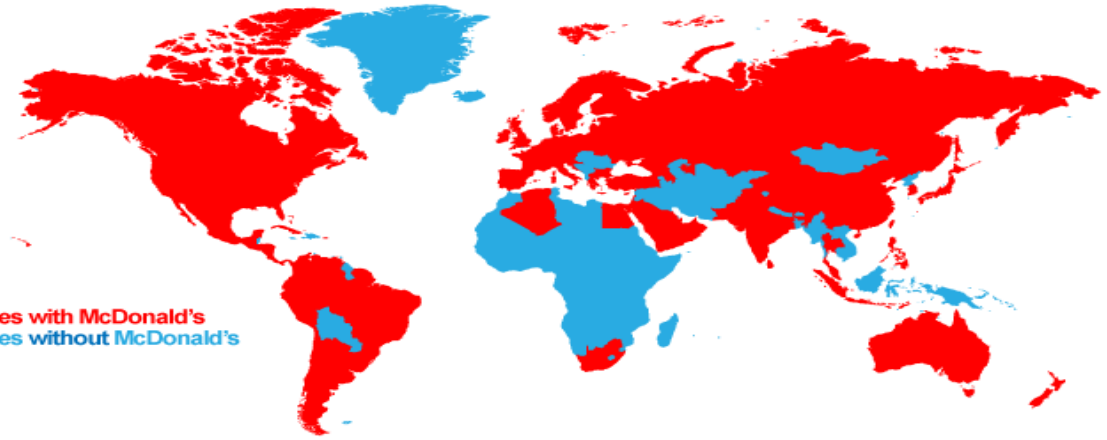
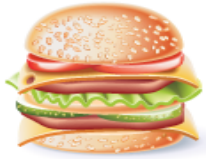
ACROSS THE WORLD





Number of McDonald's outlets of selected countries

US	Japan	Canada	Germany	UK	China
13,381	3,598	1,400	1,276	1,250	660

Most expensive McDonald's burger - seleted countires (USD)*

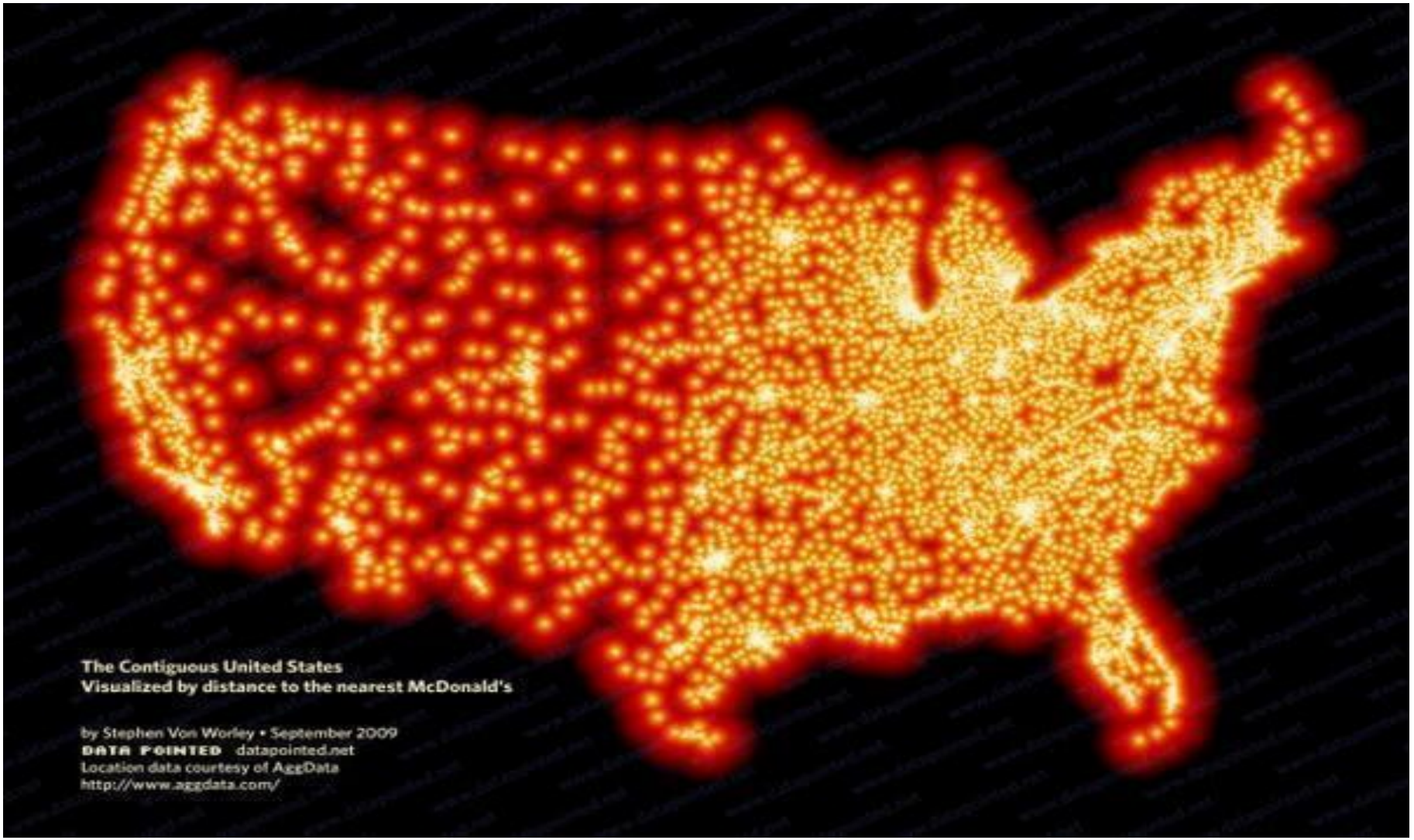
Norway	Demark	Iceland	Eurozone	US
7.18	5.93	5.21	4.96	3.57

World's busiest McDonald's

Located on famous Pushkin Square in Moscow,
the largest McDonalds in the world (more than 28,000 sq. ft.) and the busiest (more than 250 million customers to date)
The restaurant seats 700 customers and has a 70 foot-long service counter with 27 cash registers.

* Price using the Big Mac Index published by The Economist, as an informal way of measuring the purchasing power parity (PPP) between two currencies and provides a test of the extent to which market exchange rates result in goods costing the same in different countries.

Source: www.oanda.com | www.aboutmcdonalds.com


The Contiguous United States
Visualized by distance to the nearest McDonald's
by Stephen Von Worley • September 2009
DATA POINTED datapointed.net
Location data courtesy of AggData
http://www.aggdata.com/

Baker et al., 2017, *International Journal Health Policy Management*

Behavioural Interventions: Considerations

- What is the problem that necessitates change?
- Who needs to change?
- What behaviours need to change?

- What change mechanisms need to be activated?
- What behaviour change techniques/strategies can be used to activate changes?

THEORY!

Why is theory important in intervention development?

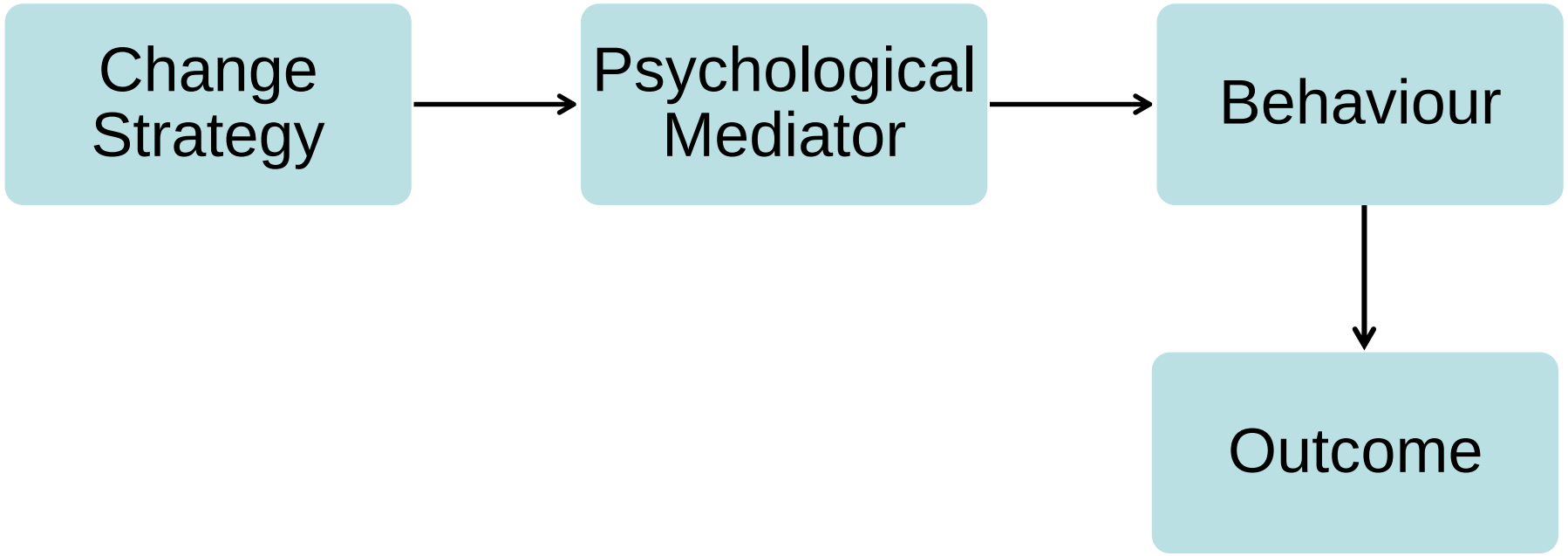
- Theory-based campaigns more effective in promoting health-protective behaviour compared to atheoretical campaigns (Noar, 2006; Webb et al., 2010)
- Evaluation of advertising countermeasures is easier and more cost effective with theoretically devised approaches given the clearly measurable constructs (French et al., 2012; Prestwich et al., 2015; Stead et al., 2005)

Why is theory important?

Answering the ‘what’ and ‘how’ questions

- Explanatory systems
  - » Personal and social factors (‘what’)
  - » Mechanisms responsible (‘how’)
  - » Targets for intervention
- Pose questions/hypotheses
- Permits disconfirmation, rejection
- Avoids ‘hit and hope’ or ‘variable fishing expeditions’

Fundamental Process Model of Health Behaviour Interventions

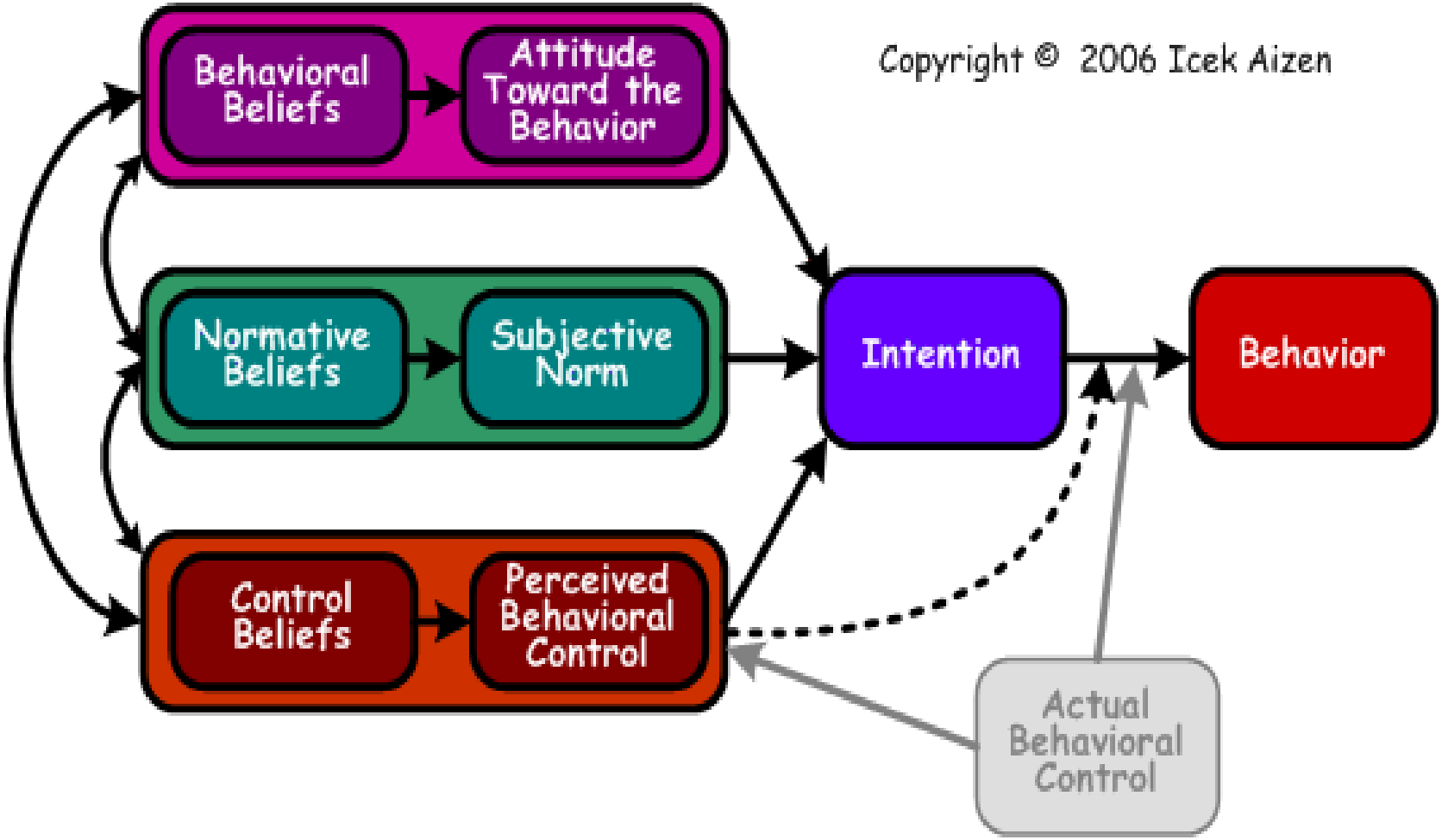


Examples of Theories

- Self-efficacy/social cognitive theory (Bandura, 1963)
- Health belief model (Becker, 1974)
- Protection motivation theory (Rogers, 1975)
- Theory of interpersonal behavior (1977)
- Theory of reasoned action (Fishbein & Ajzen, 1980)
- Self-determination theory (Deci, 1980)
- Transtheoretical model (Prochaska & DiClemente, 1982)
- Personality systems interaction theory (Kuhl, 1984)
- Theory of planned behavior (Ajzen, 1985)
- Self-regulation theory (Bagozzi, 1990)
- Health action process approach (Schwarzer, 1992)
- The I-change model (De Vries et al., 1998)
- Reasoned action approach (Fishbein & Azjen, 2009)

Health behaviour theory	Attitude	Norm	Self-efficacy	Intention	Additional variables
Extended parallel process model	✓	✓	✓	✓	Threat appraisal
Information-motivation-behavioural skills model	✓	✓	✓	✓	Information; behavioural skills
Health action process approach	✓		✓	✓	Risk perception; action & coping planning; barriers; resources
Health belief model	✓		✓		Perceived susceptibility & severity; motivation; cues to act
Protection motivation theory	✓		✓	✓	Perceived vulnerability & severity; fear
Prototype-willingness model	✓	✓		✓	Prototype perceptions; willingness
Social cognitive theory	✓	✓	✓	✓	Impediments/barriers
Theory of reasoned action	✓	✓		✓	
Theory of planned behaviour	✓	✓	✓	✓	Actual control
Transtheoretical model	✓		✓		Processes of change

Source: Sheeran et al. (2016) *Health Psychology, 35,* 1178-1188


Behavioral Beliefs
Attitude Toward the Behavior
Normative Beliefs
Subjective Norm
Control Beliefs
Perceived Behavioral Control
Intention
Behavior
Actual Behavioral Control
Copyright © 2006 Icek Aizen

Application of TPB

» Wide range of health behaviours (McEachan et al., 2011)

- 19.3%, 44.3%
- PA (23.9%)
- Diet (21.2%)

Routledge
Taylor & Francis Group

Health Psychology Review

ISSN: 1743-7199 (Print) 1743-7202 (Online) Journal homepage: http://www.tandfonline.com/loi/rhpr20

Prospective prediction of health-related behaviours with the Theory of Planned Behaviour: a meta-analysis

Rosemary Robin Charlotte McEachan , Mark Conner , Natalie Jayne Taylor & Rebecca Jane Lawton

To cite this article: Rosemary Robin Charlotte McEachan , Mark Conner , Natalie Jayne Taylor & Rebecca Jane Lawton (2011) Prospective prediction of health-related behaviours with the Theory of Planned Behaviour: a meta-analysis, Health Psychology Review, 5:2, 97-144, DOI: 10.1080/17437199.2010.521684

To link to this article: http://dx.doi.org/10.1080/17437199.2010.521684

» Stronger attitude-intention (.40) and perceived control-intention (.33) links than subjective norm (.09); intention-behaviour (.36) (Hagger et al., 2002)

Recently applied to decision-making for others (Hamilton et al., 2015, 2016, 2017)

285

British Journal of Health Psychology (2016), 21, 285–301
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www.wileyonlinelibrary.com

A psychosocial analysis of parents' decisions for limiting their young child's screen time: An examination of attitudes, social norms and roles, and control perceptions

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[2]School of Psychology and Counselling, Queensland University of Technology, Kelvin Grove, Queensland, Australia
[3]School of Nursing and Midwifery, Queensland University of Technology, Kelvin Grove, Queensland, Australia

Objectives. Preschool-aged children spend substantial amounts of time engaged in screen-based activities. As parents have considerable control over their child's health behaviours during the younger years, it is important to understand those influences that guide parents' decisions about their child's screen time behaviours.

