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The psychology of appearance: Why health psychologists should “do looks”

Nichola Rumsey*¹

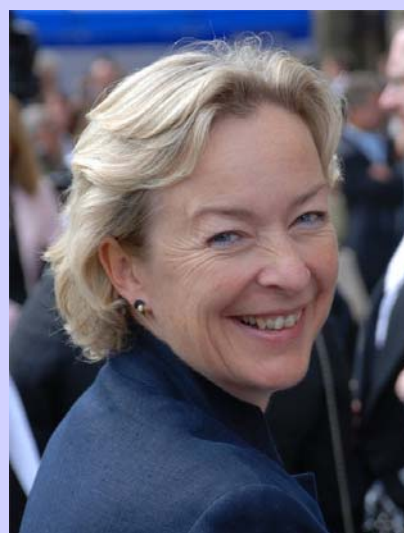
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Societal interest in appearance has a long history, but has never been more prevalent than now. Messages associating physical attractiveness with success and happiness are unremitting; researchers and commentators consider that extensive, and for a proportion of the population, debilitating levels of appearance concerns are considered normative. In this article I will offer a brief history of appearance research as a context for the current state of play in this area, explore reasons why the topic of appearance remains peripheral at best for most health psychologists, and offer arguments for why it should become more central.

A brief history of appearance research

As early as 1921, Perrin stated in the *Journal of Experimental Psychology* that ‘just why the physical characteristics of individuals should exert so profound an influence over their associates furnishes an interesting topic of speculation’. A few pockets of work on self-perceptions of appearance emerged in the 1940s and 50s - the first self-rating scales to measure subjective ratings of appearance were designed by Secord and Jourard in 1953. However, these forays were the exception rather than the rule, and Perrin would have been disappointed that so few researchers felt compelled to take up the challenge until later in the century.

Walster et al (1966) found that in a study of 752 students during Freshers Week, the only predictor of an individual’s liking for and desire to subsequently date a potential partner was physical attractiveness. However, Walster was discouraged by her colleagues from publishing the findings, as appearance was almost universally regarded as a frivolous and superficial attribute for psychologists to research. Kleinke (1974) suggested that by avoiding the study of facial appearance, psychologists could refrain from supporting the unpalatable view that looks really are important in how a person is judged, but in the 1970s the climate was beginning to change. Society was becoming more preoccupied with the body beautiful and first impressions were more important. People were becoming more geographically mobile and were coming into contact with larger numbers of unknown others for the first time (Bull & Rumsey, 1988). The



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legal profession became interested in the potential of building cases around the detrimental impact of impaired physical appearance on social and economic opportunities and on self-esteem, and were eager for evidence to support these cases.

Most of the research at this time claimed pronounced and positive effects played by facial attractiveness in liking, dating and in longer-term relationships and in the educational and criminal justice systems. In 1981 Berscheid claimed that levels of physical attractiveness had been shown in numerous investigations to be an ‘extraordinary important psychological variable’ with pervasive and strong effects resulting in numerous preferential social treatments. However in a comprehensive review Bull and Rumsey (1988) felt Berscheid’s claim was overstated and the conclusions misleading. The majority of studies were methodologically weak and conceptually naïve. Most involved undergraduate students rating head and shoulder photographs, and almost all lacked ecological validity. ►

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The early 1990s saw the publication of two meta-analyses, both of which went some way to acknowledging the complexity of the processes involved in interpersonal perception. Eagly et al (1991) found evidence for correlations between physical attractiveness and various positive traits, but concluded the average magnitude of the beauty-is-good effect was moderate at best. Feingold (1992) concluded that physically attractive people were viewed by others as having more positive personality and social traits; however there were 'generally trivial relationships' between physical attractiveness and measures of ability.

Throughout the 1990s debates concerning the social currency of physical attractiveness continues to rage among social psychologists, sociologists and social commentators. In parallel an emerging body of literature on body image (self perceptions of physical appearance) was dominated by the interests of clinical psychology and psychiatry, and was fuelled by the rising rates of eating disorders in young women. Although this research focused largely on issues of weight and shape, the more general applicability of body image research was highlighted by Cash et al (1986) who reported that in a nationwide study in the US, only 7% of women expressed little or no concern with their appearance. Rodin et al (1985) coined the term 'normative discontent' at this time. In their landmark texts, (1990; 2002) Cash and Pruzinsky summarised evidence that from early childhood onwards, body image plays an integral role in understanding many aspects of human experience.

During this time, a third area of research gradually gathered momentum, and a small number of health and clinical psychologists had begun to engage with the task of understanding the psychosocial effects of living with disfigurement. A range of challenges were identified, relating in the main to self perceptions and difficulties in social encounters (Rumsey & Harcourt, 2005). By 2000 there was a coherent body of research highlighting individual variation in adjustment, and confirming the lack of a relationship between the extent and severity of a disfigurement and levels of distress (Lansdown et al, 1997). The effect of type of condition, and demographic variables such as gender and age had less impact than many had expected, and a number of psychological factors began to emerge with increasing regularity as contenders for the most influential variables in the multifactorial process of adjustment. However, care provision remained focused around medical and surgical interventions to 'improve' appearance. A major sea-change in the provision of care in the UK was heralded in 1998 with a government

circular outlining recommendations for the reorganisation of care for those affected by cleft lip and/or palate. This circular stated that all cleft teams should include an 'appropriately trained' full time psychologist as a core member of the multidisciplinary care team. Similar moves are currently being pursued in burn care.

Despite increasing evidence of the widespread impact of appearance concerns, there still seems to be a reluctance amongst health psychologists to engage with the pervasive nature of the psychological ramifications of appearance concerns. In 2004, Natty Leitner (now Triskel) trawled abstracts from 6 of most prominent health and clinical psychology research journals from the previous 3 years. Appearance issues were central in only 2% of articles – even when participants had appearance altering conditions (arthritis, MS, Parkinsons, self injury, exercise dependence). Triskel joined Cash and Pruzinsky (2002) in concluding that appearance is a highly pertinent and usually overlooked aspect of research in health and clinical psychology.

Why should health psychologists take appearance concerns more seriously?

People's feelings about their appearance can have significant effects on their self perceptions, wellbeing, their health behaviours and their adherence to treatment.

Negative impacts on self perceptions and wellbeing:

Body dissatisfaction has a high prevalence from 8 years (Grogan, 2008) with young girls and boys linking appearance with self worth, and engaging in dietary restrictions. During the teenage years negative body image has been cited as a principal component and predictor of a variety of health issues including lowered self esteem, depression and habitual negative thinking (Stice 2002; Verplanken et al, 2008).

Recent qualitative studies have provided powerful illustrations of the impacts on both self perceptions and behaviour (Lovegrove, 2002).

"I spend my whole life trying to look thinner and prettier so that people will like me and not bully me" (Female, aged 13)

"No way am I speaking when I know they're gonna laugh at my big arse" (Male, 15) ►



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61% - 82% of adults (Harris & Carr, 2001; Lioffi, 2003) have significant appearance concerns which result in distress and affect a variety of health behaviours. The increase in financial outlay on beauty products, gym memberships, exercise equipment, dietary supplements, weight loss programmes and cosmetic surgery is exponential. In the U.S., there are currently unprecedented levels of debt related to appearance enhancement – with the majority of those affected drawn from lower income groups. There are signs that spending patterns in the UK and Europe are heading the same way.

