The status of evidence and outcomes in Stages of Change research

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Abstract

The Stages of Change model has become a prominent feature within health promotion and most of the literature associated with the model portrays it as being ‘effective’. Based on an extensive review of the literature, this paper suggests that contrary to this view, there exist a relative paucity of sufficiently strong supportive evidence. The paper describes the features of the existing evidence base, and highlights problems in relation to various aspects of design and execution. Two wider issues relating to the core nature of the model and the evidence associated with it are identified as important and discussed. Two main conclusions are drawn. First, better quality quantitative outcome studies are needed. These should be complemented with significant qualitative case studies with a focus on practitioner and organizational utilization of the model. Second, the disproportionate popularity of the model may be skewing the practical and conceptual nature of health promotion. Stages of Change activities are seen to equate to ‘health promotion’ at the expense of other activities and approaches.

Introduction

James Prochaska and Carlo DiClemente’s Trans-theoretical Stages of Change model (Prochaska and DiClemente, 1983) has had a profound impact on health promotion, becoming one of the most prominent and popular conceptual resources in the field. Their remarkably elegant vision of behaviour change as a cyclical ‘staged’ process has struck a chord with many health professionals and researchers working in topic areas ranging from smoking cessation to the promotion of physical activity. The model has been used to tailor interventions to particular ‘stages of change’ and to harness the internal ‘processes’ that are perceived to be at play within each of these stages.

Without doubt, a case can be made for the model being useful in some way. In a pragmatic sense, for hard-pressed field practitioners, it is clearly an advance on the crudeness of efforts to change behaviour based on a simple model of an input of knowledge leading to attitude shifts resulting ultimately in behaviour change. Likewise, in the tradition of ‘social marketing’ there is undeniably a ‘common sense’ attractiveness around its ability to segment populations and direct compatible interventions to them (Hastings and Haywood, 1991; Cirksena and Flora, 1995).

However, for a number of reasons, these perceived virtues cannot excuse the model from informed assessment. First, as Foucault and Popper continually suggested, the need for critique is particularly great at the very point when concepts and ideas begin to take on an established or accepted status. Second, the rapid growth in practice and research around Stages of Change cannot be left unexamined, especially when relatively profound claims are being made on its behalf. Finally, the literature tends not to explicitly discuss many important issues raised by research, leaving...
them unresolved. Central to this is the question of ‘effectiveness’. As well as being seen as broadly ‘useful’, accounts of the model go on to explicitly portray it, for example, as: ‘effective’ [Prochaska et al., 1993, p. 399], achieving ‘favourable differences’ [Steyte et al., 1999], p. 943] and ‘positive effects’ [(Campbell et al., 1994), p. 786] between intervention and control groups, and as achieving ‘a high impact rate’ [(Velicer et al., 1999), p. 26].

Whilst this literature is generally couched in an image of formality and scientific respectability, an analysis of the narrative used in the reporting of Stages of Change also shows that this form tends to be accompanied with particularly strong rhetoric and this immediately establishes the possibility that different types of evidence and persuasive strategies are at play. [Discussion of the narrative structures used to report Stages of Change work is the product of a process of discourse analysis using the tools of Fairclough (Fairclough, 1992), Prochaska et al. [(Prochaska et al., 1993), p. 399], for example, began an account of their work with this particularly emotive metaphor:

Of all the people alive in the world today, an estimated 500 million will die from the use of tobacco. Approximately 2.5 million will die in middle age with an average loss of 20 years of life. This group will lose a total of 5 billion life years, which ironically is the approximate age of the earth.

We accept that the optimism connected with the model may ultimately be well founded (as implied by the majority of the reporting), it may be robust [as suggested by, for example, Laforge et al. (Laforge et al., 1999) and Donovan et al. (Donovan et al., 1998)] and ‘useful’ to practitioners [as suggested by, for example, Houihlan (Houihlan, 1999) and Haslam, (Haslam, 1999)]. The specific claims of effectiveness may also be justified. However, this paper suggests that there may be a tendency for the strength of the evidence base to be over-stated and that there is less high-quality evidence associated with the model than generally assumed. It is possible therefore that the accepted credibility that surrounds the model [Samuelson (Samuelson, 1997), for example, contends that the model is ‘the most important theoretical health promotion development of the decade’] is derived to a significant extent from a general faith and persuasive rhetoric.