Design. A prospective design with two waves of data collection, 1 week apart, was adopted.

Psycho-Oncology
Journal of the Psychological, Social and Behavioral Dimensions of Cancer

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DOI: 10.1002/pon.4434

WILEY

PAPER

Protecting young children against skin cancer: Parental beliefs, roles, and regret

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[4]School of Psychology and Counselling,

Abstract

Objective: To examine the role of parental beliefs, roles, and anticipated regret toward performing childhood sun-protective behaviours.

Methods: Parents (N = 230; 174 mothers, 56 fathers), recruited using a nonrandom convenience sample, of at least 1 child aged between 2 and 5 years completed an initial questionnaire assessing demographics and past behaviour as well as theory of planned behaviour global (attitude, subjective norm, and perceived behavioural control) and belief-based (behavioural,

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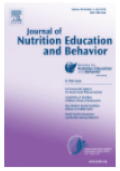
Journal of Nutrition Education and Behavior

Volume 48, Issue 4, April 2016, Pages 250-257.e1



Research Article

Investigating Mothers' Decisions to Give Their 2- to 3-Year-Old Child a Nutritionally Balanced Diet

Teagan Spinks Hons, Kyra Hamilton PhD

Theory Integration: The Way Forward

- Many theoretical approaches in Health Psychology
- Varying degrees of predictive validity
- Substantial variance in health behaviour unexplained by single theoretical approaches
- Considerable overlap between constructs and operationalisations between "competing" theories
- **Goals of integration:**
  - » Reduce complexity, eliminate redundancy
  - » Explain more variance in health behaviour and underlying processes involved

British Journal of Health Psychology (2009), 14, 189–194

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Editorial

Theoretical integration in health psychology: Unifying ideas and complementary explanations

Martin S. Hagger
Risk Analysis, Social Processes, and Health Group, School of Psychology, University of Nottingham, UK

Theoretical approaches to behaviour change are now pervasive in the health psychology literature (Abraham & Michie, 2008; Michie, Johnston, Francis, Hardeman, & Eccles, 2008). Many are developed in the social psychology literature and applied in health contexts to provide a hypothesis-testing framework for empirical investigations into health behaviours and outcomes (Michie, Rothman, & Sheeran, 2007). Numerous theoretical perspectives have been applied in the health sphere: the health action process model (Schwartzer, 1992), the health belief model (Becker, 1974), protection motivation theory (PMT; Rogers, 1975), self-determination theory (Deci & Ryan, 1985), self-regulation theory (Leventhal, Leventhal, & Contrada, 1998), social cognitive theory (Bandura, 1977), subjective expected utility theory (Edwards, 1954), the theories of reasoned action (Ajzen & Fishbein, 1980) and planned behaviour (Ajzen, 1985), the theory of interpersonal behaviour (Triandis, 1977), and the transtheoretical model (Prochaska & DiClemente, 1982) to name but a few. While meta-analytic reviews of cross-sectional, prospective, experimental, and intervention studies have indicated that these theories have varying degrees of utility in explaining variance in health behaviour and outcomes (Armitage & Conner, 2001; Hardeman *et al.*, 2002; Milne, Sheeran, & Orbell, 2000; Sibley & Abraham, 2008), a substantial variance in health behaviour remains unexplained (Ogden, 2003; Weinstein, 2007).

Theory Integration

Journal of Applied Social Psychology

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PDF Info References

Application of an Integrated Behavioral Model to Predict Condom Use: A Prospective Study Among High HIV Risk Groups[1]

Danuta Kasprzyk ✉, Daniel E. Montaño, MARTIN FISHBEIN

First published: September 1998 Full publication history

DOI: 10.1111/j.1559-1816.1998.tb01690.x View/save citation

Cited by: 38 articles Citation tools

Am score

[1]This research was funded by National Institute of Mental Health Grant R01 MH47059. Any research endeavor is us effort and extraordinary teamwork. We would like to acknowledge the teamwork of our staff that was crucial to the addition, we thank our participants for so freely sharing their lives with us. Without all of you, this project could not

✉ Correspondence concerning this article should be addressed to Danuta Kasprzyk, Battelle, Centers for Public Evaluation, 4000 N. E. 41st Street, Seattle, WA 98105-5428

Abstract

An integrated theoretical model using constructs from multiple behavioral models v understand and predict condom use among a sample of injecting drug users, comm workers, men who have sex with men, and multipartnered heterosexuals. Elicitatior were conducted to develop a questionnaire to measure model constructs that may of condom use for sex with vaginal, anal, and oral regular and casual partners. A pr survey design was used, with 993 participants interviewed at Time 1, and 686 returr interviews 3 months later. Regression analyses were conducted using Time 1 measu intention and Time 2 behavior. Strong support was found for a model that includes social norm, and facilitators/constraints as predictors of behavior, with multiple cor the 0.20 to 0.40 range. Findings also indicate perceived control and facilitators/cons distinct constructs and both, along with attitude and social norm, contribute to expl behavioral intention. Implications for intervention development are discussed.

de Vries, H., Mesters, I., van de Steeg, H., & Honing, C. (2005). *Patient Educ. Counsel.*

View issue TOC
Volume 28, Issue 17
September 1998
Pages 1557–1583

Kasprzyk, D., Montaño, D. E., & Fishbein, M. (1998). *J. Appl. Soc. Psychol.*

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Patient Education and Counseling

Patient Education and Counseling 56 (2005) 154–165

www.elsevier.com/locate/pateducou

The general public's information needs and perceptions regarding hereditary cancer: an application of the Integrated Change Model

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[a] *Department of Health Education, Maastricht University, P.O. Box 616, 6200 MD Maastricht, The Netherlands*
[b] *Department of Information and Support, Dutch Cancer Society, Amsterdam, The Netherlands*

Received 20 February 2003; received in revised form 25 July 2003; accepted 25 January 2004

Abstract

The Integrated Change Model (the I-Change Model) was used to analyse the general public's need and perceptions concerning receiving information on the role of hereditary factors with regard to cancer. The results from a study in 457 Dutch adults showed that 25% correctly indicated the types of cancer where hereditary factors can play a role. Respondents, however, overestimated the role of hereditary factors causing breast cancer. Recognition of warning signs was low, as was the recognition of inheritance patterns. Participants wanted to know the types of cancer with hereditary aspects, how to recognise hereditary cancer in the family, personal risks and the steps to be taken when hereditary predisposition is suspected. The most popular information channels mentioned were leaflets, the general practitioner, and the Internet. Respondents interested in receiving information on heredity and cancer were more often female, had had experiences with hereditary diseases, had more knowledge, perceived more advantages, encountered more social support in seeking information, and had higher levels of self-efficacy. Education should outline the most important facts about hereditary cancer, how to get support, and create realistic expectations of the impact of genetic factors.

Keywords: Hereditary cancer; Knowledge; Attitudes; Self-efficacy; Integrated Change Model

What's missing…

Theory of Planned Behaviour and Self-Determination Theory

Can SDT assist in explaining the origin of TPB constructs (why beliefs are pursued)?

"*Cognitive theories begin their analysis [of behaviour] with a cognitive representation of some future desired state. What is missing, of course, is a consideration of the conditions of the organism that make these future states desired*"

(Deci & Ryan, 1985, p. 228)

Self-Determination Theory

SELF-DETERMINED MOTIVES ('INTRINSIC')

NON-SELF-DETERMINED MOTIVES ('EXTRINSIC')

Type of Motivation

Intrinsic Motivation	Identification	Introjection	External Regulation

Defining Features

Self-endorsed reasons

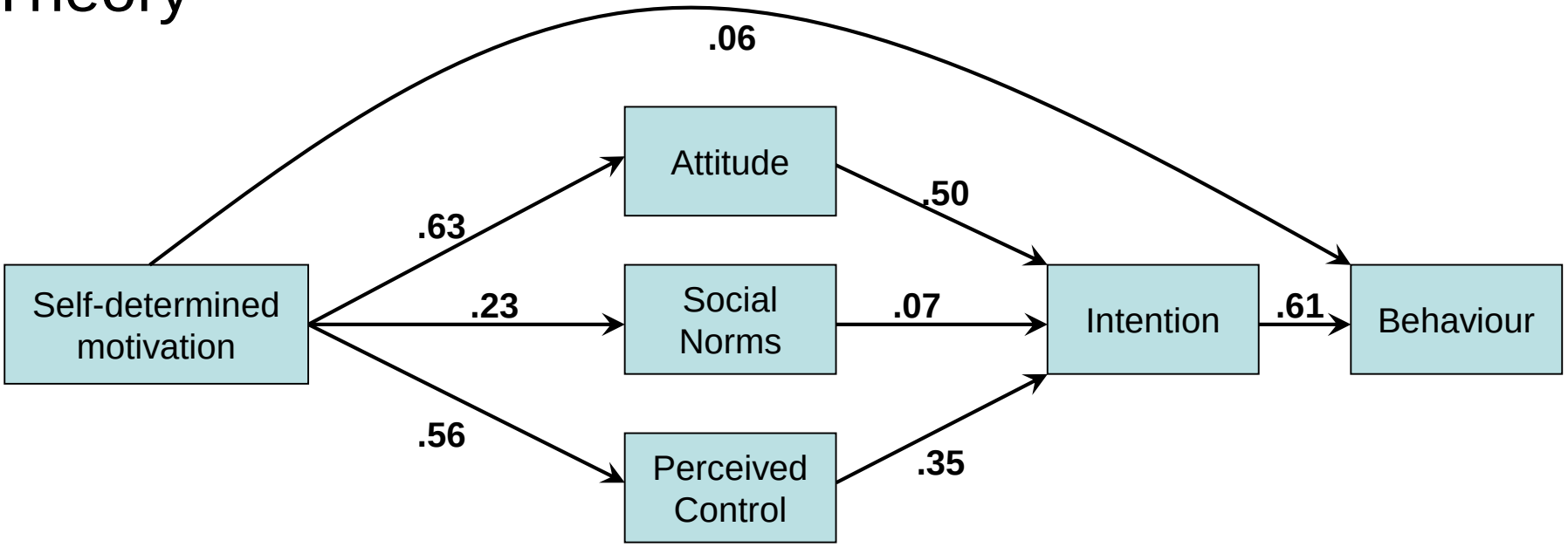
External/ other-endorsed reasons

Behavioral Response

Persistence, self-regulated

Desistence, other-regulated

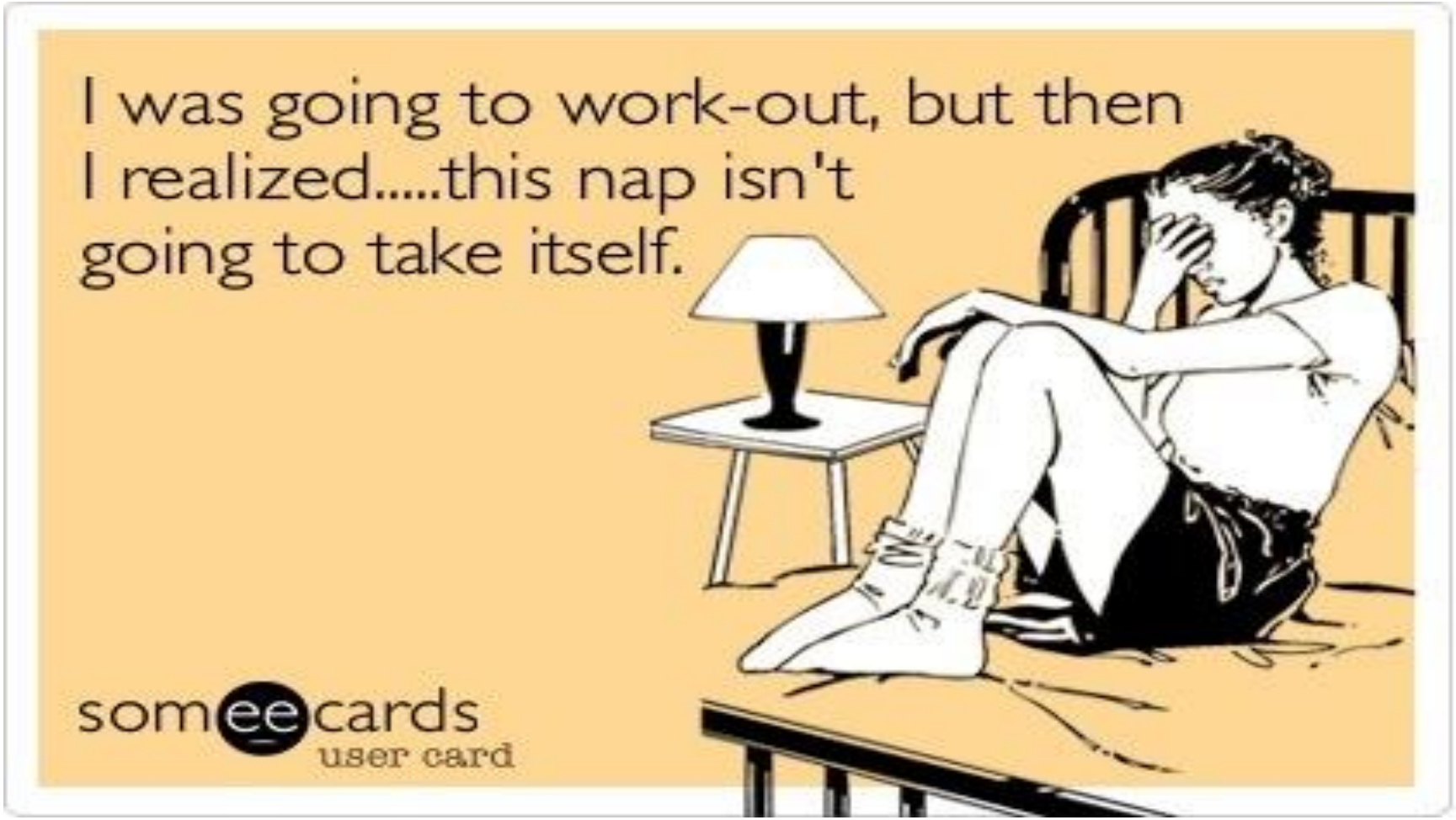
Theory of Planned Behavior and Self-Determination Theory



Showed individuals perceiving a given behaviour to be autonomously motivated are likely to strategically align their beliefs about performing the behaviour in future (e.g., attitudes, perceived behavioural control) with their motives.