Appearance concerns and health related behaviours

There is now a body of evidence to suggest that dissatisfaction with appearance impacts on a range of health behaviours, including smoking, eating and exercise.

In relation to smoking, Garner's report on a body image study conducted by *Psychology Today* in the US (1997) found that 50% of female respondents smoked to control their weight. Stice and Shaw (2003) reported that adolescent girls with body image disturbances were significantly more likely to initiate smoking and Amos and Bostock (2007) found that teenage boys and girls commonly use smoking as an appetite suppressant. Smoking cessation attempts may also be hampered by appearance concerns, particularly in relation to weight gain (King et al, 2005).

The rise in various patterns of disordered eating in attempts to match up to physical ideals (slim for females; slim and muscled for males) has been noted by many researchers. Girls from the age of 5 show a preference for thinner ideal body sizes than their own (Williamson & Delin, 2001), and are aware of calorie counting as a way to lose weight. Body dissatisfaction is evident in boys from 8 years and may occur earlier. Neumark-Sztainer, et al (2006) have noted a steady increase in the proportion of teenagers using diet pills, laxatives and diuretics, and Pope et al (2002) have discussed the growing prevalence of teenage boys and young men taking steroids and protein powders in attempts to gain muscle bulk. Only one in ten women profess to be free of concern about their weight and shape (Etcoff, et al, 2006) and Prynne (2004) has reported that 1:4 men are actively dieting at any one time.

Although on the face of it, increased exercise participation might be seen as an advantageous consequence of concern about appearance, there are increases in the numbers compulsively over-exercising. Research into the relationship between appearance

concerns and the uptake and maintenance of exercise has generated conflicting findings, however, in a recent meta analysis, Hausenblas and Fallon (2006) concluded that exercisers have a more positive body image than non-exercisers, and also that exercise intervention participants have a significantly better body image post intervention than non exercising controls. Moderating variables in these relationships (including motivation to exercise, body composition etc) need to be further researched.

Suntanning behaviour:

One area in which appearance has been more salient in driving health promotion campaigns is sun tanning behaviour and the associated risks of skin cancer. Castle et al (1999) found the perceived benefits of having a sun tan (primarily the belief that tanned skin is more attractive) predicted the intention to suntan without protection. A tan remains a desirable commodity amongst teenagers (Livingston et al, 2007) and has been linked to both excessive exposure to sun and to the use of sun beds. The news is not all bad however. Mahler et al (2007) concluded that the depiction of faces with wrinkles and sun damaged skin was effective in motivating sun protection.

Condition effects & adherence:

Many types of illness and subsequent treatment involve appearance issues which may affect treatment decision making, adherence to medication and longer term adjustment to chronic conditions. Examples include the dietary restrictions and medication which predispose to weight gain in people with diabetes and scarring from tumour excision and hair loss due to chemotherapy in people with cancer. The appearance side effects of immunosuppressive medication contribute to non adherence in transplant patients (Morris et al, 2007) and similar issues have been reported in patients with HIV.

Uptake of appearance altering interventions:

According to a global survey by Dove, in 2005 (see Etcoff, et al, 2006), a quarter of females aged 15-64 are considering cosmetic surgery. Televised make-over shows are wildly popular. The emphasis of these programmes is on the psychological pain of ugliness, or a 'defect'. Surgery and other appearance enhancing procedures are portrayed as contributing to 'healing' and to the miracle of bringing an end to the torment. Hardly surprising perhaps that increasing numbers of men and women are undergoing appearance-altering interventions (with concomitant health risks) and/or engaging in the risky use of ►

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medications (for example, amphetamine based products to induce weight loss; steroids to increase muscle). Yet, a significant proportion of potential patients present with significant psychological issues including low levels of self esteem and self confidence, and with depression. The private sector in the UK is largely unregulated, and any kind of psychological screening or follow-up is very much the exception rather than the rule in both the private and public sectors.

The challenges associated with disfigurement:

The numbers of people with disfiguring conditions are increasing, in part due to advances in medical and surgical techniques which mean that ever larger numbers of people are surviving due to life saving, but disfiguring treatment. It is currently estimated that 1:5 people have a disfigurement, whether from a congenital anomaly, trauma or as the result of disease or surgery. It is now well established that between 34 and 51% of those affected experience significant psychosocial difficulties, however, the provision of support and intervention to meet their psycho-social needs is minimal at best. Healthcare professionals are increasingly aware of the psychosocial impact of appearance concerns on their patients, but are unclear how to offer appropriate care and support. Increasingly they are looking to health and clinical psychologists to advise them and to provide research evidence to underpin their work. Surgeons continue to develop new technologies to correct 'deficits' in appearance and function. The psychosocial implications of these can be considerable (as, for example, in face transplantation), and outcomes should be carefully researched. In addition, patients need accurate information about the risks and benefits of procedures and support in treatment related decision making.

How can health psychologists contribute?

There is a pressing need to tackle levels of dissatisfaction with appearance, as these are debilitating for some and have significant effects on the daily lives and health behaviours of many others. Changing attitudes towards appearance within the population as a whole is a monumental task, but given the pervasiveness of appearance concerns, the potential for gain is enormous. Health psychologists can contribute to the task of busting the beauty myths and reducing the impact of appearance concerns on those affected in a number of ways.

In addition to the potential benefits in developing school and community based interventions to tackle appearance concerns, there is an urgent need for

effective, accessible psychosocial care within the health care system, including appropriate methods for screening, support for treatment decision making, follow-up after treatment and techniques for promoting adherence to medication. Appropriate self help materials and interventions should be designed, delivered and evaluated. Little is currently known about the short and longer term impacts of appearance enhancing interventions, and a role exists for audit and research. Many health care professionals in primary and secondary care settings lack awareness of the psychosocial impact of appearance concerns and opportunities for training and educational initiatives exist throughout the system.

Health psychologists working in the realms of health promotion and behaviour change may wish to consider (or re-consider) the impact of appearance concerns on the recipients of their interventions. In addition to contributing to the motivation to engage and maintain risky behaviours, appearance concerns may have potential in inducing positive changes. A recent anti-smoking campaign aimed at young women utilized the negative impact that smoking has on appearance and smoking warnings on tobacco products in the UK and Europe include the statement 'smoking causes aging of the skin'. There is now evidence to suggest that exercise interventions aimed at positive physical self perceptions and body mastery increase the likelihood of adherence and increase body satisfaction (Grogan, 2008). However, the relationships between appearance perceptions and health behaviours are complex. The outcomes of these sorts of campaigns are currently uncertain and more research is needed. There is also the caveat that health promotion campaigns which play on appearance concerns may have the unwanted side effect of reinforcing prevailing negative stereotypes surrounding ageing and appearance. This would mitigate against attempts to promote a greater acceptance of diversity in appearance and to dispel the myth that only youthful, flawless and attractive looks are desirable.