This notion is explored in this paper using insights and data derived from an empirical review of the model, and its use in health promotion (Bunton et al., 1999) commissioned by The Health Education Board for Scotland and completed between November 1998 and April 1999.

The paper begins with introductory material containing a brief description of the model, an overview of the process by which the review was conducted and a summary of other critiques of the model. The core of the paper then considers the specific issue of concern: the general paucity of sophisticated outcome trials that assess changes in behaviour and the limitations of those that have attempted to consider such measures. The paper concludes by considering two wider issues that arise from this discussion: being conscious of the nature of the evidence that is deployed in assessing it and establishing a clear vision of the status of the model. A number of possible ways forward are then suggested.

The nature of the Stages of Change model and expectation of models in general

Before embarking on specific examination of the Stages of Change model, as a point of subsequent reference, a brief description of its nature and the expectations associated with it is offered. The Transtheoretical Stages of Change model was developed in the early 1980s in an attempt to understand and collate a range of existing perspectives on smoking behaviour change (Prochaska and DiClemente, 1983). The framework postulated three major ideas (DiClemente and Prochaska, 1998). First, behaviour change is seen as a dynamic process that occurs in a sequenced and cyclical order, involving the following stages: ‘pre-contemplation’ (the new behaviour is not considered), ‘contemplation’ (the new behaviour is contem-
plated but not acted upon), ‘preparation’ (efforts are made to prepare for changes involved in adopting the new behaviour), ‘action’ (initial behaviour change is made) and ‘maintenance’ (the new behaviour is maintained over time). Second, it is suggested that progress through these stages is driven by a series of 10 processes specific to particular stages, including ‘consciousness raising’ (seeking information about the problem behaviour), ‘counter-conditioning’ (substituting new alternative behaviours for problem behaviour) and ‘stimulus control’ (controlling situations that may trigger relapse into the old behaviour). Third, the notion of levels of change recognizes that individuals can experience multiple problems that exist at different levels: symptom/situational, maladaptive cognitions, interpersonal conflicts, family/systems problems and interpersonal conflicts. So, in summary, by a process of collation, the Transtheoretical Model sought to accommodate and effectively transcend a range of existing cognitive theoretical frameworks such as the Health Belief Model, the Theory of Reasoned Action and Social Learning Theory, forming a new more comprehensive and multi-layered ‘supra’ structure.

These intentions point to an important wider issue relating to the nature of theories and models of human behaviour, and what should be expected of them. Whilst given little explicit attention in the literature, when this matter is considered [e.g. (Earp and Ennett, 1991; Rawson, 1992)] a wide range of assumptions can be detected. Essentially, there are varied views on the extent to which models should define the scope of the phenomenon they purport to define. Whilst it is generally agreed that models are visual representations or metaphors that seek to simplify complexity, there are different views on the extent to which it is appropriate and necessary to abridge this complexity [this tension is beautifully articulated by Isaiah Berlin’s essay The Hedgehog and the Fox (Berlin, 1997)]. For some, models offer a way of narrowing and simplifying our understanding of behaviour, highlighting areas in which action can pragmatically be taken. For others, there is less desire to restrict this vision, with attempts made to maintain a recognition of complexity. From these values, a range of other positions arises, summarized in Table I, and these will be deployed later in considering the Stages of Change model.

**Locating the present work in the context of existing critiques**

Given the intensity of debates in the published literature [e.g. between Prochaska and Velicer (Prochaska and Velicer, 1997b) and Bandura (Bandura, 1997) and Davidson (Davidson, 1992) and associated commentaries] and the strength of feeling that we have experienced in disseminating the review, before embarking on specific discussion, it is worthwhile placing this work in the context of others of a similar nature.

As far back as 1992, a critical Editorial by Robin Davidson had prompted a series of responses in the British Journal of Addiction (Davidson, 1992) and various themes can subsequently be identified from further publications. At a fundamental level, some have questioned the core internal validity of the model and this has been expressed in a range of ways. Most critically, Bandura (Bandura, 1997) has questioned whether the model is a ‘true’ stage model at all. Ahijevych and Wewers (Ahijevych and Wewers, 1992) and Farkas et al. (Farkas et al., 1996) have also questioned the ‘representativeness’ of the original group in Prochaska and DiClemente’s 1983 work; Farkas et al., for example, suggest that ‘the model was developed and validated using self-selected smokers...with higher levels of consumption who intended to quit’ (Farkas et al., 1996, 1278). Building on this, Pierce et al. (Pierce et al., 1998), Farkas et al. (Farkas et al., 1996) and Belding et al. (Belding et al., 1997) suggest that the model excludes a range of other variables that may have explanatory power, e.g. Pierce et al. suggest that variables not included in the model such as ‘level of addiction’ and ‘quitting history’ are strongly associated with cessation [(Pierce et al., 1998), p. 278]. The explanatory power of the model has also been questioned, Marcus (Marcus, 1996) and Clarke and Eves (Clarke and Eves, 1997) alluding
to a concern that stage processes and behavioural outcomes are tautological or ‘reciprocally determined’; Marcus, for example, accepts that it is not possible to determine whether ‘movement in the process of change occurs before, concurrent with, or after the change in exercise stage of adoption’ [(Marcus, 1996), p. 200].