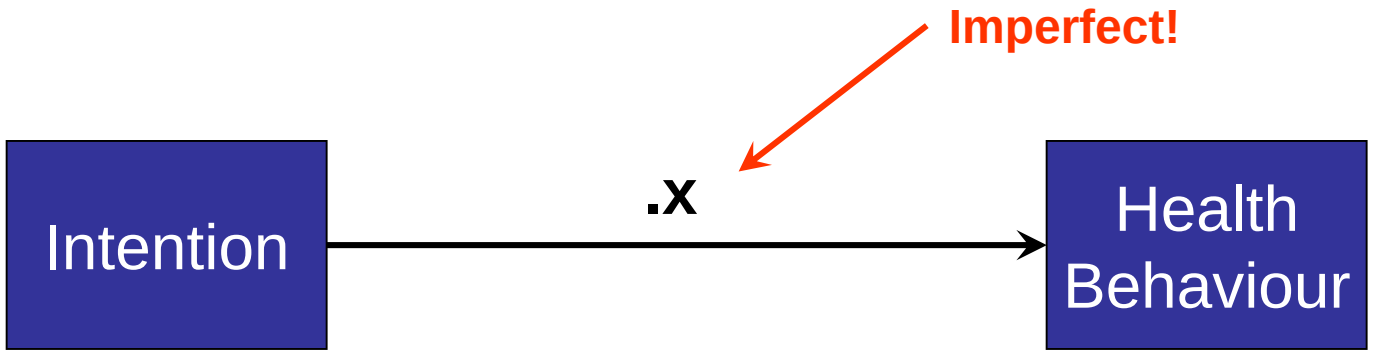
Sources: Hagger et al. (2006) *Personality & Social Psychology Bulletin*
Hagger & Chatzisarantis (2009) *British Journal of Health Psychology*

What's missing…



Intention-behaviour relations - motivation is not enough

- Motivation may be a necessary but not sufficient condition for behaviour
- Many people state an intention, motive or desire to participate in a health behaviour…. but fail miserably to do so!
- Intention-behaviour ‘gap’



Inclined Abstainers
Unsuccessful intenders

British Journal of Health Psychology (2013), 18, 296–309

The British Psychological Society
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How big is the physical activity intention–beha gap? A meta-analysis using the action contro framework

Ryan E. Rhodes[1]* and Gert-Jan de Bruijn[2]
[1]Behavioural Medicine Laboratory, University of Victoria, Victoria, British Canada
[2]University of Amsterdam, the Netherlands

Objectives. The physical activity (PA) intention–behaviour gap is a topic of consider contemporary research, given that most of our models used to understand phy activity suggest that intention is the proximal antecedent of behavioural enactment. purpose of this study was to quantify the intention–PA gap at public health guidelines a meta-analysis of the action control framework.

Design. Systematic review and meta-analysis.

Methods. Literature searches were conducted in July 2012 among five key se engines. This search yielded a total of 2,865 potentially relevant records; of these

British Journal of Social Psychology (1998), **37**, 151–165 *Printed in Great Britain*

'Inclined abstainers': A problem for predicting health-related behaviour

Sheina Orbell* and **Paschal Sheeran**
Department of Psychology, University of Sheffield, Sheffield S10 2UR, UK

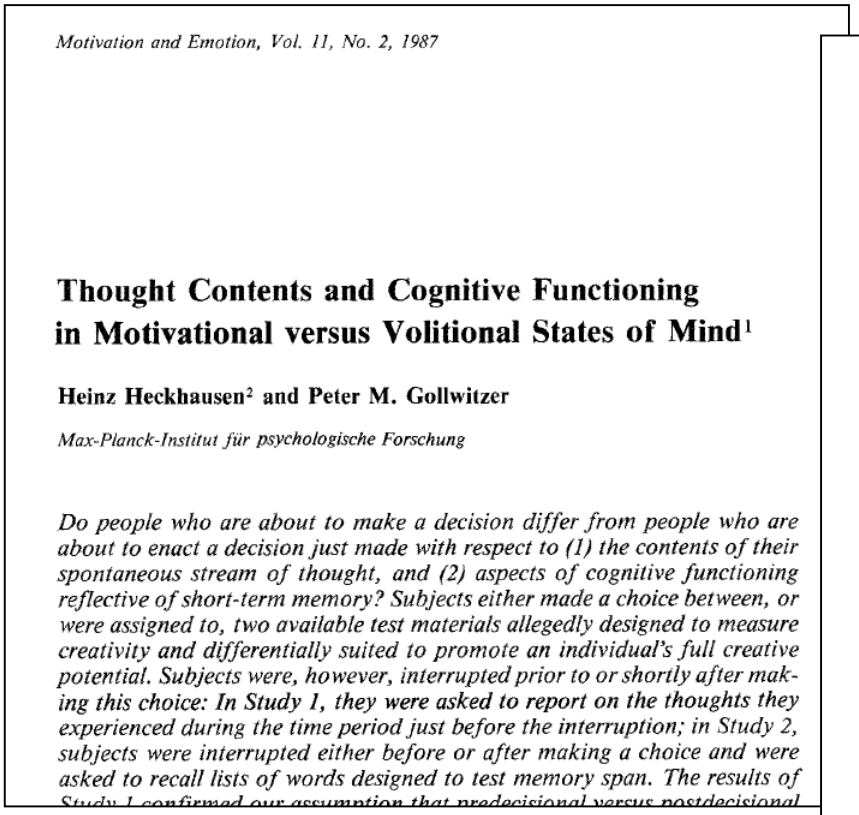
A longitudinal test of the association between motivation to undertake a precautionary health action and subsequent behaviour was conducted on women's uptake of the cervical screening test. A sample of never-screened women ($N = 166$) completed measures derived from protection-motivation theory (PMT; Rogers, 1983). One year later, screening uptake was reliably determined from medical records. While regression analyses demonstrated that PMT variables predicted both motivation to undergo cervical screening and screening uptake, there was, nonetheless, a good deal of inconsistency between protection motivation and screening behaviour. Fifty-seven per cent of those who indicated they were willing to undergo the test did not do so within a one-year period. Discriminant analysis

Inclined Abstainers
Unsuccessful intenders

		Behaviour	
		Successful	Unsuccessful
Intention	Intender	Successful Intenders (42%)	Unsuccessful Intenders (36%)
	Non-intender	Successful Non-intenders (2%)	Unsuccessful Non-intenders (21%)

Source: Rhodes & de Bruin (2013)

Filling ‘the gap’
Planning and intention-behaviour relations



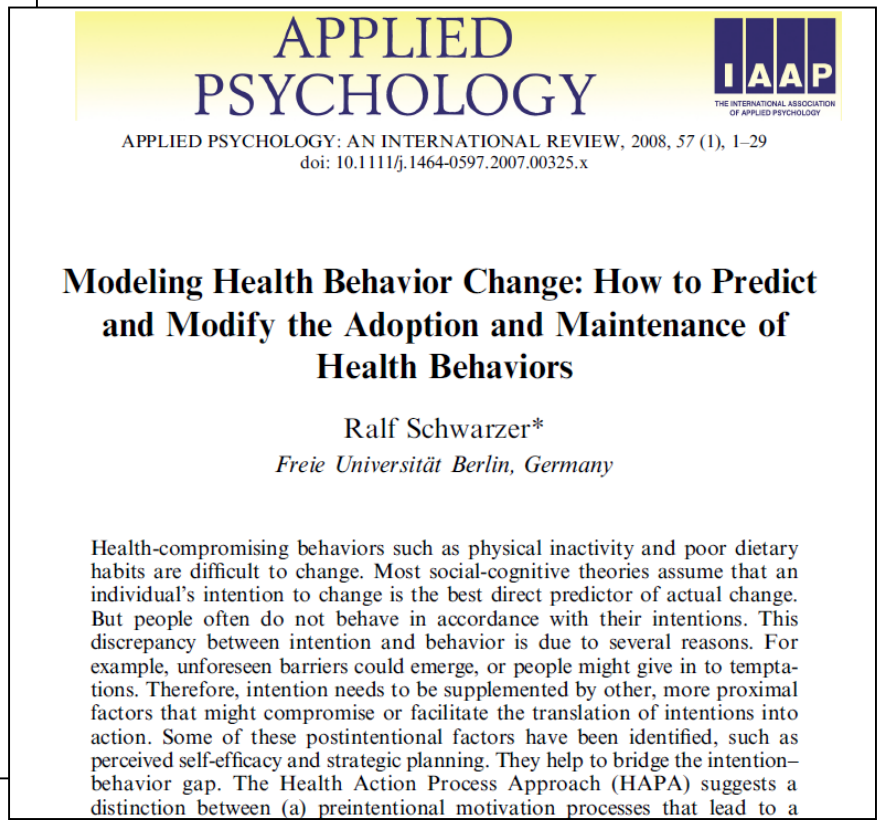
Motivation and Emotion, Vol. 11, No. 2, 1987

Thought Contents and Cognitive Functioning in Motivational versus Volitional States of Mind[1]

Heinz Heckhausen[2] **and Peter M. Gollwitzer**

Max-Planck-Institut für psychologische Forschung

Do people who are about to make a decision differ from people who are about to enact a decision just made with respect to (1) the contents of their spontaneous stream of thought, and (2) aspects of cognitive functioning reflective of short-term memory? Subjects either made a choice between, or were assigned to, two available test materials allegedly designed to measure creativity and differentially suited to promote an individual's full creative potential. Subjects were, however, interrupted prior to or shortly after making this choice: In Study 1, they were asked to report on the thoughts they experienced during the time period just before the interruption; in Study 2, subjects were interrupted either before or after making a choice and were asked to recall lists of words designed to test memory span. The results of



APPLIED PSYCHOLOGY

IAAP THE INTERNATIONAL ASSOCIATION OF APPLIED PSYCHOLOGY

APPLIED PSYCHOLOGY: AN INTERNATIONAL REVIEW, 2008, *57* (1), 1–29
doi: 10.1111/j.1464-0597.2007.00325.x

Modeling Health Behavior Change: How to Predict and Modify the Adoption and Maintenance of Health Behaviors

Ralf Schwarzer*

Freie Universität Berlin, Germany

Health-compromising behaviors such as physical inactivity and poor dietary habits are difficult to change. Most social-cognitive theories assume that an individual's intention to change is the best direct predictor of actual change. But people often do not behave in accordance with their intentions. This discrepancy between intention and behavior is due to several reasons. For example, unforeseen barriers could emerge, or people might give in to temptations. Therefore, intention needs to be supplemented by other, more proximal factors that might compromise or facilitate the translation of intentions into action. Some of these postintentional factors have been identified, such as perceived self-efficacy and strategic planning. They help to bridge the intention–behavior gap. The Health Action Process Approach (HAPA) suggests a distinction between (a) preintentional motivation processes that lead to a

Sources: Heckhausen & Gollwitzer (1987), Schwarzer (2008)

Filling the 'the gap'

Planning and implementation intentions

- Dual-phase models of action: *motivational* vs. *volitional*
- Gollwitzer et al. (1999) Implementation intentions: "Strong effects of simple plans"
- Also known as "if-then" plans (Gollwitzer, 2015)
- Linking context/cue/prompt with the intended action
  - e.g. "IF condition X arises THEN I will do behaviour Y"
- This does not *change* intentions, but *strengthens* the intention-behaviour relationship

Strong Effects of Simple Plans

Advances in Experimental Social Psychology
Volume 38, 2006, Pages 69–119

Implementation Intentions and Goal Achievement: A Meta-analysis of Effects and Processes

Peter M. Gollwitzer, Paschal Sheeran

doi:10.1016/S0065-2601(06)38002-1

Get rights and conte

Holding a strong goal intention ("I intend to reach *Z*!") does not guarantee goal achievement, becaus people may fail to deal effectively with self-regulatory problems during goal striving. This review analyze whether realization of goal intentions is facilitated by forming an implementation intention that spells out th when, where, and how of goal striving in advance ("If situation *Y* is encountered, then I will initiate goa directed behavior *X*!"). Findings from 94 independent tests showed that implementation intentions had positive effect of medium-to-large magnitude ($d = .65$) on goal attainment. Implementation intentions wer effective in promoting the initiation of goal striving, the shielding of ongoing goal pursuit from unwante influences, disengagement from failing courses of action, and conservation of capability for future go

APPLIED PSYCHOLOGY: Health and Well-Being

APPLIED PSYCHOLOGY: HEALTH AND WELL-BEING, 2014, *6* (1), 1–47
doi:10.1111/aphw.12017

Implementation Intention and Action Planning Interventions in Health Contexts: State of the Research and Proposals for the Way Forward

Martin S. Hagger*
Curtin University, Australia

Aleksandra Luszczynska*
University of Colorado at Colorado Springs, USA and University of Social Sciences and Humanities, Poland

The purpose of this paper is to provide an overview of the literature on two planning intervention techniques in health behaviour research, *implementation intentions* and *action planning*, and to develop evidence-based recommendations for effective future interventions and highlight priority areas for future research. We focused our review on four key areas: (1) definition and conceptualisation; (2) format and measurement; (3) mechanisms and processes; and (4) design issues. Overall, evidence supports the effectiveness of planning interventions in health behaviour with advantages including low cost and response burden.

Sources: Gollwitzer & Sheeran (2006)
Hagger & Luszczynska (2014)

Planning: a prospective self-regulatory skill

- Action Planning
  - » task-facilitating self-regulation strategy
  - » when, where, and how an intended behaviour is to be performed

- Coping Planning
  - » barrier-focused self-regulation strategy
  - » planning for the anticipation of barriers and the generation of alternative behaviors to overcome those (Sniehotta et al., 2010)

Coping Self-efficacy: a phase specific perception of self-efficacy

- Self-efficacy is seen as functional at different levels and at different points in time within a self-regulatory goal attainment process (Schwarzer & Renner, 2000).

- Confidence in ability to execute a behaviour (task self-efficacy) vs. optimistic beliefs about capability to deal with barriers that arise during the adoption and maintenance phase (coping self-efficacy).

Sample:

- Participants (*N*=629, baseline; *n*=254, follow-up) were young adults living in South East Queensland, Australia.
  - » Only dropout difference was on age (returning: *M*=22.2 years, *SD*=6.4, dropped out: *M*=20.5 years, *SD*=3.3).

Design and Procedure:

- Participants completed a baseline paper-based questionnaire and two phone follow-ups.
- A longitudinal design with three waves of data collection, each spaced 1 week apart. Measures at each point based on theoretical sequence of the HAPA: intention (T1), self-efficacy and planning (T2), flossing behaviour (T3).