Conclusion

Appearance related research remains a minority sport and specialist knowledge in this area is the preserve of a few. In view of the pervasive nature of appearance concerns in the population, it is time that health psychologists grasped the nettle and acknowledged the role of these issues in the adjustment and wellbeing of many. ►



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In addition to the need to put the diverse and stimulating topic of appearance higher up in the health psychology training and practice agenda, we need to engage in debates with policy makers and health care providers to find ways of reducing the negative impacts and more effectively meeting the needs of those affected. ■

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an interview with

Theory-based behaviour prediction and change: An interview with Gaston Godin

By Vera Araújo-Soares and Justin Presseau

ehp: From your research programme we can see that you conduct research with different groups, namely adolescents, adults, and healthcare professionals. From your experience what do you consider as similarities and distinguishing factors of behaviour and behaviour change predictors between these groups?

GG: It would be more appropriate to say that I have applied social cognition theories to predict different behaviours performed in different contexts among different populations. This combination of dimensions is challenging for predictive studies because each of these dimensions requires special attention. With respect to your question regarding applying theory to different populations, studies among populations of adults are often the easiest to conduct. This is one of the reasons why I have never been a fan of conducting my research with university students; they are (too) often used as participants in the scientific psychology literature. Furthermore, any study among youth is challenging because of the important variations in cognitive development at younger ages. Measurement is always problematic with youth. In recent years we have been using “palm computers” to assess Theory of Planned Behaviour (TPB) variables. This has proven to be a very useful approach, and of course the kids enjoy the tool! We also face a number of challenges with healthcare professionals. First, it is very difficult to clearly define the action to be adopted by healthcare professionals as well as the “context” of behavioural performance. Also, healthcare professionals are inclined to believe that they are adopting clinical behaviours for the benefit of their patients rather than for themselves. As a result, there are important variations in the application of the guidelines and operational definitions of the variables in models such as the TRA/TPB. More research is needed on this latter population.

ehp: There has been considerable research into augmenting dominant social cognition models such as the TPB with additional predictors of behaviour, as well as various moderators and mediators of the effects in these models. Using physical exercise as an example, which constructs would you say are the most relevant and compelling for predicting and/or changing physical exercise over and above intention and perceived behavioural control (PBC)?

GG: If we think about cognitions, how about self-efficacy? I know that several researchers would say that self-efficacy is similar (or equivalent) to PBC, but there

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is some scientific evidence suggesting that the two constructs differ or at least are not assessing the same aspects of control. Self-efficacy refers to specific barriers and contexts whereas PBC refers to a more global evaluation of control. That is why I believe that self-efficacy is a relevant construct for predicting exercise behaviour over and above intention and PBC.

ehp: You also emphasised the measurement issues related to different populations to the detriment of distinct predictors of behaviour. Is this a result of your belief that social cognition-based theories are universal in their application, regardless of the developmental stage of the population you are studying?

GG: This is a tricky question and I do not think that I have the expertise to give a correct answer. Nevertheless, I can say that we have successfully applied social cognition theories such as Ajzen's and Triandis' theories in different cultural contexts (e.g. Inuit living in the Northern part of Quebec, Canada; populations of West Africa; various ethnocultural groups in Canada). In each of these studies, measurement issues proved to be the main challenge that we faced, particularly in how to ensure that the instrument was adapted to the studied populations (i.e., language, type of scale used). Our methodological approach was worth the effort, as we were able to explain intentions just as well as studies conducted with Occidental populations.

ehp: Why is Triandis' (1980) theory of interpersonal behaviour (TIB) so rarely tested? ►

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GG: That is an interesting question because Triandis' theory was published at the same time period as Fishbein and Ajzen's theory of reasoned action (TRA). The question is also interesting as most of my research has been more strongly influenced by Triandis' theory than by the TPB, even though I am often identified as a researcher that applies the TPB. I can think of three reasons why Triandis' theory of interpersonal behaviour is so rarely tested. First, researchers like parsimonious models. Triandis' theory contains more variables than the popular TRA/TPB. It also contains constructs that were initially not given much attention by health psychologists (e.g., affective versus cognitive attitude, personal/moral norm, role belief, facilitating conditions). Second, contrary to the TRA/TPB, there are no clear guidelines for the operational definition of the variables. For instance, how do you assess role belief and personal/moral norm? How do you combine role belief and normative beliefs in a social norm construct? What are the rules for measuring facilitating conditions to adopt a given behaviour? The operational definition of these variables has been left to the researcher without clear specification. This has had some consequences on the model. For instance, instead of assessing "objective" facilitating conditions researchers tend to use a "subjective" measure. In summary, the measurement of Triandis' variables is not as clearly defined as one would like it to be. Third, Triandis' model was published as a chapter in the proceedings of a scientific meeting in 1980. It took some time before the scientific community became aware of its value. When it became clear that some of the TIB variables were relevant for predicting behaviour, researchers have added these important variables to the TPB, often naming it as an "extended TPB". Thus, most researchers are not aware that important variables such as facilitating conditions, personal/moral norm and role beliefs are parts of the Triandis theory of interpersonal behaviour. It also needs to be mentioned that Triandis is one of the first to have specified that facilitating conditions (i.e., the environmental context) have a moderating effect on the intention-behaviour relationship. He also included both the affective and cognitive attitudes as determinants of intention. In addition, he gave full consideration to habit in the prediction of intention and behaviour and hypothesised that as the influence of habit on behaviour increases, the role of intention decreases. In summary, Triandis' theory is still very valuable for the prediction of health behaviours.

ehp: Are there any theories of behaviour or behaviour change still in use today for which you feel there exists sufficient evidence to reject?

GG: It is hazardous to state that a given theory should be rejected. Nonetheless, from my point of view, in the field of health, too much credit has been given to the health belief model (HBM). It is true that my work is more invested in "health promotion" than "disease prevention", but the HBM is driven by health (more precisely disease) considerations instead of social considerations. I am of the opinion that behaviours (even so-called "health" behaviours) are adopted and maintained for "social" reasons. There are contextual situations where a given behaviour is adopted for health reasons (e.g. disease), but as soon as the situation is back to normal these behaviours are not maintained. In fact, I don't think there are any "health" behaviours. This classification was created by health professionals. Epidemiologists or experts in medicine see specific behaviours as related to disease (or health) and therefore classify these behaviours as health behaviours. In doing so, they limit the scope of reasons why people adopt a given behaviour. From their perspective, if individuals become informed and

"In fact, I don't think there are any 'health' behaviours"

- Gaston Godin

knowledgeable of the risks to their health due to their behaviours, they would change them. These health professionals see the reasons to justify their interventions as the reasons underlying behaviour adoption and maintenance. We know that this is not the case. Do you believe that individuals brush their teeth for health or social reasons? That they lose weight for health or social reasons? That is why I do not support theories such as the HBM but prefer to analyse behaviour using more general/broader theories of behaviour.

ehp: Are there any theories of behaviour or behaviour change that you feel have been sufficiently validated that further testing would not add to the knowledge base?