These basic concerns have been reflected in a series of more specific issues related to establishing valid links between the status of individuals and the ‘stage’ they are allocated into. In discussing the narrative expressed by smokers, McKie et al., for example, note that ‘the dynamic nature of assessing an individual’s position on the Stages of Change model was clearly borne out...people could shift through several stages of the model in minutes as they spoke of attempts to give up’ [(McKie et al., 1999), p. 9]. In a broader sense, cross-national studies have shown large variations in the distribution of populations across stages; Kearney et al., for example, note ‘large between-country differences (in stage distribution)...with three-fold differences in the precontemplation stage (Ireland and Italy 15% versus Greece and Portugal 46%) and in the maintenance stage (Greece 14% versus Ireland 47%)’ [(Kearney et al., 1999, p. 117]. The validity of self-reported behaviour with respect to stage has also been questioned (Lechner et al., 1998; McKie, 1999). Lechner et al., for example, show that by using different models of dietary assessment, subjects can be classified into different stages, concluding [(Lechner et al., 1998), p. 8]:

...the distributions over the different stages in both studies showed that many subjects who were in action or maintenance according to the traditional classification were classified in the precontemplation stage according to the alternative classification method.

Consequently, there is evidence that significant proportions of individuals are unassignable to recognized stages (Marcus, 1996; Pierce et al., 1998; Kearney, 1999).

The external validity of the model has also been questioned with respect to its transfer into other topic domains. Clarke and Eves (Clarke and Eves, 1997) do this in relation to ‘negative’ behaviours such as smoking and drug use to ‘positive’ behaviours like physical activity and healthy eating, and Lauby et al. (Lauby et al., 1998) with respect to the complexities of sexual behaviour. Finally, Duncan and Cribb (Duncan and Cribb, 1996) and Piper and Brown (Piper and Brown, 1998) highlight some ethical difficulties associated with Stages of Change interventions. These include the potential for the model to exclude pre-contemplative individuals from intervention and the potential for the model to act as a subtle form of coercive control.

Despite the presence of these perspectives in the literature, there are still three broad problems. First,
many of them are buried in affirmative reports or tagged on to conclusions as sources for ‘future research’ [e.g. (Marcus et al., 1996; Steptoe et al., 1999)]. Second, except for Ashworth’s review (Ashworth, 1997), Whitehead’s Editorial (Whitehead, 1997) and Bandura’s pointed comments (Bandura, 1997), these critiques have largely failed to find significant expression in the ‘mainstream’ health promotion literature. Finally, with the exception of Ashworth’s review (Ashworth, 1997), the critical focus has tended to be on conceptual themes at the expense of any comprehensive consideration of outcome.

**The review of the Stages of Change literature**

Specific coverage of the full review processes has been reported in detail elsewhere (Bunton et al., 1999, 2000). The search was limited to the period 1985–1998, and derived from the major electronic databases including: Medline, CINAHL, EMBASE, EMBASE (Psychiatry), PsychINFO, PsycLIT, Sports Discussion, Social Citation Index and ASSIA. Using key words, ‘transtheoretical model’, ‘stages of change’, ‘motivational interviewing’ and ‘brief intervention’, 1000 publications were initially identified and for the purpose of the full review, these were narrowed to 368 that directly mentioned ‘stages of change’ as a component of the intervention. In specifically considering outcome, this group was further reduced to 239 empirical studies with an associated data set. These were categorized according to whether they were primarily about structure (tests of the fabric or framework of the model/theory), process (tests of the ingredients, mechanisms or procedures of the model/theory) or outcome [end-point assessment or measurement after delivery of scientific health intervention(s)]. Of these, 178 (74.48%) were classed as concerned with structure, 50 (20.92%) with process and 11 (4.6%) with outcome. See Table II.