Int.J. Behav. Med. (2017) 24:420–427
DOI 10.1007/s12529-016-9605-4

CrossMark

Translating Dental Flossing Intentions into Behavior: a Longitudinal Investigation of the Mediating Effect of Planning and Self-Efficacy on Young Adults

Kyra Hamilton[1] · Mikaela Bonham[1] · Jason Bishara[1] · Jeroen Kroon[1] · Ralf Schwarzer[2]

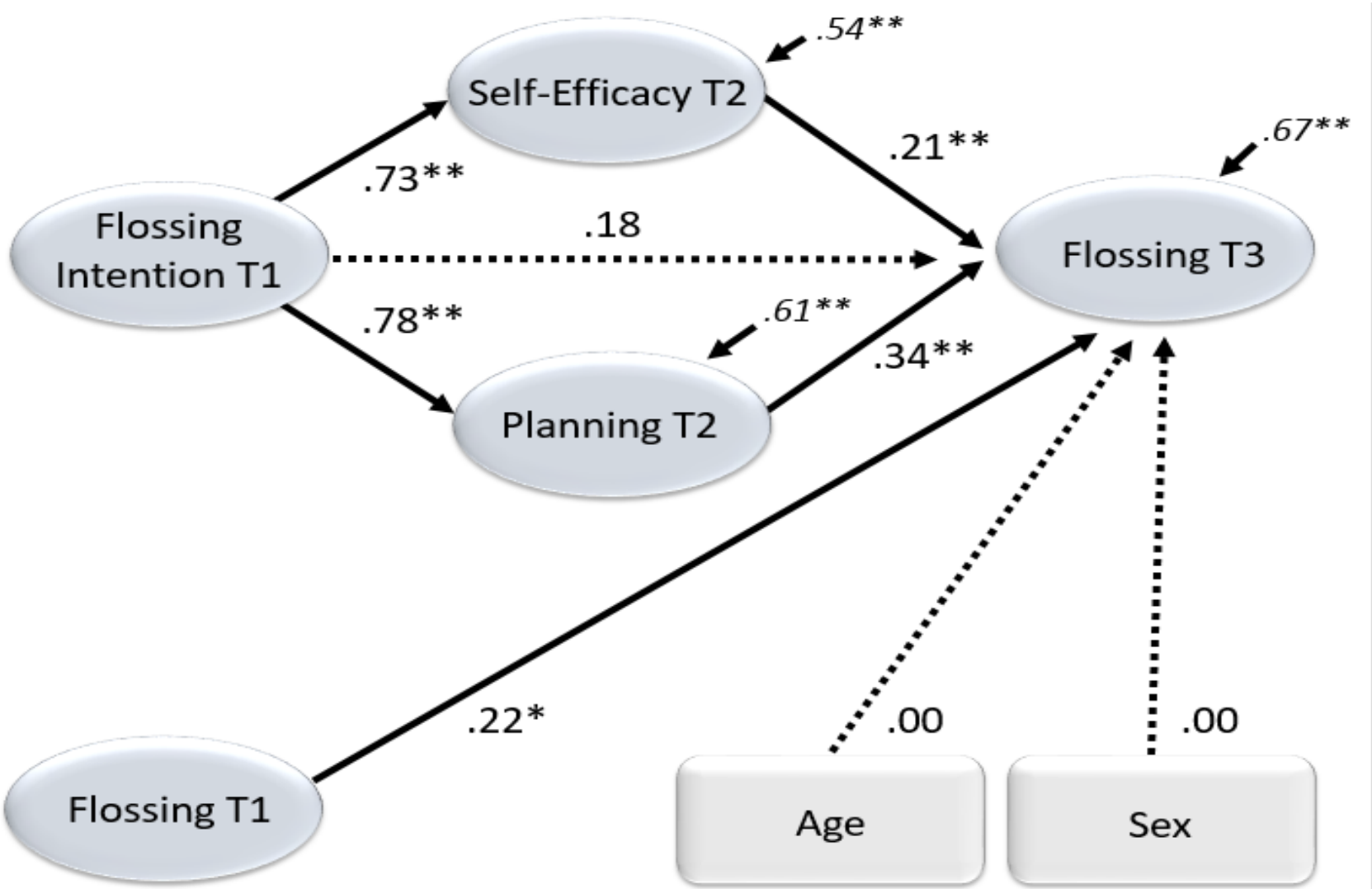
Published online: 18 October 2016

Abstract

Purpose Although poor oral hygiene practices can have serious health consequences, a large number of adults brush or floss their teeth less than the recommended time or not at all. This study examined the mediating effect of two key self-regulatory processes, self-efficacy and planning, as the mech-

Introduction

Worldwide estimates for the prevalence of oral health conditions indicate that nearly 100 % of the adult population experiences dental caries (i.e., tooth decay) and 15 to 20 % of adults aged 35–44 years severe periodontal (gum) disease


.54**
Self-Efficacy T2
.21**
.67**
.73**
Flossing Intention T1
.18
Flossing T3
.78**
.61**
.34**
Planning T2
.22*
.00
.00
Flossing T1
Age
Sex

Hamilton, K., Cornish, S., Kirkpatrick, A., Kroon, J., & Schwarzer, R. (2018). Parental supervision for their children's dental hygiene: mediating effects of planning, self-efficacy, and action control. *British Journal of Health Psychology, 23*(2), 387-406. doi:10.1111/bjhp.12294

British Journal of Health Psychology (2018)

The British Psychological Society
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Parental supervision for their children's toothbrushing: Mediating effects of planning, self-efficacy, and action control

Kyra Hamilton[1,2]*, Stephen Cornish[1], Aaron Kirkpatrick[1], Jeroen Kroon[3] and Ralf Schwarzer[4,5]

[1]School of Applied Psychology, Menzies Health Institute Queensland, Griffith University, Brisbane, Queensland, Australia
[2]School of Psychology and Speech Pathology, Health Psychology and Behavioural Medicine Research Group, Curtin University, Perth, Western Australia, Australia
[3]School of Dentistry and Oral Health, Menzies Health Institute Queensland, Griffith University, Gold Coast, Queensland, Australia
[4]Department of Educational Science and Psychology, Freie University Berlin, German
[5]Department of Clinical, Health, and Rehabilitation Psychology, SWPS University of Social Sciences and Humanities, Wroclaw, Poland

Objectives. With 60–90% of children worldwide reportedly experiencing dental caries, poor oral health in the younger years is a major public health issue. As parents are important to children's oral hygiene practices, we examined the key self-regulatory behaviours of parents for supervising their children's toothbrushing using the health action process approach.

Design and method. Participants ($N = 281$, 197 mothers) comprised Australian parents of 2- to 5-year-olds. A longitudinal design was used to investigate the sequential mediation chain for the effect of intention (Time 1) on parental supervision for their

Measures

- **Supervision behaviour, Intention, Self-efficacy, Planning.**
- **Action control : a concurrent self-regulatory skill**
  - Monitoring one's progress, comparing performance with goals, and investing more effort if needed.
  - Dental flossing interventions improved self-monitoring of oral hygiene, which in turn, improved flossing frequency (Schüz, et al., 2007; Schwarzer et al., 2015).

In regards to supervising my child brushing their teeth for 2 minutes twice daily, do you agree that, during the past 2 weeks...

E.g., "… I have consistently monitored when, how often, and how to supervise my child brushing their teeth", scored *not at all true* [1] to *definitely true* [7].

Sample:

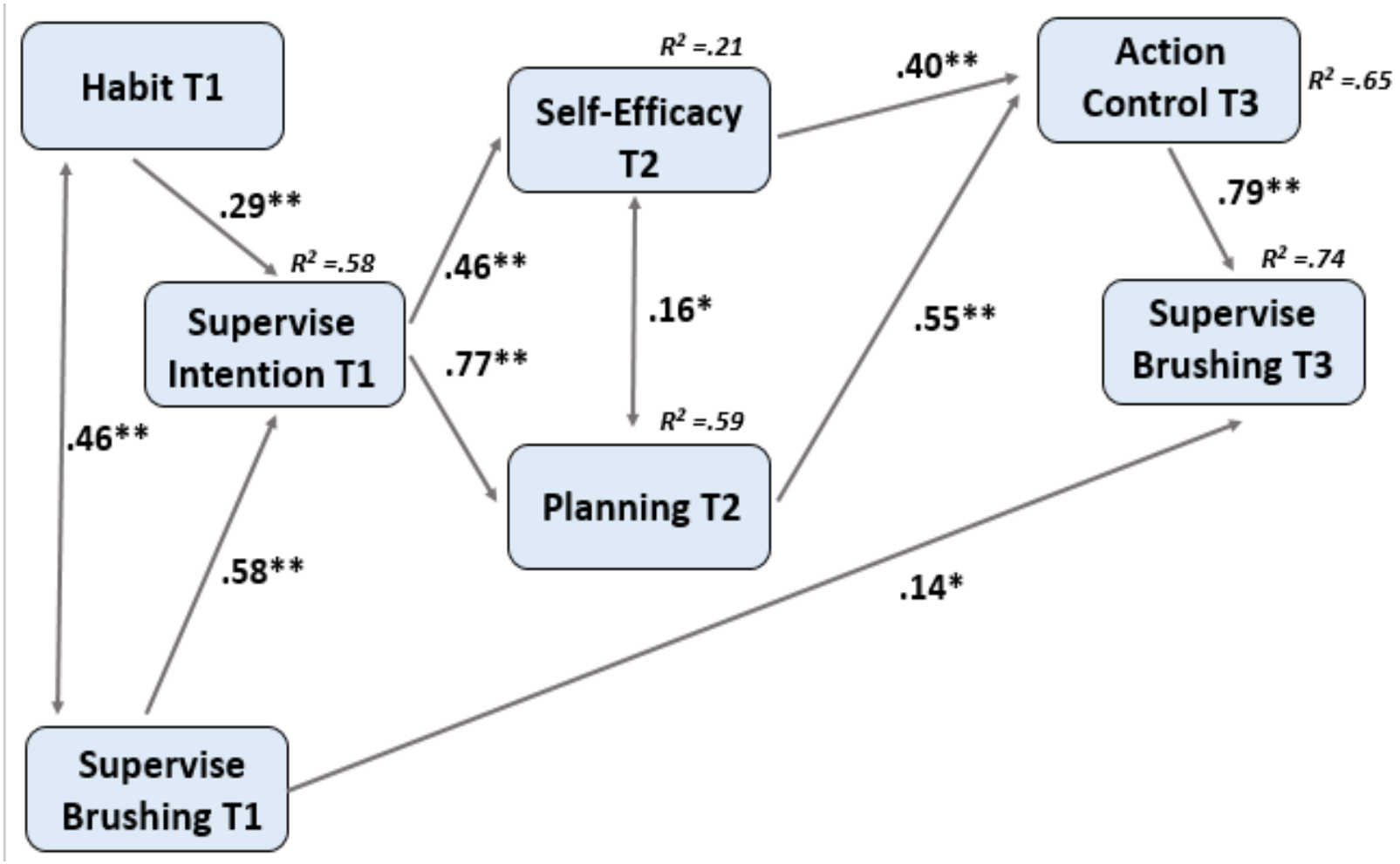
- Participants (*N*=281, baseline; *n*=219, follow-up) were parents of children aged between 2 and 5 years.

Design and Procedure:

- Participants completed a baseline paper-based questionnaire and two phone or online follow-ups.
- A longitudinal design with three waves of data collection, each spaced 1 week apart. Measures at each point based on theoretical sequence of the HAPA: intention (T1), self-efficacy and planning (T2), action control and supervision behaviour (T3).

Target behaviour:

- The target behaviour was *supervising my child brushing their teeth for two minutes twice daily* based on guidelines outlined by the Australian Dental Association (2016).


Habit T1
.29**
R^2 =.58
Supervise Intention T1
.46**
.77**
R^2 =.21
Self-Efficacy T2
.16*
R^2 =.59
Planning T2
.40**
Action Control T3
R^2 =.65
.79**
R^2 =.74
Supervise Brushing T3
.55**
.46**
.58**
.14*
Supervise Brushing T1

Psychology & Health

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Social-cognitive Antecedents of Hand Washing: Action Control Bridges the Planning-Behavior Gap

Benjamín Reyes Fernández, Nina Knoll, Kyra Hamilton & Ralf Schwarzer

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To link to this article: http://dx.doi.org/10.1080/08870446.2016.1174236

HEALTH EDUCATION RESEARCH

Article Navigation

Self-efficacy, planning and action control in an oral self-care intervention

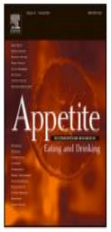
Guangyu Zhou ✉, Caiyun Sun, Nina Knoll, Kyra Hamilton, Ralf Schwarzer

Health Education Research, Volume 30, Issue 4, 1 August 2015, Pages 671–681, https://doi-org.libraryproxy.griffith.edu.au/10.1093/her/cyv032

Contents lists available at ScienceDirect

Appetite

journal homepage: www.elsevier.com/locate/appet



Research report

The role of action control and action planning on fruit and vegetable consumption

Guangyu Zhou [a], Yiqun Gan [b,*], Miao Miao [b], Kyra Hamilton [c,d], Nina Knoll [a], Ralf Schwarzer [e,f]

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[b] Department of Psychology, Peking University, Beijing, China
[c] School of Applied Psychology, Griffith University, Brisbane, Queensland, Australia
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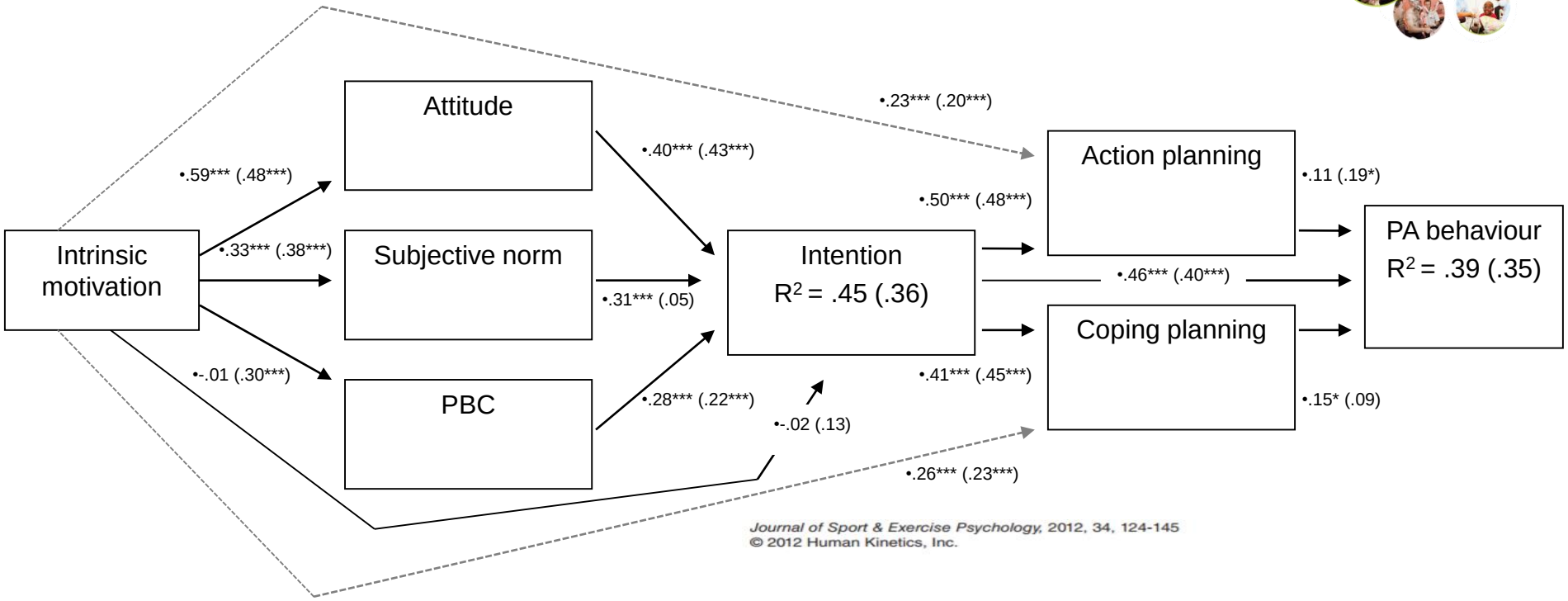
ABSTRACT