GG: True tests of theories are still lacking. For instance, one of the most popular theories is the TPB; the scientific literature is filled with applications of the TPB. To undertake a systematic review of studies applying the TPB as I did with Gerjo Kok in the mid-90's would now be a huge task. However, most of these applications remain cross-sectional studies. The number of prospective studies is still modest in comparison, and even less have used experimental designs to test the assumptions of the TPB. Therefore, we still have a poor understanding of the mechanism of behavioural change. Additional tests of the theory are still needed and we need to continue investing in theory building and validation. ►

an interview with

Gaston Godin

ehp: Integrating causal constructs from various theories when predicting and changing behaviour seems to ensure a higher likelihood of success of behaviour change in particular settings, but might be of questionable generalizability. Testing new causal models each time therefore makes accumulating a generalisable knowledge base difficult. Are our current theories of behaviour prediction and change sufficient for the applied role we subject them to, or do we need to stop using current theories in their current forms and put more effort into developing them further?

GG: Generally speaking, my research agenda is driven by public health preoccupations. As such, we are applying social cognition theories to better understand behaviour and to use this information to develop theory-based interventions. This is why we have a tendency to integrate constructs from different theories in our prediction studies. In this process, we occasionally try (when possible) to test some theoretical issues, but this is not the priority. One of the drawbacks of this approach is the difficulty (or impossibility) to test the validity of a given theory. I nonetheless acknowledge that the main focus of psychologists is in theory testing and development.

ehp: One of the key issues in behavioural change interventions is maintenance of change. What do you think of the current research in this area? Where do you see it progressing?

GG: I think we are now making some progress. Not long ago, the main interest was nearly restricted to the explanation of intention. Not many people were predicting behaviour and using this information to develop interventions; even less to evaluate such interventions. For instance, we recently conducted a systematic review of applications of social cognition theories to predict healthcare professional's intentions and behaviour (see Godin, Belanger-Gravel, Eccles, & Grimshaw, 2008). We found only 16 prospective studies predicting behaviour but 72 predicting intention. How many of these studies have been used to develop interventions? I would safely say less than five, but I would not be surprised if none resulted in an intervention. Regarding maintenance issues, I think that the field has started making progress with the identification of the intention-behaviour gap (e.g. Orbell & Sheeran, 1998; Sheeran, 2002), the search of "moderators" of this gap (e.g. Cooke & Sheeran, 2004) and the identification of the key role played by stability of intention to favour the translation of intention into action (e.g. Conner & Godin, 2007; Conner, Sheeran, Norman, and Armitage, 2000; Sheeran & Abraham,

2003). Moreover, a few researches are now investing considerable efforts in promoting a research agenda for the development and evaluation of theory-based interventions (e.g., Charles Abraham, Gerjo Kok, Susan Michie).

ehp: The theme of this year's EHPS conference is 'Behaviour, health and healthcare: From physiology to policy'. How can research in health psychology impact on policy, and what do we need to do in order for this to happen?

GG: From my experience in public health, the most important aspect is to ensure that the key stakeholders are involved as partners in the research project. They must be part of your research team. This is the best condition to ensure that the findings will not stay on the shelves.

ehp: Should health psychology be putting more emphasis on the implications of research from other domains (e.g., management, engineering) for developing theory and changing behaviour?

GG: Yes. For instance, experts in education could contribute to the development of health education interventions. The science of intervention is not limited to health psychology. The efficacy of interventions could also be enhanced by the involvement of experts in computing, graphics, communications, etc...

ehp: Do we have compelling evidence that theory based interventions work better than evidenced based interventions?

GG: This is an ongoing debate in the scientific community. The only thing I can say is that the efficacy of interventions appears to be related to the level of planning (Gerjo Kok et al.). We have also observed that the best planned interventions are usually theory-based (Godin et al., 2007). In summary, theory-based interventions seem to enhance efficacy in outcome.

ehp: What are some of the big questions in Health Psychology that you would like to see answered (or at least attempted to answer)?

GG: The main question that everyone would like to have answered is how to change behaviour. Which approaches/strategies work for which groups? However, before this can happen, we will need to have a better understanding of the mechanisms through which behaviour change occurs. To change/modify a "phenomenon" we first need to understand it! ■

Note: For full reference list, please see page 58



original article

Finding better ways of motivating and assisting smokers to stop: Research at the CRUK Health Behaviour Research Centre**Robert West***¹¹ University College London, England**The problem of cigarette smoking**

A major goal of Health Psychology is to find better ways of encouraging and helping people to stop doing things that are bad for their physical or mental health but which they enjoy or that meet immediate needs. For the majority of people who smoke cigarettes, stopping smoking is the change in their behaviour that would make the biggest improvement to their life-expectancy. Most smokers know this and try to stop repeatedly, but they also fail repeatedly. Table 1 summarises the problem.

What we know about combating smoking

Of all the areas of health-related behaviour, smoking cessation is arguably the one that has the strongest evidence base in terms of proven methods of motivating attempts at change and improving the long-

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Table 1: The problem with cigarette smoking (see West & Shiffman, 2007)

- ▶ After the age of about 35 years, each year that stopping is postponed loses the smoker an average of 3 months of life
- ▶ Whereas in countries such as the UK almost half of all smokers try to stop in a given year, only about 2% actually succeed in the long term
- ▶ Smokers spend more of their lives suffering from diseases of old age than do non-smokers
- ▶ Smoking prevalence has declined substantially in countries such as the UK since the 1960s but it now appears to be stuck at over 20% and in many developing countries prevalence is increasing
- ▶ With the most effective methods of cessation, only 25% of quit attempts succeed in the long term
- ▶ Even in the UK where help with stopping smoking is more readily available than almost anywhere in the world, most quit attempts are made completely unaided and fewer than 5% use the combination of psychological assistance and medication that gives them the best chance of succeeding.

term success of those attempts. Table 2 summarises what we know.

Despite this, smoking prevalence in western countries is falling only very slowly and in many parts of the world, such as China, it is rising. The annual death toll from tobacco is currently estimated at 5 million and if current trends continue tobacco will kill more than 1 billion people this century (World Health Organisation, 2008). It is clear, therefore, that much more needs to be done to reduce the extraordinary toll of death and suffering caused by cigarettes.

A great deal can be done simply by governments implementing measures that are already known to be effective. These measures are embodied in the first ever global health treaty: The Framework Convention on Tobacco Control (see Fong, Cummings, & Shupland, 2006). However, there remain very important promising lines of research aimed at improving stop-smoking interventions. Cancer Research UK is one of Britain's main sources of funding for medical research and it is putting substantial resources into smoking cessation research. A major part of this research is a programme grant that funds a team of researchers at the Health Behaviour Research

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Centre (HBRC) housed in the Department of Epidemiology and Public Health at University College London.

The HBRC smoking cessation programme

This research programme covers a wide range of methods but with one primary goal: to reduce suffering and premature death by finding better ways of motivating and assisting smokers to stop. However, it is also intended that the research should contribute to our understanding of behaviour change processes more generally. The programme is not directly concerned with preventing take-up of smoking because, while that is very important, there are other teams around the world who are better placed to follow that line of research.