**Reflection**

Three specific themes arise from this work.

**Table II. Summary data of structure/process/outcome analysis**

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of studies</th>
<th>Structure</th>
<th>Process</th>
<th>Outcome</th>
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</thead>
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<tr>
<td>1985</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>0</td>
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<tr>
<td>1986</td>
<td>2</td>
<td>2</td>
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<td>Mid-1998</td>
<td>33</td>
<td>24</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Totals</td>
<td>239</td>
<td>178</td>
<td>50</td>
<td>11</td>
</tr>
</tbody>
</table>

|                | (100%)       | (74.48%)   | (20.92%) | (4.6%)  |

**The general paucity of sophisticated outcome trials**

The most striking feature of these data is the small number of studies that have assessed outcome. Despite the origins of the model in the early 1980s, it was not until the early 1990s that any work considering behavioural outcomes was reported. This paucity of evidence is acknowledged by Heather ([Heather, 1992], p. 829); ‘the propensity of the model to catch the spirit of the times has had little to do with its scientific support but perhaps this may come later’ (italics added).

Despite such confidence, much of the literature has avoided measuring behaviour change as an outcome, preferring either softer indicators such as increases in knowledge or recall of an intervention [e.g. (Campbell et al., 1994; Skinner et al., 1994; Leed-Kelly et al., 1996)] or internally generated measures of ‘stage progression’ (e.g. moving from the ‘preparation’ stage to ‘action’) (Campbell, 1994; Domel et al., 1996; Cole et al., 1998; Crane et al., 1998; Grimley and Lee, 1998).

This latter type of work is particularly problematic, especially when expressed in research designs structured around intervention groups that receive stage-specific interventions against a control group.
who receive a non-staged intervention [e.g. (Prochaska et al., 1993; Skinner et al., 1994; Strecher et al., 1994; Voorhees et al., 1996; Schorling et al., 1997; Peterson and Aldana, 1999; Steptoe et al., 1999)]. There are two difficulties. First, stage progression does not necessarily equate to ultimate behaviour change, e.g. Clarke and Eves suggest ‘it is merely the intention to exercise that changes and not the behaviour itself’ [(Clarke and Eves, 1997), p. 206]. Second, there is a strong possibility that the ‘stage progression’ displayed in these studies within the ‘staged’ intervention groups in comparison to ‘non-staged’ match groups could be artifactual. Since specific ideas are selectively introduced to one group and not the other, and then eventually used as an outcome measure, there is a danger that subjects may, either consciously or unconsciously, absorb these prompts and comply with the suggestions.

Even in examples that attempt to consider a form of outcome, few studies include the full range of ingredients normally associated with a robust and comprehensive experimental design—the manipulation of an independent variable, the existence of a control condition, the minimizing of the effects of confounding variables and statistical measurement and analysis of a dependent variable (Harris, 1991; EPI Centre, 1996). Much of the work has been cross-sectional [e.g. (Gomel et al., 1996; Jamner et al., 1997; Kearney et al., 1999)], often containing no control groups [e.g. (Marcus et al., 1992; Marcus et al., 1996; Cole et al., 1998; Berg-Smith et al., 1999)] and using small and/or self-selected samples (Campbell, 1997; Ruggiero et al., 1997; Wilson et al., 1997). Moreover, the complex and interactive nature of stage allocation, transtheoretical processes and intervention makes the precise structuring and isolation of independent and dependent variables problematic. Therefore, it may be inherently difficult to isolate the generalized effects of an intervention from the specific influence of Stages of Change. For example, Steptoe et al. (Steptoe et al., 1999) included nicotine replacement therapy within a design that primarily was interested in behavioural counselling based on Stages of Change. These limitations are compounded by the tendency for the nature and basis of the intervention to be not explicitly described [as is suggested by Rollnick et al. (Rollnick et al., 1999)] or clouded in an array of approaches. Berg-Smith et al. (Berg-Smith et al., 1999), for example, described their work as comprising four substantial intervention models. These combined influences mean that the model tends to be, in Popper’s terms, ‘non-falsifiable’ or ascientific, a position accepted by Heather (Heather, 1992), p. 829.