Globally, fruit and vegetable intake is lower than recommended despite being an important component to a healthy diet. Adopting or maintaining a sufficient amount of fruit and vegetables in one's diet may require not only motivation but also self-regulatory processes. Action control and action planning are two key volitional determinants that have been identified in the literature; however, it is not fully understood how these two factors operate between intention and behavior. Thus, the aim of the current

Theory Integration: Building on Models



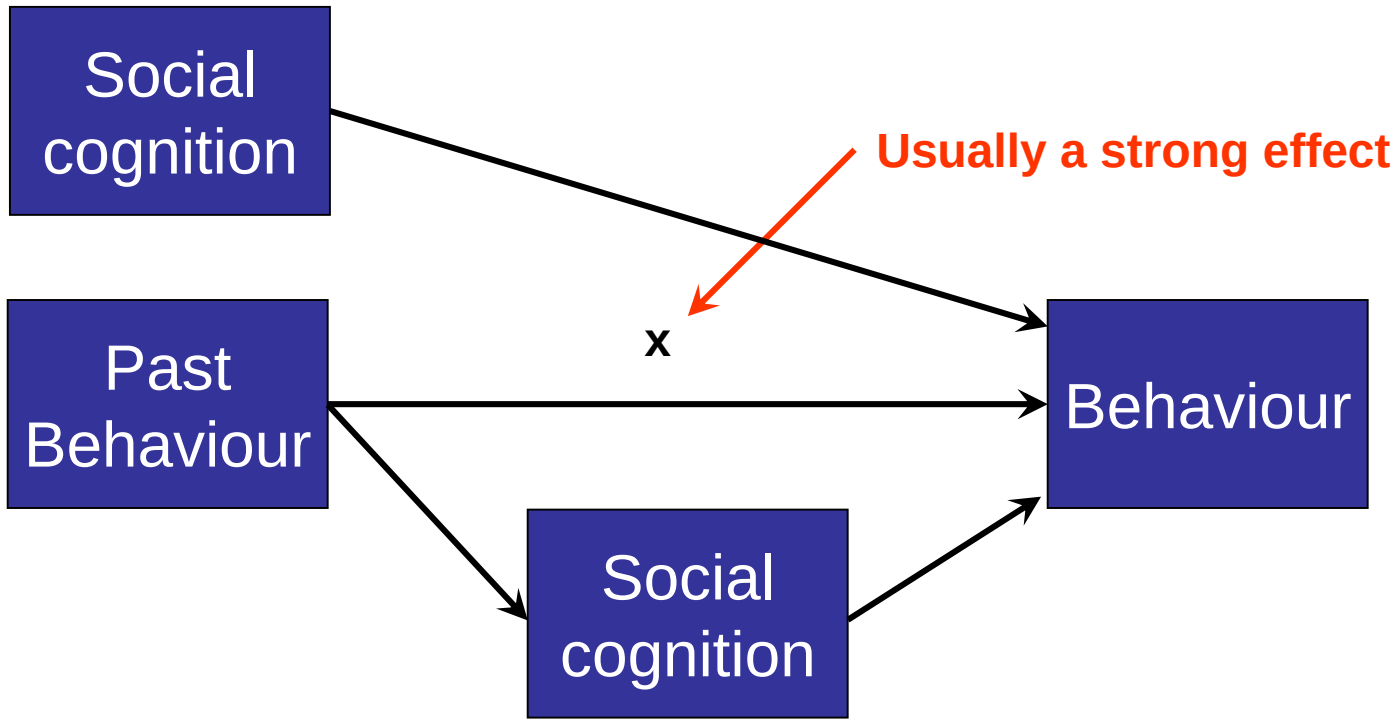
Journal of Sport & Exercise Psychology, 2012, 34, 124-145

Testing a Model of Physical Activity Among Mothers and Fathers of Young Children: Integrating Self-Determined Motivation, Planning, and the Theory of Planned Behavior

Kyra Hamilton, Stephen Cox, and Katherine M. White
Queensland University of Technology

Parents are at risk for inactivity; however, research into understanding parental physical activity (PA) is scarce. We integrated self-determined motivation, planning, and the theory of planned behavior (TPB) to better understand parental PA. Parents (252 mothers, 206 fathers) completed a main questionnaire assessing measures underpinning these constructs and a 1-week follow-up of PA behavior to examine whether self-determined motivation indirectly influenced intention via the TPB variables (i.e., attitude, subjective norm, and perceived behavioral

Pervasive Effect of Past Behaviour



c.f. Oullette & Wood (1998)
Verplanken & Orbell (2003)
Gardner (2015)
Hagger, Rebar, Mullan, Lipp & Chatzisarantis (2015)

Effects of Past Behavior Alcohol and Dietary

Contents lists available at ScienceDirect

Preventive Medicine

journal homepage: www.elsevier.com/locate/ypmed

Using meta-analytic path analysis to test theoretical predictions in health behavior: An illustration based on meta-analyses of the theory of planned behavior

Martin S. Hagger [a,b,c,*], Derwin K.C. Chan [a,d], Cleo Protogerou [a,e], Nikos L.D. Chatzisarantis [a]

[a] Health Psychology and Behavioral Medicine Research Group, School of Psychology and Speech Pathology, Faculty of Health Sciences, Curtin University, Perth, Australia
[b] Faculty of Sport and Health Sciences, University of Jyväskylä, Jyväskylä, Finland
[c] School of Applied Psychology and Menzies Health Institute Queensland, Behavioural Bases for Health, Griffith University, Brisbane, Queensland, Australia
[d] Institute of Human Performance, University of Hong Kong, Hong Kong
[e] Department of Psychology, University of Cape Town, Cape Town, South Africa

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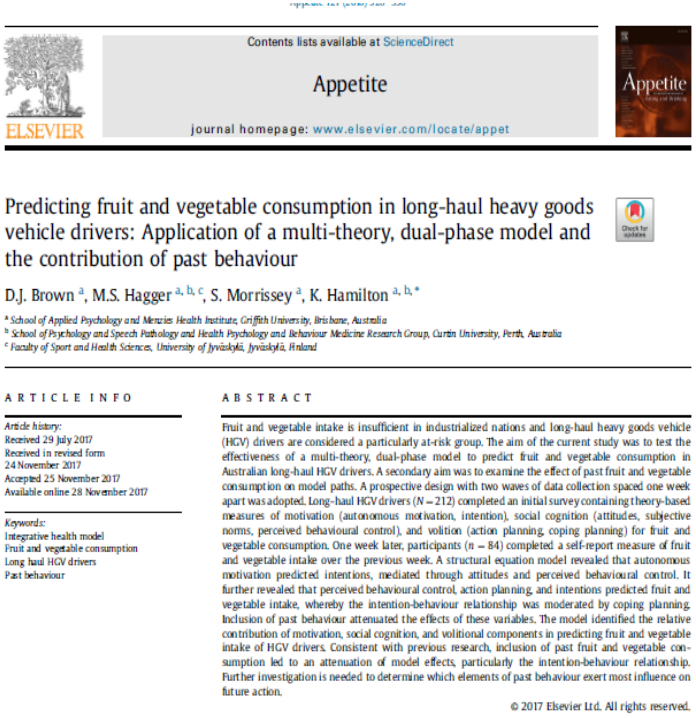
ABSTRACT

Objective. Synthesizing research on social cognitive theories applied to health behavior is an important step in the development of an evidence base of psychological factors as targets for effective behavioral interventions. However, few meta-analyses of research on social cognitive theories in health contexts have conducted simultaneous tests of theoretically-stipulated pattern effects using path analysis. We argue that conducting path analyses of meta-analytic effects among constructs from social cognitive theories is important to test nomological

"The finding that past behaviour reduced the effects of intentions on behaviour indicates that intentions are only mildly effective in accounting for stability and change in health behaviours, consistent with Sniehotta et al.'s (2014) contention that the theory of planned behaviour is a static rather than dynamic theory."

Effect of Past Behaviour - FV

Brown, D., Hagger, M. S., Morrissey, S., & Hamilton, K. (2018). Predicting fruit and vegetable consumption in long-haul heavy goods vehicle drivers: Application of a multi-theory, dual-phase model and the contribution of past behavior. *Appetite*, *121*, 326-336. https://doi.org/10.1016/j.appet.2017.11.106.



Contents lists available at ScienceDirect

Appetite

journal homepage: www.elsevier.com/locate/appet

Predicting fruit and vegetable consumption in long-haul heavy goods vehicle drivers: Application of a multi-theory, dual-phase model and the contribution of past behaviour

D.J. Brown [a], M.S. Hagger [a, b, c], S. Morrissey [a], K. Hamilton [a, b, *]

[a] School of Applied Psychology and Menzies Health Institute, Griffith University, Brisbane, Australia
[b] School of Psychology and Speech Pathology and Health Psychology and Behaviour Medicine Research Group, Curtin University, Perth, Australia
[c] Faculty of Sport and Health Sciences, University of Jyväskylä, Jyväskylä, Finland

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Keywords:
Integrative health model
Fruit and vegetable consumption
Long haul HGV drivers
Past behaviour

ABSTRACT

Fruit and vegetable intake is insufficient in industrialized nations and long-haul heavy goods vehicle (HGV) drivers are considered a particularly at-risk group. The aim of the current study was to test the effectiveness of a multi-theory, dual-phase model to predict fruit and vegetable consumption in Australian long-haul HGV drivers. A secondary aim was to examine the effect of past fruit and vegetable consumption on model paths. A prospective design with two waves of data collection spaced one week apart was adopted. Long-haul HGV drivers ($N = 212$) completed an initial survey containing theory-based measures of motivation (autonomous motivation, intention), social cognition (attitudes, subjective norms, perceived behavioural control), and volition (action planning, coping planning) for fruit and vegetable consumption. One week later, participants ($n = 84$) completed a self-report measure of fruit and vegetable intake over the previous week. A structural equation model revealed that autonomous motivation predicted intentions, mediated through attitudes and perceived behavioural control. It further revealed that perceived behavioural control, action planning, and intentions predicted fruit and vegetable intake, whereby the intention-behaviour relationship was moderated by coping planning. Inclusion of past behaviour attenuated the effects of these variables. The model identified the relative contribution of motivation, social cognition, and volitional components in predicting fruit and vegetable intake of HGV drivers. Consistent with previous research, inclusion of past fruit and vegetable consumption led to an attenuation of model effects, particularly the intention-behaviour relationship. Further investigation is needed to determine which elements of past behaviour exert most influence on future action.

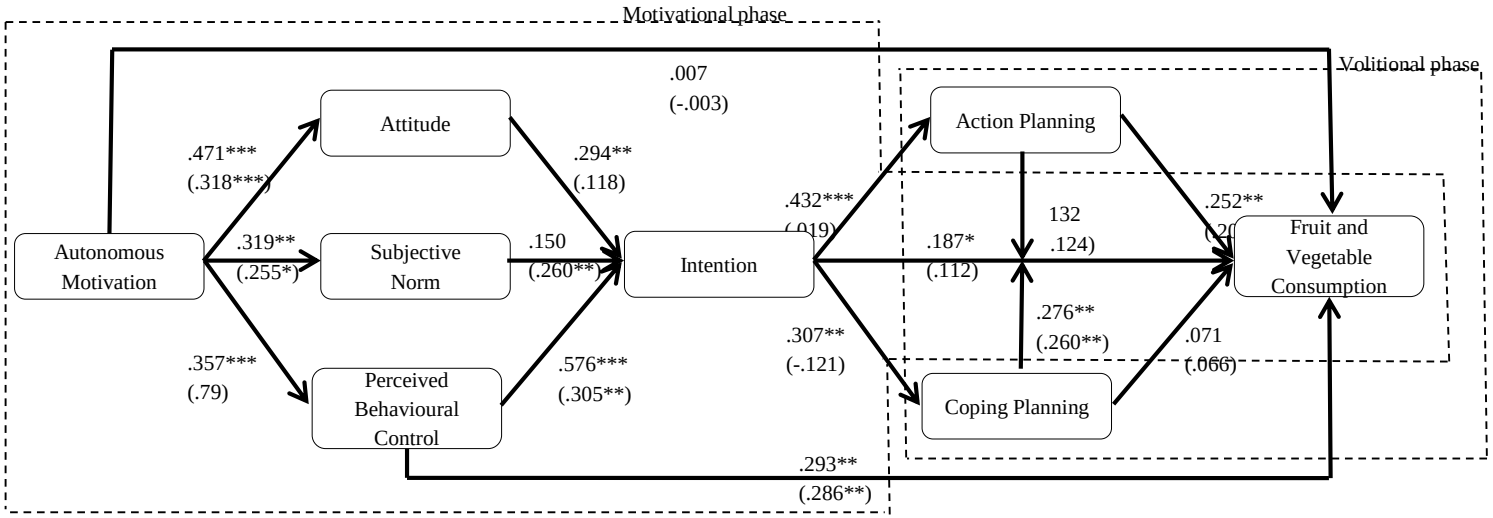
Sample and Method

- A prospective design with two waves of data collection spaced one week apart was adopted.
- Long-haul HGV drivers (*N* = 212, *n* = 84)
- Survey containing theory-based measures of motivation (autonomous motivation, intention), social cognition (attitudes, subjective norms, perceived behavioural control), and volition (action planning, coping planning) for fruit and vegetable consumption.

Effect of Past Behaviour - FV

Results

- The inclusion of past behaviour resulted in a number of effects in the model being reduced to trivial values and failed to reach statistical significance including:
  - » the direct effect of autonomous motivation on perceived behavioural control;
  - » the direct effect of attitudes on intentions;
  - » the direct effects of intentions on action planning, coping planning, and behaviour;
  - » the indirect effects of autonomous motivation on intentions via attitudes and perceived behavioural control;
  - » and the total indirect effect of autonomous motivation on intentions and fruit and vegetable consumption via attitudes, subjective norms, and perceived behavioural control.