The 3Ts framework for smoking cessation: A simple conceptual framework underpinning efforts to promote smoking cessation embodies three key elements of change designated as the 3 Ts (West & Sohal, 2006): Tension, Triggers, and Treatment (Figure 1).

Interventions may address one or more elements of this model. This framework provides the basis for the HBRC research programme. The remainder of this paper describes just three of the research questions that are being addressed. The first two ►

Table 2: What is known about encouraging and helping smokers to stop (see West, 2006; West, 2006b)

- Price rises, mass media campaigns, smoke-free legislation and advice from a doctor all have a significant impact in encouraging smokers to try to stop
- Nicotine replacement therapy (NRT) in the form of transdermal patches, chewing gum, lozenges, nasal spray, and an inhaler helps between 1 in 20 and 1 in 10 of those using them to stop long term who would not have stopped otherwise
- The antidepressants bupropion and nortriptyline help approximately the same number as NRT.
- The nicotinic partial agonist, varenicline, helps somewhat more people
- Advice and assistance from a trained specialist, individually or in groups, helps about 1 in 20
- Personalised advice and assistance delivered by an automated website can probably help between 1 in 40 and 1 in 10
- Written self help materials can help about 1 in 100

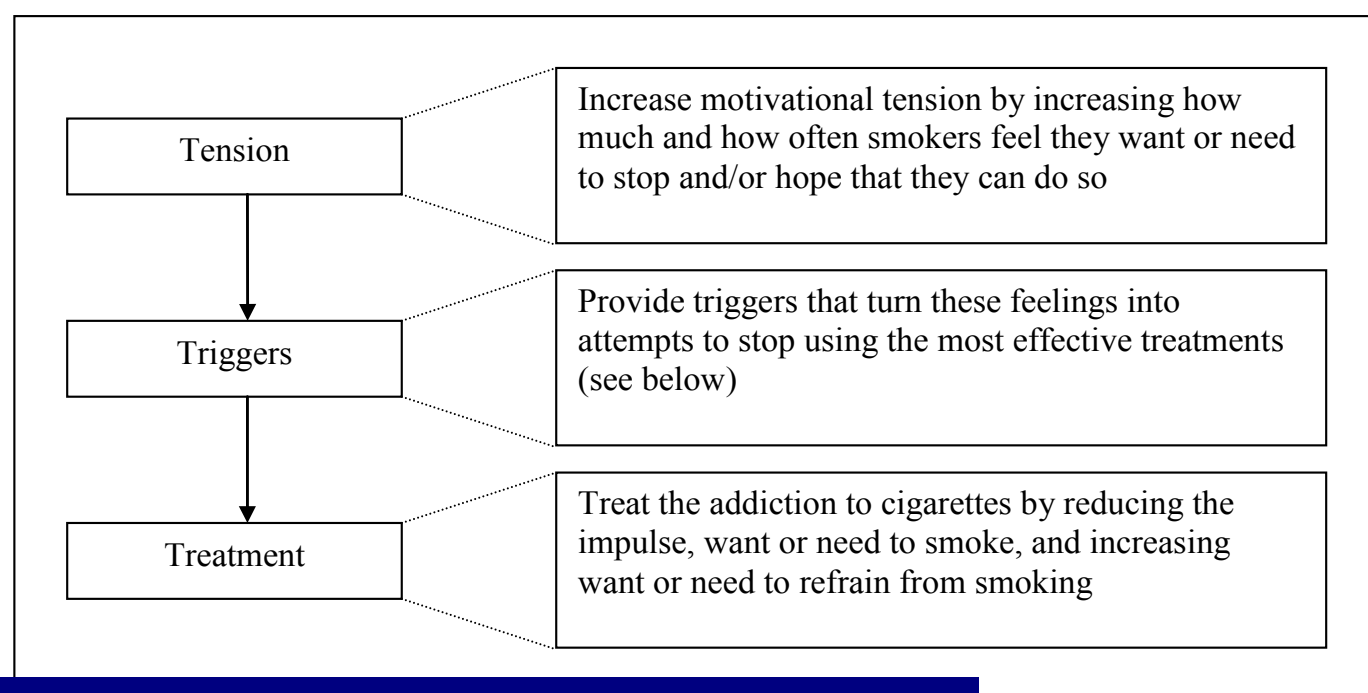


Figure 1: The 3Ts framework for promoting smoking cessation



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Box 1

PRIME Theory focuses on the moment-to-moment control of behaviour through the strongest of competing impulses and inhibitions. These are generated 1) directly by internal or external stimuli acting on learned and unlearned dispositions (what one can term 'habit' and 'instinct'), and 2) indirectly by the strongest of any present feelings of 'want' (involving anticipated pleasure or satisfaction) and 'need' (anticipated relief). It argues that 'evaluations' (beliefs about what is good or bad etc.) can only influence behaviour through wants or needs. It notes that plans are formed when wants or needs motivate the idea of action to be taken in the future. For plans to have any effect on behaviour they must be remembered and generate wants or needs that are strong enough to overcome wants, needs, impulses or inhibitions arising from the immediate situation.

PRIME Theory notes that all behaviour is reactive 'in the moment' to internal or external stimuli and it delineates ways in which dispositions to generate plans, evaluations, wants, needs, and impulses and inhibitions change over time and in response to experiences. It argues that the dynamics of the process of change broadly follow the tenets of chaos theory, involving a mixture of stability and apparently chaotic switching of states in response to what are often minor fluctuations in influences. It also argues that 'identity' is a major source of wants and needs, and identity change is a major factor underpinning behaviour change. See www.primetheory.com

concern all three elements of the 3Ts framework while the third addresses just treatment.

1. What are the causal pathways leading smokers ultimately to succeed at stopping? A popular model of the process of behaviour change, the Transtheoretical Model (TTM), has been found to be descriptively inaccurate and no better at predicting behaviour change than simpler models of motivation and addiction (Sutton, 2001; West, 2005, 2006c). Systematic reviews of interventions based on the TTM have not found these to be better than other forms of intervention in changing behaviour (e.g. Riemsma *et al.*, 2003).

Our research aims to advance the theory of behaviour change by developing and testing predictions from a theory of motivation, PRIME Theory, that seeks to encapsulate, in the simplest possible model, the breadth of understanding embodied in everyday language and the strong elements of existing formal theories (West, 2006a). The research involves qualitative studies, surveys, longitudinal studies and experimental tests of predictions. Box 1 briefly outlines key aspects of the theory.

PRIME Theory makes a number of specific predictions that differ from those from the TTM. One is that more smokers will quit if health professionals enthusiastically offer help to all comers and do not ask them first whether they are interested in stopping smoking. It also predicts that assessing how much smokers want to stop will significantly enhance prediction of quit attempts over and above assessment of intention to stop. A third prediction is that many successful quit attempts will be made without pre-planning because of a 'chaotic switch' in the

motivational system (a kind of 'epiphany') which suddenly makes 'not smoking' part of the person's core identity. A fourth prediction concerns the role of identity in maintaining behaviour change. It argues that a 'self-sealing tyre' type of identity about the new behaviour, with a clear boundary around it whose integrity is preserved after violations, will be essential for lasting behaviour change. This identity is contrasted with, to continue the metaphor, a 'balloon' identity that has a clear boundary but when punctured deflates entirely, or a 'leaky tyre' which does not have a clear boundary.