Accepting these limitations, studies do exist that try to avoid these structural difficulties and attempt to assess ultimate changes in behaviour. In some, there is a degree of evidence to suggest that stage-matched interventions result in significantly higher levels of ultimate behaviour change that those that are non-stage-matched [e.g. (Prochaska et al., 1993; Campbell et al., 1994)]. However, as Ashworth [(Ashworth, 1997), p. 171] notes, this relatively small pool of literature ‘does not present a coherent body of evidence’.

We are also now beginning to see work that explicitly suggests that the model has been ‘ineffective’ in achieving set health promotion aims, e.g. in relation to increasing uptake of breast screening (Crane et al., 1999), improving levels of smoking cessation (Aveyard et al., 1999; Lancaster et al., 1999; Steptoe et al., 1999), bringing about dietary changes (Green and Rossi, 1998), increasing levels of physical activity (Naylor et al., 1999), and improving biological indicators such as weight, body mass index, serum cholesterol and blood pressure (Steptoe et al., 1999).

**Wider issues**

As well as these specific details, the above discussion points to two wider issues relating to the nature of the Stages of Change evidence base and ultimately the very nature of the model.

*The nature of evidence associated with Stages of Change*

The literature highlights the tendency for supportive and critical contributions to be advanced on the basis of widely different types of evidence and that different levels of credibility are conferred to
Stages of Change research

these. Occasionally, this work is built around broad conceptual development, reflection and critique (Davidson, 1992; Bandura, 1997; Cardinal, 1997; Norman et al., 1998) or practitioner knowledge (Heather, 1992; Rollnick, et al., 1997; Werch, 1997). However, the vast majority of this work can be classed as ‘empirical’ where the model is applied to a field population [e.g. (Prochaska et al., 1993; Marcus et al., 1996; Grimley and Lee, 1998)]. Galante (Galante, 1996) characterizes this form of research as adopting an empirical, generalized and mechanical view of behaviour where the model is considered a fixed and robust resource from which objective and generalized data can be derived. This work takes on a ‘scientific’ identity, based on grouped data, deploying various forms of survey design and using quantitative measures. For example, Prochaska and Velicer [(Prochaska and Velicer, 1997a), p. 6] suggested the need for ‘multi-variate measurement models and statistical methods’ in Stage of Change evaluation. This type of work is traditionally considered to produce ‘sound’ evidence and status in decision-making processes (Speller et al., 1997). Many are clearly attempting to portray Stages of Change evidence in this way and the apparent prominence of the model suggests that they have been successful.

As our review suggests, there is, however, doubt over the authority of these data and thus the assumption of valid evidence. Heather’s acceptance of the model being based on ‘spirit’ rather than ‘science’ confirms this. Given that Stages of Change is generally portrayed as objective and scientific, this is a surprising reaction—a defence based on formal empirical research would perhaps have been expected. However, when challenged, many opt for a defence based on a fundamentally different rationale. Heather [(Heather, 1992), p. 829], for example, states:

...it is at least arguable that treatment providers must base their innovations on a sense that something is right and valuable without affording themselves the comfort of waiting for the empirical evidence to totally justify their decisions.

There are similar examples. Samuelson [(Samuelson, 1997), p. 14] calls Bandura’s critique of Stages of Change ‘esoteric’ and suggests a ‘pragmatic’ use of the model where educators and practitioners ‘draw on their own observations, professional interactions, and extensive field experience’. Also, Haslam (Haslam, 1999) acknowledges then dismisses criticisms of the model, claiming that it has ‘intuitive’ appeal. In these examples, the formal assumptions traditionally used to support the model are suspended in favour of a more intuitive, localized and holistic ‘sense’ (Galante, 1996).

We would accept and indeed support this type of evidence having status. For example, in the field of psychotherapy research, Stiles (Stiles, 1995a,b) offers a vision of work founded on case studies and focussing on narrative accounts of processes. If the Stages of Change model is the product of softer, subjective insights (weltanschauung) which traditional scientific enquiry finds difficult to access or understand, this alternative approach is quite appropriate. Davidson (Davidson, 1992) has already opened up this avenue within Stages of Change research, favouring a form of ‘tacit’ knowledge.