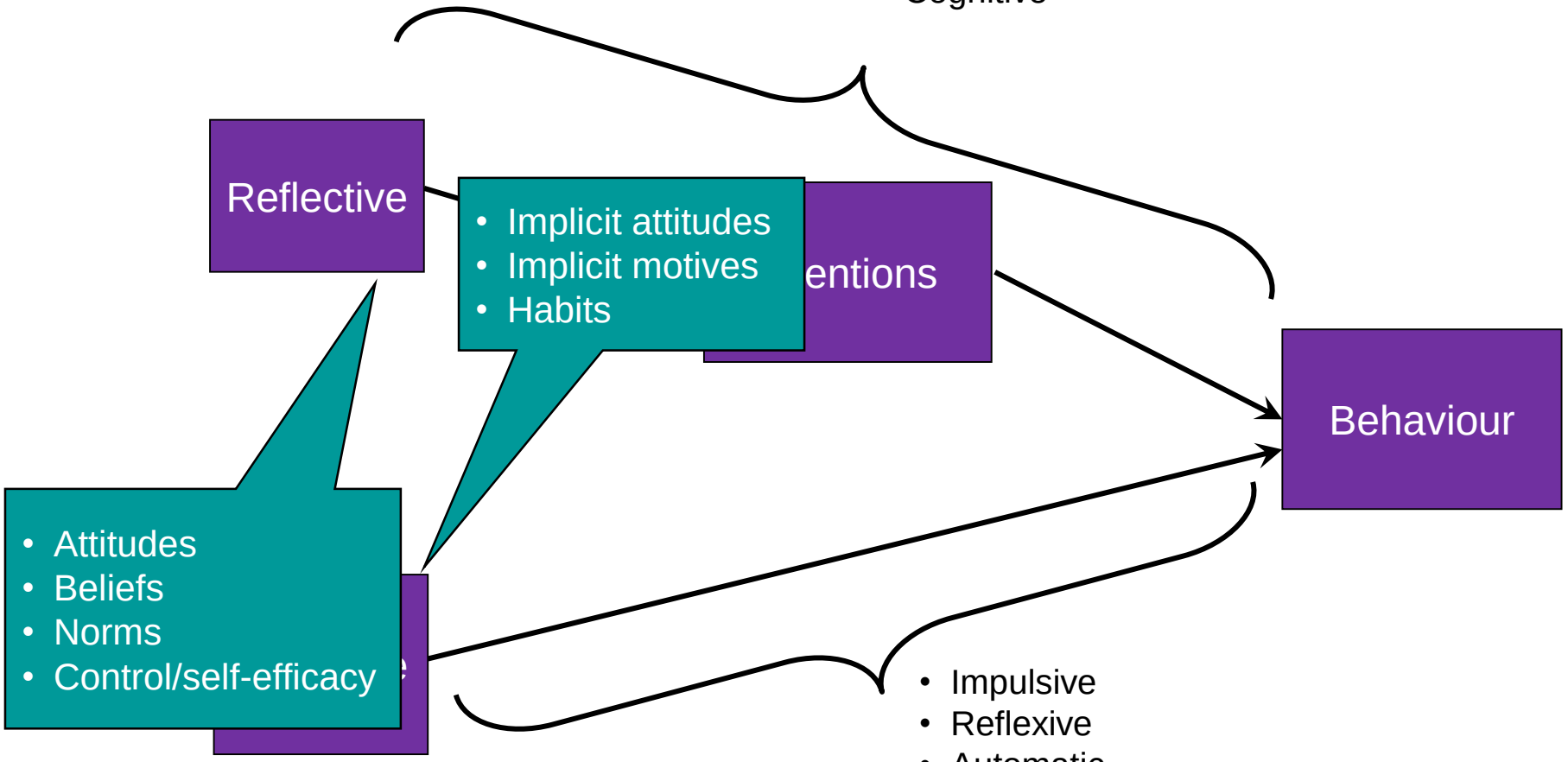


Past Behaviour, Habit, and Explaining Behaviour Change

- What does the past-future behaviour effect represent?
  - Unmeasured variables
  - Habit as a ‘construct’
  - Implicit effects that occur beyond an individual’s awareness

Dual Processes

- Reasoned
- Deliberative
- Intentional
- 'Slow'
- Cognitive

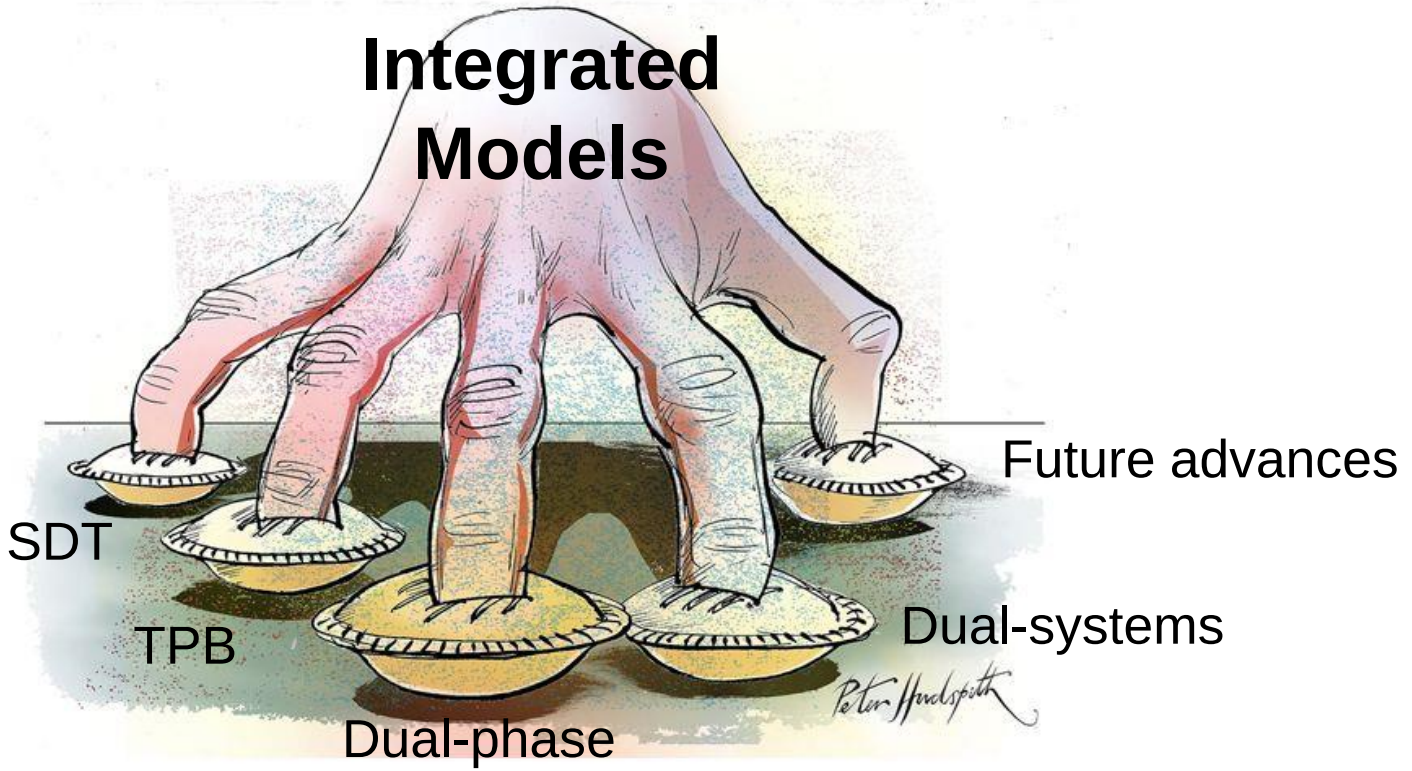


Strack, F., & Deutsch, R. (2004). Reflective and impulsive determinants of social behaviour. *Personality and Social Psychology Review, 8*, 220-247. doi: 10.1207/s15327957pspr0803_1

Phipps, D. J., Hagger, M. S., & Hamilton, K. (2019). A Meta-Analysis of Implicit and Explicit Attitudes in Children and Adolescents. *PsyArXiv*. https://doi.org/10.31234/osf.io/52jrs

- A meta-analytic structural equation model revealed that both implicit and explicit attitudes independently predicted behavior, with a larger effect size for explicit attitudes.
- Moderator analyses revealed larger effects of implicit measures on behavior for social bias behaviors compared to diet and health-related behaviors and aggression behaviors.
- Findings support an additive model for the effects of implicit and explicit attitudes on behavior in children and adolescents, and provide formative evidence to guide future research using implicit measures in younger populations.

Theory Integration: Building on Models



ARTICLE

An Integrated Behavior Change Model for Physical Activity

Martin S. Hagger and Nikos L.D. Chatzisarantis

Health Psychology and Behavioral Medicine Research Group, School of Psychology and Speech Pathology, Faculty of Health Sciences, Curtin University, Perth, Australia

HAGGER, M.S. and N.LD. CHATZISARANTIS. An integrated behavior change model for physical activity. *Exerc. Sport Sci. Rev.*, Vol. 42, No. 2, pp. 62–69, 2014. *We present the Integrated Behavior Change Model, a comprehensive multitheory model outlining the psychological factors and processes that impact physical activity behavior. The model integrates hypotheses from social-cognitive, motivational, dual-phase, and dual-systems theories. We provide the theoretical basis for the model and demonstrate its utility in driving future research and developing effective interventions to promote physical activity.* **Key Words:** social-cognitive theory, self-determination theory, autonomous motivation, action planning, implicit processes, dual-systems theories, behavior change intervention

INTRODUCTION

Research examining the psychological influences on health-related physical activity behavior typically has adopted a single theoretical approach from an array of theories and models developed in the field of social psychology (13). The purpose of adopting any theory or model is to identify effectively and parsimoniously the important psychological factors associated with physical activity behavior and the processes by which these factors affect physical activity (14,30). Although many

more effective explanations of the psychological influences on physical activity (13,18).

In the present review, we seek to synthesize our recent theoretical and empirical work on the development of integrated theories of health behavior and draw further on recent and past social psychological theories to derive an Integrated Behavior Change (IBC) Model that incorporates the very latest thinking on the psychological influences on behavior change and apply it to physical activity behavior. Our review will begin with outlining social-cognitive and motivational

cn on the factors and processes that un- y behavior and, importantly, inform the nterventions that will promote increased ipation.

MOTIVATIONAL PROCESSES

and models that have been applied to un- ty behavior have adopted an information- itive approach. Social-cognitive models activity is an intentional behavior and e in active deliberation of the attributes at their beliefs are stored in memory re- lue before forming an intention to engage

tecedents of intention in the attitude and subjective norm constructs and elements from Bandura's (4) social cognitive theory with perceived behavioral control closely aligned with self-efficacy. The theory is one of the most frequently applied and tested in health behavior research, and numerous meta-analyses have supported its predictive efficacy in health domains (26), particularly physical activity (20). The theory of planned behavior forms the starting point of the proposed IBC model, such that intentions form the most proximal predictor of behavior and mediates the effects of attitudes, subjective norms, and perceived behavioral control on behavior (Figure; Appendix, SDC 1, http://links.lww.com/ESSR/A5, effects 1–4). Meta-analytic reviews of the large number of studies adopting the theory have demonstrated the important contribution it has made to the prediction of health behaviors like physical activity (20,26).

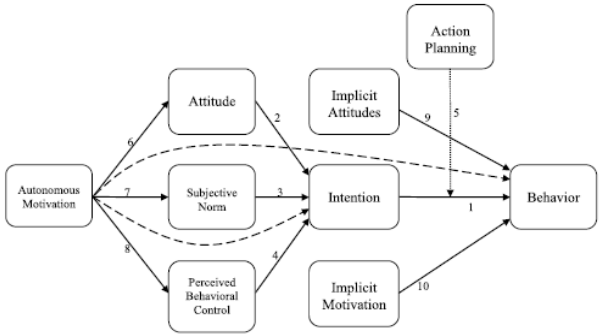
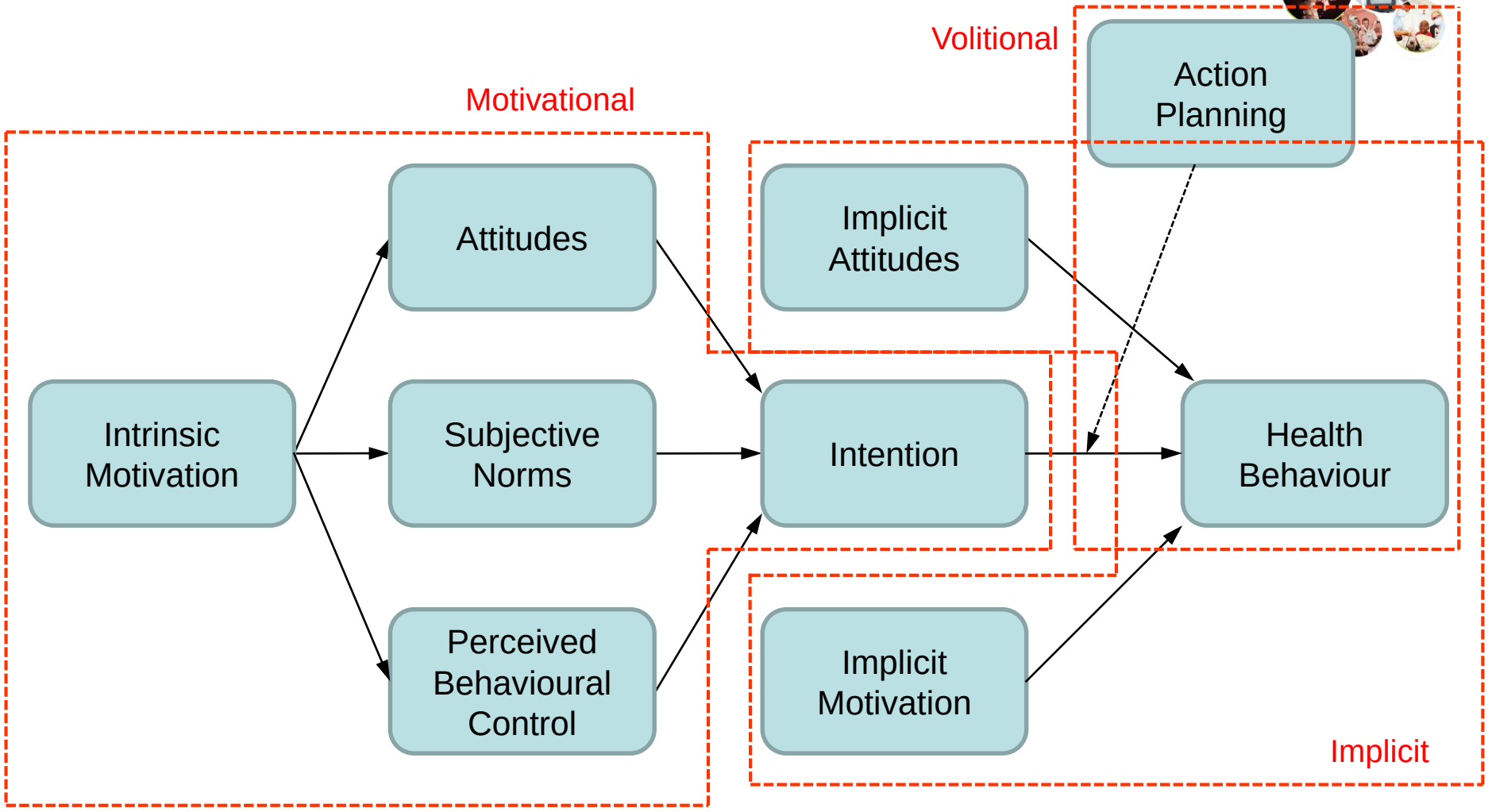


Figure. Schematic diagram of the Integrated Behavior-Change (IBC) Model for physical activity. The IBC model depicts deliberative (reflective) and spontaneous (impulsive) pathways for the effects of motivational and psychological constructs from multiple theories on physical activity participation (behavior). The deliberative pathway is composed of the distal effects of autonomous motivation from self-determination on physical activity mediated by constructs from the theory of planned behavior (attitudes, subjective norms, perceived behavioral control, intention). The spontaneous pathway involves the effects of implicit attitudes and motivation on physical activity. The intention-behavior relationship is proposed to be moderated by action planning, depicted as a broken line directed at the path between intention and behavior. Broken lines between constructs indicate direct effects proposed to be nonsignificant or unsubstantive relative to the indirect effects. Other nonsignificant direct effects include the effects of attitude, subjective norms, and perceived behavioral control on behavior. Numerals reflect the hypothesized paths in the model.

Hagger, M. S., & Chatzisarantis, N. L. D. (2014). An integrated behavior-change model for physical activity. *Exercise and Sport Sciences Reviews, 42*, 62-69.