It is hoped that ideas from PRIME Theory will contribute to all three elements within the 3Ts framework by helping tailor mass media communications, improving the efficiency of clinician advice, and improving the effectiveness of psychological aids to cessation.

2. How do key population smoking cessation parameters (rate of attempts to stop smoking, use of aids to cessation such as nicotine replacement therapy, and success of attempts to stop smoking) respond to events, including societal interventions (e.g. the introduction of smoke-free legislation), campaigns (e.g. No Smoking Day) and calendar dates (such as New Year's day)? To answer this question we survey the adult population of England¹ every month and we follow up the smokers and recent ex-smokers 3 and 6 months after the initial contact. This 'Smoking Toolkit Study' (STS), is the first such study of its kind in the world. It has been going since November 2006. Table 3 lists some of the key findings of the STS to date. ►

¹ The study is restricted to England due to resource constraints

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This study should contribute to all three elements of the 3Ts framework by assessing how far policy initiatives such as smoke-free legislation generate motivational tension and trigger or aid cessation, by looking at what drives usage of different cessation aids and also by examining the real world effectiveness of these treatments.

Table 3: Some early findings from the Smoking Toolkit Study
(for more information: www.smokinginengland.info)

- ▶ Almost 50% of smokers made at least one quit attempt in 2007
- ▶ Approximately 40% of quit attempts involved use of nicotine replacement therapy, mostly bought 'over-the-counter' rather than obtained on prescription
- ▶ Approximately 50% of quit attempts are made spontaneously and not planned in advance; these appear to be more likely to succeed than those that are planned.
- ▶ Smokers in lower social grades try to stop and use treatments to help them stop at the same rate as those in higher grades but are less likely to succeed
- ▶ The New Year period and the introduction of smoke-free legislation in July appears to have increased not just the rate at which smokers try to stop but also the short-term success rates
- ▶ No Smoking Day appears to trigger about 100,000 smokers to try to stop
- ▶ Approximately 60% of smokers are trying to cut down at any one time of whom about 25% are using NRT to help them. Those who cut down are much more likely to try to quit
- ▶ Approximately 40% of quit attempts are made by gradual reduction. These are less likely to succeed in the short-term than abrupt quits unless the smokers uses NRT
- ▶ Approximately 15% of smokers regularly use NRT in situations where they cannot smoke and these are much more likely to make quit attempts
- ▶ Raising the legal age for selling cigarettes from 16 to 18 has had no immediate effect on smoking prevalence or levels of consumption in smokers age 16 or 17

3. Are there more effective and cost-effective clinical interventions to aid cessation? The studies addressing this question are all aimed at the 'Treatment' element of the 3Ts framework.

In collaboration with colleagues at the Marie Curie Cancer Centre in Warsaw, Poland, we are conducting a major clinical trial of tablets containing cytisine as an aid to cessation. Cytisine is a partial-agonist acting on particular nicotinic acetylcholine receptors thought to be important to addiction that is produced by the laburnum plant (Etter, 2006). It has been licensed in central and eastern Europe for more than 40 years as a smoking cessation aid and there is evidence strongly suggesting that it is beneficial. However, no high quality clinical trials have been conducted and before it can be recommended for use such trials are needed. The major advantage of this compound is that it is extremely cheap to produce and a full course of treatment could be sold for as little as £2, compared with up £50-£150 for existing treatments.

We are also undertaking development work on a device to enable smokers to get as much nicotine as they need relatively easily from a simple puffer. This device, known at the moment as the 'Nicotine Cannon', is a simply engineered mouthpiece that can hold five Nicorette inhalator cartridges at the same time with a system whereby the user can easily adjust the concentration of vapour inhaled. We are currently looking at how much nicotine smokers get from this device and how far it reduces their cigarette cravings. Pure nicotine in the doses obtained by smokers poses little or no harm to the health and a device such as this might prove a safe and effective tool for smokers wanting to stop.

We have developed a collaboration with a large number of smoking cessation services around England to provide data to inform best practice. We are investigating factors such how far the type of counselling and the skills of the individual counsellor makes a difference. Although most services are moving away from specialist advice provided by dedicated staff to smokers in groups, we have found this model of care to be associated with higher success rates than that now being offered, which is individual counselling by staff who do this as a small part of their healthcare role (McEwen, West, & McRobbie, 2006).

Conclusions

There has been the space here to describe only ▶



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a small part of the work being undertaken. For the full programme see www.ucl.ac.uk/hbrc. It is in its early stages but we expect that by the end of the five year period we will have much better information on effective and cost-effective methods of motivating and assisting smoking cessation. We also hope to have a better understanding of how it is that smokers manage to achieve lasting cessation which can be fed into the further development of smoking cessation interventions. Such an understanding will hopefully have implications for behaviour change interventions more generally. ■

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Disclosure: Robert West has undertaken research and consultancy for companies that develop and manufacture smoking cessation medications, including Pfizer, GSK, Novartis, Sanofi-Aventis and Johnson&Johnson.

An interview with Gaston Godin (continued from page 53)

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original article

Gene-environment interactions and health behaviours: Opportunities for European health psychology**Rutger C. M. E. Engels*¹ & Carmen S. van der Zwaluw¹**¹ Radboud Universiteit Nijmegen, the Netherlands

Important theoretical models in contemporary health psychology have concentrated on environmental risk factors, such as norms and behaviours of peers and family members, to explain health behaviours. A few examples are the prototype-willingness model (Gibbons et al., 2006), the theory of planned behaviour (Ajzen, 1991), the I-change model (de Vries et al., 2003), the social learning theory (Bandura, 1986), and the transtheoretical model (Prochaska et al., 1992), which inspire many scholars in our area. Besides social norms and behaviours, another stream of research in health psychology focuses on the role of chronic and acute environmental stressors (e.g., childhood trauma, bad family relations, divorce, aggression, and bullying), and people's perceptions of these experiences, on engagement in health-threatening behaviours.

Most of the research based on these models is moving away from straight-forward approaches examining direct associations between environmental factors and behaviour, to the more complex interplay between environmental and individual factors on behaviour. In the past decade, there has been increasing attention for the interaction between individual characteristics, such as novelty seeking, extraversion, self-control, self-efficacy or habit strength on the one hand, and environmental factors on the other, in relation to health-threatening behaviours. However, less effort was made to include genetic susceptibility in designs as a key individual characteristic in explaining (transitions in) health behaviour. As such, we would like to plead for an inclusion of genetic effects in the models described above, and to focus on gene-environment interactions in health psychological research. We will first briefly elaborate on the proposed biological mechanisms underlying the link between genes and behaviour. Further, we will address several reasons for looking at gene-environment effects, and possible directions one can follow. To make our discussion as concrete as possible, we will concentrate on alcohol use and dependence as a specific type of health behaviour.