In isolation, any recourse to qualitative knowledge is not in itself inappropriate. However, concerns over the potential superficiality and incongruity of these expressions must be raised. This retreat into subjectivity clearly sits uncomfortably alongside the objective assumptions that supporters of the model invariably draw upon. Whilst tacit knowledge can be ‘legitimate’, it is in our view not enough to declare this in a superficial way. Despite the existence of many case study-based methodologies that would allow a formal and systematic consideration of such evidence, the Stages of Change literature reflects no reporting of such work. Any recourse to subjectivity can thus be considered as rather disingenuous, reflecting a tendency within the Stages of Change movement to selectively draw on varying types of evidence to maintain an impression of worth.
The nature and status of the model

As well as variability within the evidence base, there remains a more fundamental uncertainty over the very nature of the Stages of Change model. The evaluation and cross-case comparison of any health promotion approach is to large extent dependant on the presumption that a relatively fixed and stable entity is being applied consistently across locations and time. Given the apparently variable deployment of the Stages of Change model, significant concerns can thus be raised over the validity and reliability of data across cases.

Drawing on the framework established earlier in the paper, this variability is reflected in the associated literature. Whilst Prochaska and Velicer (Prochaska and Velicer, 1997b) have stated that ‘the transtheoretical model has proven remarkably robust’, Rollnick et al. (Rollnick et al., 1999), p. ix suggest that ‘in truth, there is no such thing as it, merely a collection of different strategies for use in different situations...replicable methods simply do not exist’. There are then at least two quite different sets of assumptions of the model: one based on the presumption of a fixed and generalized pattern, the other on a more flexible and non-specific use with little effort made to differentiate between them.

Similarly, expectations of the ‘power’ of the model vary. In particular, there has been some confusion over whether it has predictive power or is at best descriptive, which is captured in an exchange between Bandura (Bandura, 1997) and Prochaska and Velicer (Prochaska and Velicer, 1997b). Those most associated with the model have generally been reluctant to suggest that it has significant predictive power, particularly when only the Stages of Change components are deployed. Whilst many simply use only the stage component descriptively [e.g. (Wilson et al., 1997; Cole et al., 1998; Maqueen et al., 1999)] the contention would be that these approaches fail to utilize the full potential of the model, specifically the change processes. The claim is thus made that these uses are unrepresentative of the ‘real’ model (Velicer et al., 1999). Nevertheless, many still clearly believe that the model has predictive power. Given the expectations associated with it, this may not be an unreasonable expectation—the model should contribute something prospectively to the understanding of behaviour change. This has been accepted by Prochaska and Velicer ([Prochaska and Velicer, 1997], p. 11), who state, ‘across a variety of problems and populations, these first three stages have been practical predictors of who signs up for health promotion programmes, who shows up, who finishes up, and who ends up better’. So, how predictive is the stage of change model?

Traditionally, the predictive capacity of a well-developed model or theory concerned with individual behaviour should be associated with its ability to define the future outcome of an intervention prior to and independent of that individual having any conscious awareness of the relevant variables and their expected effect (Rawson, 1992). Additionally, any given theoretically shaped intervention should be expected to bring about change to a degree significantly beyond any that would have happen ‘naturally’. This does not seem to be the case with the Stages of Change model.

As suggested already, by identifying themselves as being at a particular stage, individuals already are conscious of this status prior to any subsequent intervention. Future progress may therefore be as much a consequence of a pre-determined map and motivation. As the model itself suggests, this could be a product of inherent change processes as well as the effect of the intervention. This does not mean that the model is not useful. It does, however, raise concerns over the ‘power’ of it and what added value it confers. Rawson [(Rawson, 1992), p. 211], for example, suggested that in comparison to uncomplicated ‘iconic’ models (models that simply describe the isolated elements of a system), ‘analogic’ models have greater potential in that they seek to explain ‘relationships and progressions between elements’. In relation to Stages of Change such higher conceptual status would be reflected in greater explicit consideration of the articulation between the main elements involved, i.e. the stage location, the promotion or activation of stage-specific processes, the intervention and an assess-
ment of the additional contribution these elements make beyond change that would have happened despite intervention.

**Conclusion**

Much is still not known about the Stages of Change model and these gaps may in time be filled. In our view, the model may be particularly useful when deployed in a way that reflects the features contained in the left column of Table I, i.e. it is used sensitively, flexibly and guardedly in association with a range of other theoretical resources. If one were given the opportunity to look at how the model is actually used in field situations (a task that has not yet been systematically undertaken), this may in fact be the most prominent type of use.