Source: Hagger & Chatzisarantis, N. L. D. (2014). An Integrated Behaviour-Change Model for Physical Activity. *Exercise and Sports Sciences Reviews.*

Integrated Behaviour Change Model

- **Combines**:
  - » Intentional and motivational processes (i.e. autonomous motivation, TPB)
  - » Dual-phase volitional processes (i.e. action planning)
  - » Dual-systems implicit processes (i.e. implicit attitudes and motivation)
- **Advantages**:
  - ✓ Utilises motives supported by SDT and TPB
  - ✓ Aims to reduce intention-behaviour gap
  - ✓ Acknowledges potential for automatic processing of behaviour

Testing the Integrated Model Sugar Consumption

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journal homepage: www.elsevier.com/locate/appet

Predicting sugar consumption: Application of an integrated dual-process, dual-phase model

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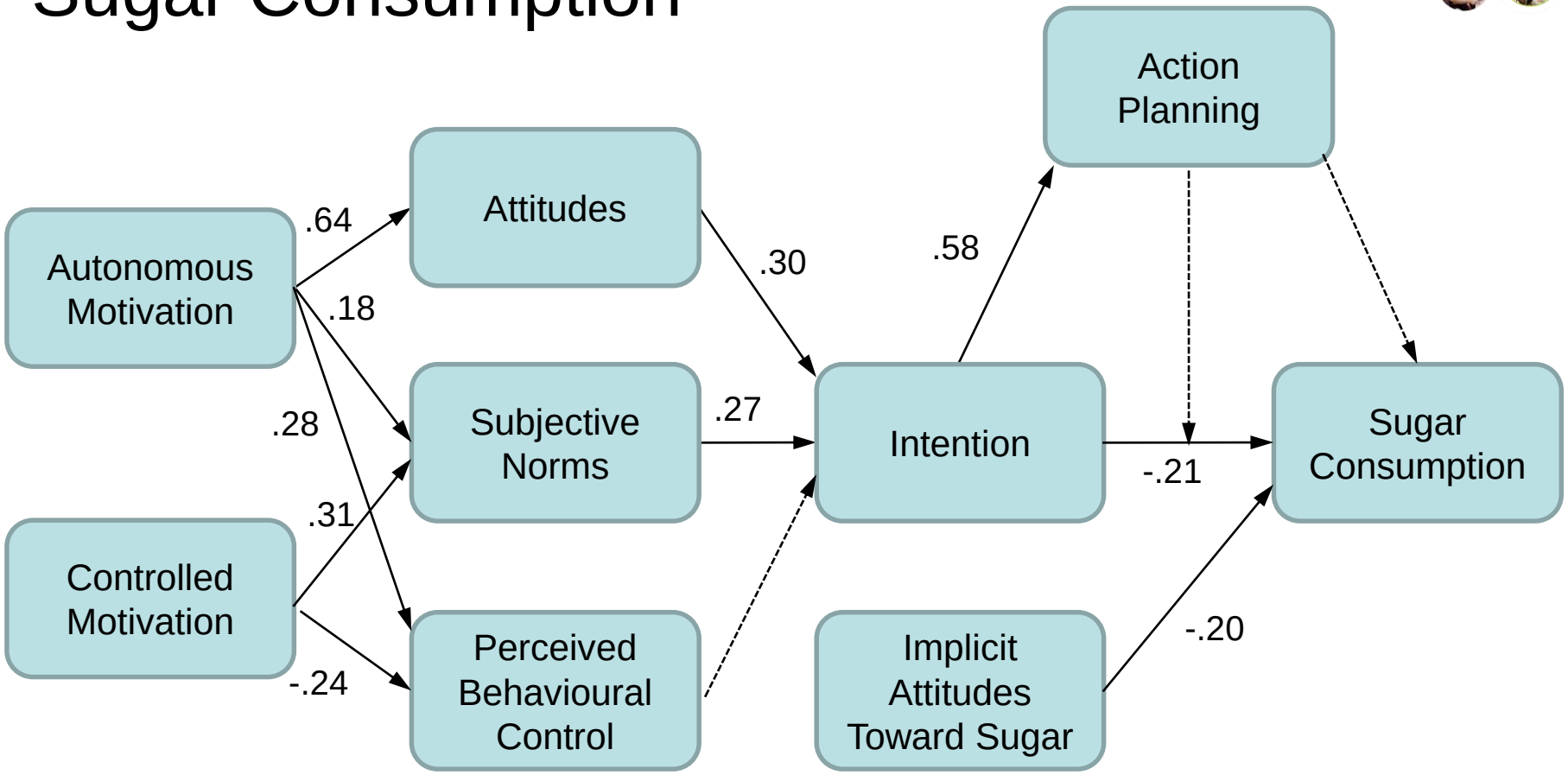
ABSTRACT

Excess consumption of added dietary sugars is related to multiple metabolic problems and adverse health conditions. Identifying the modifiable social cognitive and motivational constructs that predict sugar consumption is important to inform behavioral interventions aimed at reducing sugar intake. We tested the efficacy of an integrated dual-process, dual-phase model derived from multiple theories to predict sugar consumption. Using a prospective design, university students (N = 90) completed initial measures of the reflective (autonomous and controlled motivation, intentions, attitudes, subjective norm, perceived behavioral control), impulsive (implicit attitudes), volitional (action and coping plan-

Sugar Consumption



Testing the Integrated Model Sun Safety

Health Psychology

0278-6133/17/$12.00 http://dx.doi.org/10.1037/hea0000533

Child Sun Safety: Application of an Integrated Behavior Change Model

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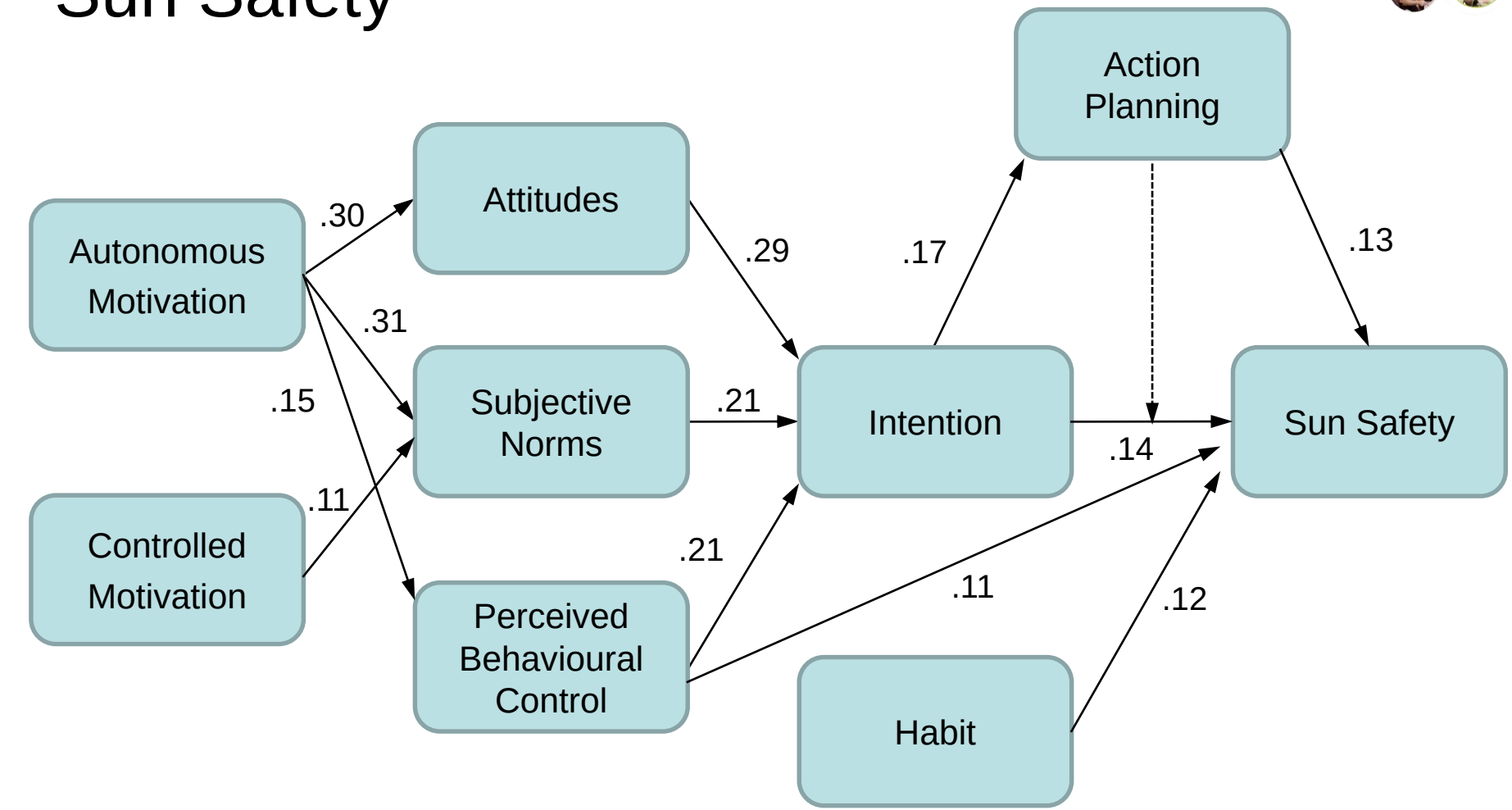
Objective: Childhood sun exposure increases risk of skin cancer in later life. Parents of young children play an important role in minimizing childhood sun exposure. The aim of the current study was to identify the motivational, volitional, and implicit antecedents of parents' sun-protective behaviors based on an Integrated Behavior Change model. ***Method:*** Parents (N = 373) of 2- to 5-year-old children self-reported their intentions, attitudes, subjective norm, perceived behavioral control, autonomous and controlled motivation, action plans, habit, and past behaviors with respect to sun-protective behaviors for their children. Two weeks later (n = 273), the parents self-reported their participation in sun-protective behaviors for their child. ***Results:*** Data were analyzed using variance-based structural equation modeling. Results showed significant direct effects of attitudes, subjective norm, perceived behavioral control, and past behavior on intentions, and significant direct effects of autonomous motivation, perceived behavioral control, intentions, action planning, habit, and past behavior on parents' participation in sun-protective behaviors for their child. There were also significant total indirect effects of autonomous motivation on

Sun Safety


Action Planning
Attitudes
Autonomous Motivation
.30
.29
.17
.13
.31
.15
Subjective Norms
.21
Intention
Sun Safety
.14
.11
Controlled Motivation
.21
.11
.12
Perceived Behavioural Control
Habit

What are the implications of these findings for behaviour change?

Interventions Based on the TPB

- Interventions based on the TPB could target attitudes, subjective norms, and/or perceived control

- Target salient beliefs (Ajzen, 1991)

- Open-ended survey to elicit salient beliefs or qualitative interviews (Ajzen & Fishbein, 2003)

Qualitative Interviews + Quantitative Survey

Hamilton, K., Cleary, C., White, K.M., & Hawkes, A. (2016). Keeping kids sun safe: exploring parents' beliefs about their young child's sun-protective behaviours. *Psycho-Oncology, 25*, 158-163. doi:10.1002/pon.3888.

Hamilton, K., Hatzis, D., Kavanagh, D. J., & White, K. M. (2015). Exploring parents' beliefs about their young child's physical activity and screen time behaviours. *Journal of Child and Family Studies, 24*, 2638-2652.

Hamilton, K., & White, K.M. (2010). Identifying parents' perceptions about physical activity: a qualitative exploration of salient behavioural, normative, and control beliefs. *Journal of Health Psychology, 15*, 1157-1169. doi:10.1177/1359105310364176.

Interview Questions:

- Advantages and disadvantages of doing [target behaviour] (behavioural beliefs)
- People/groups who would approve and disapprove of doing [target behaviour] (normative beliefs)
- Easy and difficult to do [target behaviour] (control beliefs)

Data Analysis:

- Thematic content analysis

Phase 2: Quantitative Survey (Hamilton et al., 2017, *Psycho-Oncology*; Hamilton et al., 2016, *British Journal of Health Psychology*; Hamilton & White, 2011, *Journal of Science and Medicine in Sport*)

Elicitation Study + Quantitative Survey

Design and Method:

- Open ended survey: Advantages and disadvantages of [target behaviour] (behavioural beliefs), People/groups perceived to approve and disapprove of [target behaviour] (normative beliefs), Barriers to and motivators for [target behaviour] (control beliefs)
- Content analysis

Hamilton, K., Peden, A.E., Pearson, M., & Hagger, M.S. (2016). Stop there's water on the road! Identifying key beliefs guiding people's willingness to drive through flooded waterways. *Safety Science, 86*, 308-314. doi:10.1016/j.ssci.2016.07.004.

Vayro, C., & Hamilton, K. (2016). Using three-phase theory-based formative research to explore healthy eating in Australian truck drivers. *Appetite, 98*, 41-48. doi:10.1016/j.appet.2015.12.015.

Spinks, T., & Hamilton, K. (2015). Investigating key beliefs guiding mothers' dietary decisions for their 2-3 year old. *Appetite, 89*, 167-174

Hamilton, K., Daniels, L., Murray, N., White, K.M., & Walsh, A. (2012). Mothers' perceptions about introducing complementary feeding at 6 months: identifying critical belief-based targets for promoting adherence to current infant feeding guidelines. *Journal of Health Psychology, 17*, 121-131. doi:10.1177/1359105311409786.

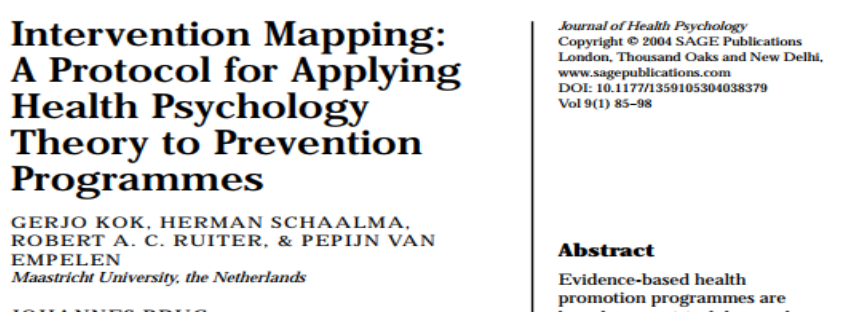
Hamilton, K., White, K.M., Young, R., Hawkes, A., Starfelt, L.C., & Leske, S. (2012). Identifying critical sun-protective beliefs among Australian adults. *Health Education Research, 27*, 834-843. doi:10.1093/her/cys093.

Salient Beliefs

Sun Safety	Screen Time	Nutrition
Provide peace of mind	Improve mental health	Improve my child's health
Take up time/energy	Increase parent distress	Resistance from child
Spouse/partner	Promote healthy habits	Other family
Other family	Spouse/partner	Spouse/partner
Friend	Lack of time	Child food preferences
Have a rule in place	Inconvenient	
Lack of accessibility		

Basis for Intervention

- Matching theoretical determinants of behaviour change to means to change them
- Intervention ‘mapping’ approach (Kok et al., 1998, 2004, 2016)
- Linking psychological variables with behaviour change methods or ‘techniques’



Intervention Mapping: A Protocol for Applying Health Psychology Theory to Prevention Programmes

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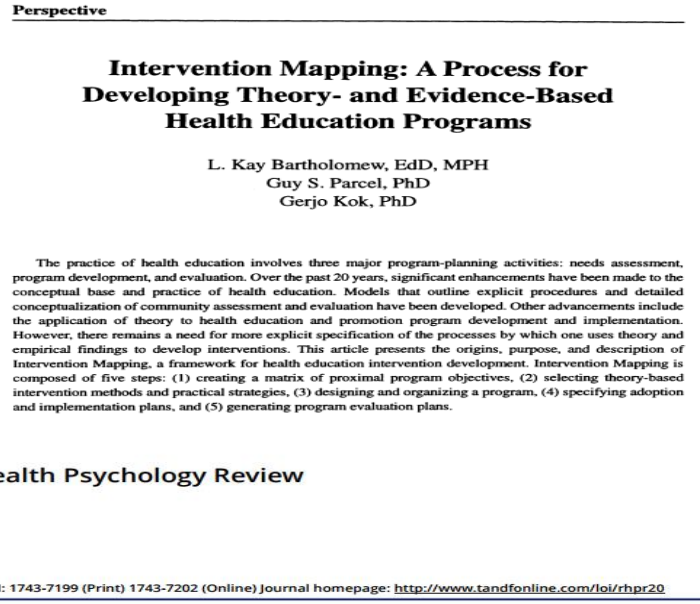
Abstract

Evidence-based health promotion programmes are



Perspective

Intervention Mapping: A Process for Developing Theory- and Evidence-Based Health Education Programs

L. Kay Bartholomew, EdD, MPH
Guy S. Parcel, PhD
Gerjo Kok, PhD

The practice of health education involves three major program-planning activities: needs assessment, program development, and evaluation. Over the past 20 years, significant enhancements have been made to the conceptual base and practice of health education. Models that outline explicit procedures and detailed conceptualization of community assessment and evaluation have been developed. Other advancements include the application of theory to health education and promotion program development and implementation. However, there remains a need for more explicit specification of the processes by which one uses theory and empirical findings to develop interventions. This article presents the origins, purpose, and description of Intervention Mapping, a framework for health education intervention development. Intervention Mapping is composed of five steps: (1) creating a matrix of proximal program objectives, (2) selecting theory-based intervention methods and practical strategies, (3) designing and organizing a program, (4) specifying adoption and implementation plans, and (5) generating program evaluation plans.