The value of genetic effects on alcohol use was already emphasized by substantial evidence from studies with behaviour-genetic designs (adoption and twin designs) showing strong effects of genetic influences on variations in alcohol use, misuse and

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dependence (e.g., Dick et al., 2007; Poelen et al., 2007; Rhee et al., 2003; Viken et al., 1999). Besides behavior-genetic research showing genetic effects, molecular genetic research has described a number of candidate genes that might be associated with susceptibility for alcohol consumption and dependence. In the past decades neurological dopamine systems were identified as key systems in reward and reinforcement with regard to alcohol use and dependence (Herz, 1997; Wise & Bozarth, 1984; Wise & Rompre, 1989). It is now recognized that numerous circuits in the brain, including parts of the limbic system and the prefrontal cortex, and several corresponding neurotransmitters, such as among others dopamine (DA), serotonin (5-HT), and norepinephrine (NE) are involved in the biology of reward (Pierce & Kumaresan, 2006; Robinson & Berridge, 2003). Genetic mutations (polymorphisms) may alter the functioning of (parts) of these reward systems, possibly creating inter-individual differences in alcohol use, in responses to alcohol and/ or in craving, and are as such primary candidates to investigate with regard to alcohol use and dependence. In addition, polymorphic ►

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variations in genes may also cause different responses to environmental factors (see e.g., Jabbi et al., 2007), while stressors in turn may be associated with increased alcohol consumption (Conger, 1956; Goeders, 2003).

For more than a decade now, it is acknowledged that to understand individual differences in phenotypes like alcohol use and dependence, it is not sufficient to know to what extent genes or environment affect that behavior, but that the focus of interest should shift towards the interaction between genes and environment (see elaboration in Rutter, 2002). That is, nature and nurture do not operate independently of each other but primarily in combination, and genetic effects on behavior may exist because they affect an individual's susceptibility to adverse environments. Thus, adverse environments, consisting of, for instance, negative or inadequate parenting, traumatic childhood experiences, or other environmental stressors may pose a risk for alcohol misuse, depending on genetic susceptibility factors (Rutter & Silberg, 2002). With respect to the field of alcohol research, Heath and Nelson (2002) pointed to two main reasons for gene-environment interactions in genetic epidemiological research. First, a lack of attention to genetic effects in studies on environmental risk factors may lead to wrong conclusions about the role of specific environmental factors for alcohol use and dependence. Second, studies exclusively examining genes might underestimate the effects of specific genetic if these effects are only present or strong and consistent under specific environmental circumstances.

Although the value of gene-environment studies is thus widely emphasized, there is still a paucity in empirical research on gene-environment interactions in relation to alcohol use. The literature on environmental risk factors linked to development of drinking in adolescence, transitions from regular drinking to alcohol misuse and dependence, and the negative alcohol-related consequences, is enormous with thousands of articles published annually. In addition, in the past decade, there has also been an enormous boost in molecular epidemiological research focusing on the direct effects of candidate genes on alcohol-related phenotypes. However, when we specifically took a look at studies testing gene-environment interactions associated with alcohol use and dependence in humans – by means of systematically searching Psychinfo, Ovid Medline, and Pubmed, checking the reference lists of all identified articles, and through expert consultations - we identified only nine articles. These papers focused on a small range of stressors such as

childhood abuse (Ducci et al., 2007), maltreatment (Kaufman et al., 2007; Nillson, et al., 2007), stressful life events (Nillson et al., 2005) and negative life experiences (Bau et al., 2000; Madrid et al., 2001) in interaction with specific polymorphisms. Although these studies indeed found support for gene-environment interactions effects, the strong diversity in studies published so far in terms of heterogeneity in genes, environmental risk factors, phenotypes (alcohol use and dependence measures), sample characteristics, and study designs makes it not possible to draw firm conclusions.

What we would like to stress, first, is that it is important for further development of theories in health psychology dealing with environmental risk factors, to acknowledge the interplay with genetic factors, as well as genetic effects on environment itself (see for details on the latter issue Rutter et al., 2006). Second, scholars in the field of health psychology are well trained, highly skilled and have the theoretical backup to adequately set up designs, such as matched case-control studies, longitudinal population studies and experimental studies with homogeneous samples, and measure or even manipulate environmental risk factors. As many molecular genetic-informative studies lack sufficient measurements of these environmental stressors (see also Moffitt et al., 2006), input of scholars in disciplines of health psychology as well as developmental psychology, will be of eminent value. We assume that this will be the start of a new era of research which will include both genetic and environmental factors, and their interplay in explaining behaviour, and as such cover a significant number of risk factors for, in this case, alcohol use and dependence. Besides the environmental aspects mentioned before, other environmental risk factors, such as norms and examples set by drinking family members and peers, as well as alcohol cues (e.g., Hutchison et al., 2002) may also be included in this type of studies.

We feel that gene-environment interactions should be a focus of future studies in health psychology. In conclusion we will briefly explore some innovative, new views on gene-environment research. It has been proposed that clinically defined phenotypes such as alcoholism are too heterogeneous in their clinical presentation to be reliably associated with both certain genes or environmental factors (van der Zwaluw et al., 2007). Perhaps, then, should we concentrate on distinct aspects of alcoholism, such ►

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as withdrawal or tolerance, include co-morbid disorders, such as depression or ADHD in our phenotypes, or focus on mediating traits, so called endophenotypes (Gottesman & Gould, 2003) such as craving (Hutchison et al., 2002) or brain waves (Porjesz et al., 2005), to represent phenotypes that might be more closely related to specific genetic factors and perhaps also to environmental ones. In addition, besides the fact that genes may interact with each other (epistasis) and in this way change or conceal the measured effects of one locus or gene (Cordell, 2002), there may also be environment-environment interactions. For example, a traumatic life event, in combination with the presence of an alcohol-dependent partner - and a genetic susceptibility - may cause a person to start consuming large amounts of alcohol. Although we recognize that gene-environment research has many difficulties to overcome, we are convinced of the importance of gene-environment studies in an attempt to better explain health behaviours in humans ■

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original article

The intention-behaviour gap – it's all under control (executive control)**Julia L. Allan***¹¹ University of Aberdeen, Scotland

Successful health behaviour change often requires the foregoing of short-term pleasures and convenience in favour of less pleasurable, more effortful behaviours. As initiating and maintaining a series of effortful behaviours over time inevitably requires considerable self-control, it is likely that natural (intra and inter-individual) variation in the strength and availability of cognitive or 'executive' control resources will be related to the likelihood that an individual's intentions are successfully translated into action.

Behavioural intentions do not reliably lead to changes in behaviour (Sheeran, 2002; Conner & Armitage, 1998; Godin & Kok, 1996), and the substantial 'intention-behaviour gap' remains a major focus of research in health psychology. Significant progress has been made towards understanding and reducing the gap, with the identification of key moderators of the intention-behaviour relationship. Individual differences in post-intentional processes such as action planning (where concrete behavioural responses are linked to situational cues in order to achieve the intended goal state) have been identified as important determinants of behaviour. The spontaneous use of action plans and the prompted use of implementation intentions or 'If-Then' plans have been found to predict behaviour over and above intentions and improve rates of intention-behaviour translation (Sniehotta et al, 2005; Ziegelmann, Luszczynska, Lippke & Schwarzer, 2007; Gollwitzer & Sheeran, 2006).