However, we feel that the literature has maintained an unnaturally assured façade on two fronts. First, it has suggested that the Stages of Change model can be considered as a single and consistent entity. Second, it has tended to paint a relatively rosy picture of the success of the model, tending towards what Popper [(Popper, 1992), p. 38] has termed a ‘dogmatic attitude’ whereby theorists ‘constantly claimed to find ‘verifications’ for their favourite theories. This paper has thus attempted to temper this optimism by stressing the need to adopt a more critical assessment of the model whereby refutations of it are actively sought, openly discussed and genuinely assimilated. In this spirit, despite its popularity and prominence in practice and the mass of research associated with it, this paper highlights significant concerns about the status of the Stages of Change model that cannot be easily dismissed.

Most pessimistically, the excessive claims in the absence of sufficient analytical or reflective work raises the possibility that, despite the beliefs and extensive efforts of those deploying the model, it remains in the realms of ‘pseudoscience’ (Kitzinger, 1990), an unnecessarily complex and elaborate façade that (at best) conceals simple and self-evident ideas around targeting.

More positively, we suggest a number of possible avenues for further attention. There is a need to compliment the one-dimensional and mechanistic approach to evidence that focuses on whether the model ‘works’ or not, with one that is more rounded and sophisticated in its orientation [see (Tudor Hart, 1997)]. This would include better quantitative studies that sought to isolate the Stages of Change component as a single independent variable, measure behaviour change as a dependent variable, ensure the use of control group and use representative samples. Given the inherently complex nature of these circumstances such approaches would only provide one particular insight. To provide a fuller picture, these should be complemented with qualitative case studies of practitioner utilization of Stages of Change. In response to the concerns raised by Steptoe et al. (Steptoe et al., 1999) about the use of Stages of Change in primary care, there is also need for explicit process-based implementation evaluation of the model in a range of settings. Given that the model is now the basis of significant commercial activities [see (Boseley, 1999)] such work with a seriously critical orientation is even more necessary.

The expression of the model may also have significance for the general development of health promotion policy and practice. The disproportionate popularity of the model may be acting as an additional pressure that is skewing the nature of health promotion—where Stages of Change activities begin to equate to ‘health promotion’ at the expense of other activities and approaches. It is clearly difficult to provide definitive evidence that this is so and it could be reasonably argued that it is the those who deploy the model rather than the model itself that are culpable for such actions. There are, however, a series of indications that suggest that the model is contributing to the fostering of particular types of health promotion. Clearly, the model is associated primarily with individualistic approaches, DiClemente [(DiClemente, 1993), p. 101] unashamedly stating:

...our research has concentrated on intentional change, as opposed to societal, developmental, or imposed change, and appears to be touching
upon dimensions of the basic structure underlying both the self-directed and treatment—facilitated modification of addictive behaviour...

and Prochaska and Velicer (Prochaska and Velicer, 1997) insist that:

...the future of health promotion programmes lies with stage-matched, proactive and interactive interventions.

Via narrative analysis of research reports, this emphasis can be confirmed in more detail by the detection of a consistent and formulaic structure [see, e.g. (Jamner et al., 1997; Lauby et al., 1998; Haslam, 1999)]. In general terms this involves the following elements: there are particular individualistic and behaviourally oriented health problems (e.g. smoking, drug use, low levels of physical activity, etc.); there are difficulties related to ‘uptake’ and ‘adherence’ to counter-acting messages; that a novel Stages of Change model has been developed that supersedes other less useful models; that the model has proven to be ‘effective’; and that this success has been displayed across a range of behavioural problems.

The construction of the problem in this way largely limits the potential solutions to individually focussed, topic-based interventions that exclude wider social and environmental approaches (Bunton et al., 1991). For example, in relation to the promotion of walking, Lumsdon and Mitchell ([Lumsdon and Mitchell, 1999], p. 271) have noted that:

...most of the evidence for techniques that help the sedentary adopt physical activity comes from quasi-experimental and experimental intervention studies, many of which examine various cognitive and behavioural strategies at an individual level...in comparison, interventions aimed at environmental, institutional and social levels remain largely unexplored.

Furthermore, as Reid [(Reid, 1999), p. 934] has suggested, the tendency for Stages of Change to be delivered mechanistically as a ‘magic bullet’ may act to displace existing approaches to health promotion that are effective (in the case described by Reid, antismoking projects for young people based on ‘tried and tested’ social influences theory are passed over in favour of Stages of Change). More widely this displacement may hinder a more varied and complex ‘systems’ approach to health promotion (Nicholas and Gobble, 1991; Baum, 1995). A wider range of health promotion models that seek to define social, policy and community processes therefore need to be expressed and utilized.

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References


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