Health Psychology Review

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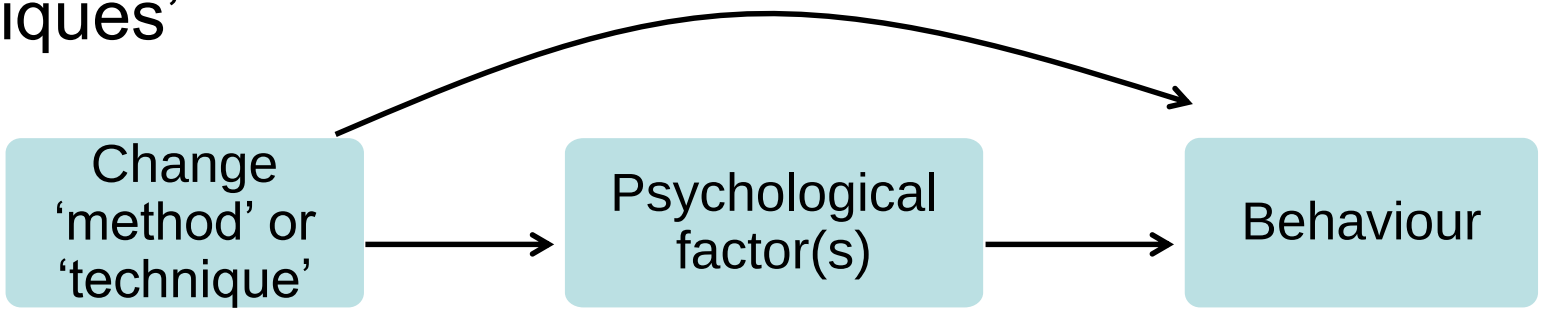
A taxonomy of behaviour change methods: an Intervention Mapping approach

Gerjo Kok, Nell H. Gottlieb, Gjalt-Jorn Y. Peters, Patricia Dolan Mullen, Guy S. Parcel, Robert A.C. Ruiter, María E. Fernández, Christine Markham & L. Kay Bartholomew



Griffith UNIVERSITY
MENZIES HEALTH INSTITUTE QUEENSLAND

Behavioural belief “Take up time and energy” – Provide information on how child sun protection can be achieved with minimal effort (e.g., seeking shade instead of using sunscreen)

Information provision → Attitudes → Sun safety

Hamilton, K., Peden, A., Keech, J., & Hagger, M. S. (2018). Changing people's attitudes and beliefs toward driving through floodwaters: evaluation of a video infographic. *Transportation Research Part F: Traffic Psychology and Behaviour, 53*, 50-60. doi.org/10.1016/j.trf.2017.12.012.

Behaviour change method	Description	Target construct	Example of infographic content
Provide information on consequences of behaviour	Participants provided with details on the consequences of driving through floodwaters	Attitudes	Presentation of statistics associated with driving through floodwater; Providing information about the uncertainty of conditions when water is covering the road and specific information about the effect of floodwater on vehicles
Prompt/raise personal risk	Highlighting personal risk by demonstrating links between the person and the risky/harmful action	Risk perception, perceived severity, perceived susceptibility	Providing an account of why people drive through floodwater by presenting quotes of people who have driven through floodwaters from prior surveys
Emphasise personal susceptibility to negative consequences of behaviour	Identifying the negative consequences of the behaviour and their relevance to the individual	Risk perception, perceived severity, perceived susceptibility, anticipated regret	Presentation of imagery to demonstrate potential loss of loved ones
Provide instruction; Prompt barrier identification and planning in relation to anticipated barriers	Instruction on how to perform the behaviour; Identify important obstacles and suggest strategies to overcome them	Barrier self-efficacy	Providing tangible strategies to avoid driving through floodwater such as following advice of emergency personnel and signage, making planning, calling family
Provide information about others' behaviour		Subjective norm	Presentation of quotes highlighting the social pressures of others to drive through floodwaters from prior surveys

https://www.youtube.com/watch?v=ZtlXpDBjU1Q

Promoting Self-Efficacy, Planning, and Self-Monitoring

Zhou, G., Sun, C., Knoll, N., Hamilton, K., & Schwarzer, R. (2015). Self-efficacy, planning, and action control in an oral self-care intervention. *Health Education Research, 30*, 671-681.

Lhakhang, P., Hamilton, K., Sud, N., Sud, S., Kroon, J., Knoll, N., & Schwarzer, R. (2016). Combining self-management cues with incentives to promote interdental cleaning among Indian periodontal disease outpatients. *BMC Oral Health*, 16:6.

Scheermann, J. F. M., Hamilton, K., Sharif, M. O., Lindmark, U., & Pakpour, A. H. (under review) A social media-based intervention for oral health promotion among Iranian adolescents: A cluster randomized controlled trial. *Psychology & Health*.

- Model/demonstrate the behaviour
- Prompt behavioural practice
- Prompt barrier identification and planning in relation to anticipated barriers
- Prompt self-monitoring of behaviour (instruct and practice skills to self-monitor)
- Provide feedback on performance and rewards

Promoting Habits

Hamilton, K., Fraser, E., & Hannan, T. (2019). A habit-based workplace physical activity intervention: A pilot study. *Occupational Medicine.*

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- Teach to use / avoid environmental prompts/cues (cue identification and planning)
- Restructuring environment

(e.g., rubbish bins outside door)

Ageing & Society, Page 1 of 27. © Cambridge University Press 2017 1
doi:10.1017/S0144686X17001027

Behaviour change techniques to facilitate physical activity in older adults: what and how

URSKA ARNAUTOVSKA*, FRANCES O'CALLAGHAN* and KYRA HAMILTON*†

ABSTRACT

Physical inactivity in older adults presents a significant problem within modern societies globally. Using a mixed-method approach, this study explored strategies for the development and delivery of physical activity (PA) interventions by investigating what behaviour change techniques (BCTs) are useful, and how these techniques should be implemented to be feasible for older adults. Sixty-six older adults completed a survey indicating the most useful BCTs, mapping on to motivational, volitional and automatic factors. Of these, 48 older adults participated in an interview exploring strategies for a PA intervention targeted at older adults. The most useful BCT identified in the survey was autonomy support (61.3%), followed by instruction to perform the behaviour (43.5%) and having a credible source of information about PA (42.6%). The key themes discussed in the interviews included providing support in making an informed choice, instruction on how to perform PA, information about health consequences, social support, goal setting, action and coping plans, behavioural demonstration and practice, and monitoring PA. The interviews also revealed key aspects of programme implementation including face-to-face delivery, followed up with additional materials; low cost; age-appropriate PA level; and individualised approach. Interventions assisting older adults in increasing their PA participation across a range of settings should incorporate BCTs targeting multiple processes, while tailoring their delivery to older adults' preferences to ensure their feasibility in supporting regular PA engagement.

Hamilton, K., & White, K. M. (2014). Strategies for developing and delivering a parental physical activity intervention: answers to the what and how. *Journal of Physical Activity & Health, 11*, 152-164. doi:10.1123/jpah.2011-0190.

Arnautovska, U., O'Callaghan, F., & Hamilton, K. (2017). Applying the Integrated Behaviour Change model to understanding physical activity among older adults: a qualitative study. *Journal of Sport & Exercise Psychology.* Advanced online publication. doi:10.1123/jsep.2015-0300.

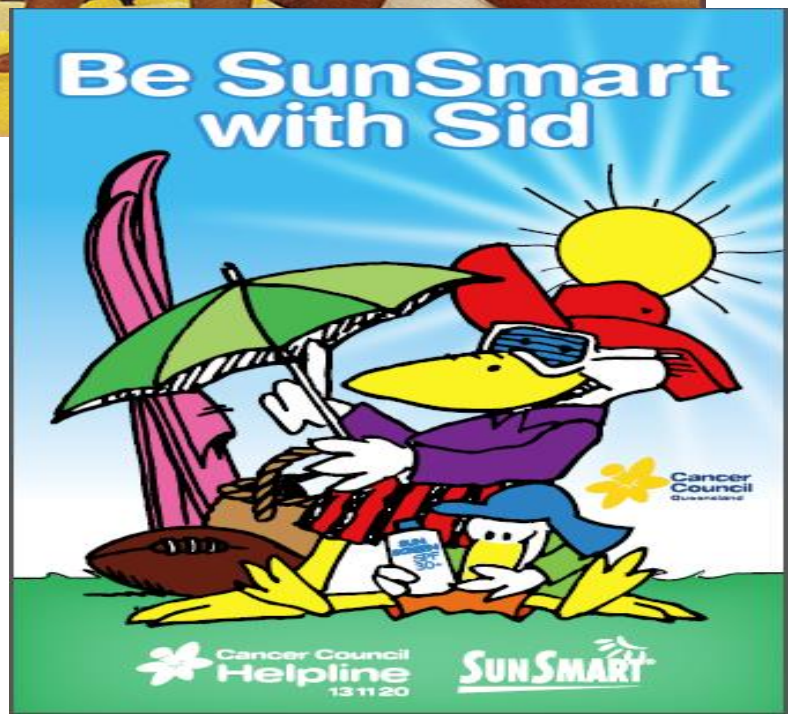
Hamilton, K., Burton, E., Henderson, J., Hagger, M. S. (2019). Discussing lifestyle behaviors in general practice settings: perspectives and experiences of General Practitioners. *Health Psychology and Behavioral Medicine: An Open Access Journal*.

Summary

- Theory is important to inform knowledge on predictors, mechanisms and processes of behaviour change
- Can explain individual behaviour and also an individuals behaviour for others health (e.g., parents' behaviour for children's health)
- Multiple processes lead to health behaviour
  - Motivational
  - Volitional
  - Implicit
- Can be used to explain behaviour change and guide interventions

The Future

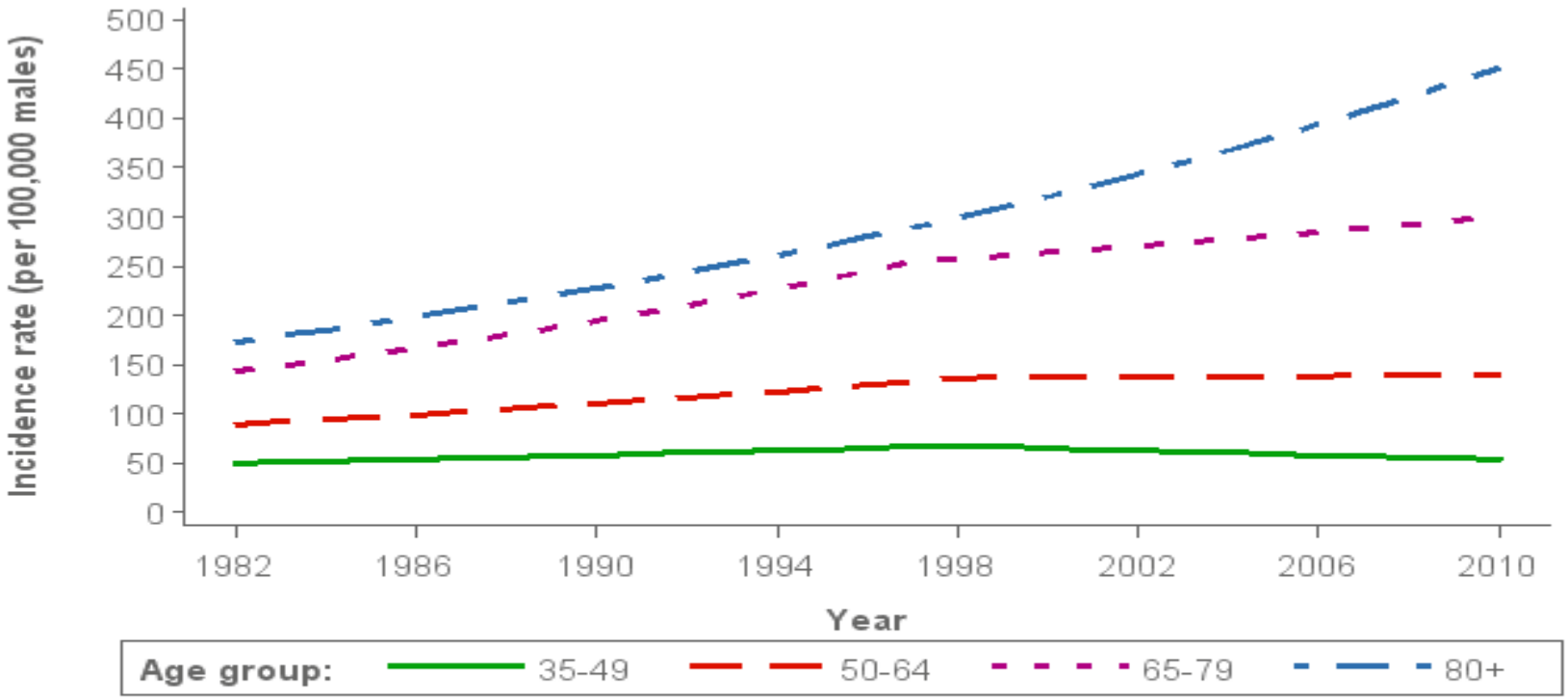
- More evidence for integrated model is required
- Other volitional constructs
- No role for emotion responses
- Extend the model to a ‘tetra-process’ framework (Hamilton & Hagger, in preparation)
- Broader application to other health behaviours
- More longitudinal, and experimental and intervention research needed
- Multiple goals and goal conflicts



- 30 year campaign to promote sun protection and de-glamourise tanning: Sid Seagull, SunSmart Schools, solaria ban, OHS rules
- In Australia, rates of melanoma decreased by 3.8 per cent per year for males under 40 between 1997 and 2008, and 3.4 per cent per year for females under 40 between 2000 and 2008.
- Melanoma on the trunk declined by 6 per cent per year for males since the late 90s. On the upper limbs, rates of melanoma dropped by about 1 per cent per year since 1988 for males, and since 1982 for females.

British Journal of Dermatology Jan 2013

Trends in melanoma incidence by age group for males, Qld 1982-2010



Data source: Queensland Cancer Registry.
Notes: Rates age-standardised to the Australian standard population (2001). Trends modelled using Joinpoint software (version 3.4.3).
Linear trends (estimated average annual percentage change with 95% confidence intervals shown in brackets):
Males 35-49 1982-1998 = +2.0% (+0.4%,+3.6%); 1998-2010 = -1.9% (-3.7%,-0.1%).
Males 50-64 1982-1998 = +2.7% (+1.5%,+3.9%); 1998-2010 = +0.2% (-1.0%,+1.4%).
Males 65-79 1982-1997 = +3.9% (+3.0%,+4.8%); 1997-2010 = +1.3% (+0.6%,+2.0%).
Males 80+ 1982-2010 = +3.5% (+3.0%,+4.0%).

Key Messages

- Theory important for understanding behaviour and designing interventions to change behaviour
- Need to involve key stakeholders (target population, industry, policy makers
- Need to be in it for the long-haul, behaviour change is not going to happen over night

Thank You!

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