The success of this research suggests that it may be possible to explain additional variance in the intention-behaviour gap if other important post-intentional processes are identified. Successful goal pursuit requires many things in addition to planning, for example; suppression of goal-incongruent habits and thoughts, inhibition of distracting information, and maintenance of goal relevant thoughts and behaviours over time. As people who don't action plan are less likely to turn intentions to action, then it is possible that people who don't (or can't) efficiently control and utilise these additional processes will also be less likely to perform intended actions.

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The necessities of goal pursuit

Many of the processes involved in goal pursuit have been identified in cognitive and neuropsychological models of effortful action control. From the study of patients suffering damage to the frontal lobes of the brain and the task performance of normal adults under differing demands, it has been possible to map out many of the component processes involved in the control and instigation of effortful thoughts and behaviours. The identified 'executive control' processes include processes similar to action planning (planning and advance task set reconfiguration), but additionally describe further cognitive processes thought to be required during effortful modification of behaviour. These additional processes include selective attention, inhibition of prepotent responses, task-shifting, and flexibility of thought, and are used when complex or novel behaviours are required, when habitual or automatic behaviours are insufficient to achieve a goal or when a current response must be effortfully overridden (Norman & Shallice, 1986).

Norman & Shallice (1986) include executive control processes (referred to as the 'Supervisory Attentional System') as the highest level of their 'Attention to Action' model of action control. In the model, routine, familiar behaviours are thought to ►

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be performed relatively automatically by action schemas (sets of thoughts and actions that have become linked together through repeated use or practice) and can be automatically elicited by environmental cues (e.g. getting into a car triggers the 'put on seatbelt' schema). When schemas are insufficient, that is when a complex or novel situation is encountered, or triggered schemas turn out to be inappropriate given the current context, the supervisory attentional system is activated. The SAS effortfully controls behaviour in a slow, volitional and flexible manner, selectively activating useful schemas and inhibiting inappropriate schemas, thus allowing overall goals to be achieved by producing novel, complex patterns of behaviour. As SAS / executive control processes are effortful they use considerable cognitive resource. When resources are not available (e.g. when an individual has naturally weak executive control, or when the available resources are being used elsewhere), behaviour would be expected to be largely driven by established habits and routines and attempts to effortfully change behaviour would be less likely to succeed.

Executive Control as a Moderator of the Intention-Behaviour Relationship

Recent research has demonstrated that individual differences in some executive control processes are indeed predictably related to the likelihood that intentions are turned into actions. Hall, Fong, Epp & Elias (2007) proposed that individuals with strong cognitive inhibition would perform more effortful dietary and exercise behaviours than others. They gave participants a laboratory task designed to measure their ability to inhibit prepotent responses in an abstract, general way - the 'Go-NoGo' task. During Go-NoGo tasks, participants learn to make rapid 'Go' responses to certain stimuli, and are instructed to withhold this response ('NoGo') when other stimuli are shown. The speed with which a Go response can be made under conditions where the prepotent response would be a NoGo provides a measure of inhibition. When used to predict behaviour in the same participants over a subsequent 7 day period, Hall et al found that scores on the Go-NoGo task explained a significant amount of the variance in diet and exercise behaviour over and above that explained by intentions. Importantly, they also demonstrated a moderating effect of executive control as the correspondence between intentions and behaviour was greatest for those with strong inhibition suggesting that it was the people with better executive control who were more likely to turn their intentions into actions. The proportion of variance explained by

the independent and interactive effects of intention and executive control in this study was 59% for physical activity and 61% for dietary behaviour, almost double the amount typically explained by intention alone (Sheeran, 2002). However, this study only examined one of the many executive processes likely to be involved in intention-behaviour translation and the findings were interpreted in terms of this specific process (inhibition). Other control processes likely to be involved in intention-behaviour translation include task-shifting and cognitive flexibility. For example, changing an unhealthy diet for a healthy one requires considerable flexibility of thought when weighing up alternative possible foods as well as the ability to shift task set from normal to new eating behaviours. Recent results from our lab (Allan, Johnston & Campbell, in preparation) suggest that individuals who score poorly on objective tests of planning, cognitive flexibility and task switching eat fewer portions of fruit and vegetables and more unhealthy snacks than intended. As multiple different control processes seem to be involved in intention-behaviour translation, it is likely that it is general executive control ability that is important rather than the presence or absence of one specific skill.

Future Directions

This research raises a number of interesting questions. Firstly if executive control is predictably related to the intention-behaviour gap can executive control ability be improved to facilitate intention-behaviour translation?

Secondly, does executive control moderate the likelihood that any one specific intention is translated into the appropriate behaviour or does it operate at a more general level (i.e. in general, across all behaviours, people with weak executive control may be less likely to succeed)?

Thirdly, can we develop methods to reduce the demands on, or circumvent the need for, executive control during behaviour change?

There is some research that hints at the answer to the first question. Baumeister, Gailliot, DeWall & Oaten (2006) report work suggesting that self-regulation improves with practice, producing a beneficial effect across a range of different behaviours requiring self-control. However the causal pathways are unclear and the specific processes being improved have yet to be identified. ►



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Falko Sniehotta and colleagues are currently investigating the second question and preliminary evidence suggests that the effect of executive control seems to operate at a general level improving the general correspondence between intentions and behaviours across a wide range of different behaviours.

It is third question which presents the most interesting possibility, as theoretically anyone with naturally weak executive control or temporarily depleted executive resources (e.g. through tiredness, multi-tasking, effort expended elsewhere in their daily lives) could benefit from an intervention that reduces the need for/demand on executive control if executive control is essential for behaviour change. We already know that implementation intentions seem to be able to offset and even prevent control resource depletion ('ego-depletion'; Webb & Sheeran, 2003), presumably because the linking of actions to environmental cues allows the action to be elicited automatically, circumventing the need for executive control. If the other cognitive control processes identified as intention-behaviour moderators by our recent work can be used in a similar way, this opens the door for exciting new avenues of research. As an example, in the field of dietary behaviour change, removing cues to problem foods from the environment would theoretically reduce the demands on cognitive inhibition (as there would be less to be inhibited). Providing a reference list of good alternatives to various problem foods or a set menu would reduce the need for cognitive flexibility and remove the need for in situ deliberation (as deliberation is known to be a drain on cognitive resources), and so on and so forth.

Conclusion

The study of executive control in the specific context of health behaviour change is a new and developing field. However, the conceptual overlap between behaviour change research conducted in health psychology and goal-directed behaviour research conducted in cognitive neuropsychology is great. It is my opinion that there is much to be gained from integrating knowledge from the two domains, both in terms of insights for future directions and explanations of current problems. ■

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conference announcements

conference title	date	location
8th conference of the European Academy of Occupational Health Psychology	12 – 14 November 2008	Valencia, Spain
UK Society for Behavioural Medicine 4th Annual Scientific Meeting	6 – 7 January 2009	Exeter, England
Society of Behavioral Medicine Annual Meeting & Scientific Sessions	22 – 25 April 2009	Montreal, Canada
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