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Background Paper

Theories of behavior change in relation to environmental tobacco smoke control to protect children

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This paper explores theories of behavior change in terms of their relevance to reducing ETS exposure (ETS control), with a focus on protecting children. ETS control is most likely to be achieved through a combination of a good practical and theoretical understanding of the task required, grounded in empirical evidence. There are a number of behavioral methods by which ETS control around children can be achieved: some applicable to smokers, and others likely to be relevant for all parents or others concerned to protect children.

Smokers, as the source of ETS, can respond either passively by complying with rules and requests about when and where to smoke or they can take active steps either:

- quit smoking altogether; or
- restrict when and where they smoke, by not smoking in close proximity to children, and/or not smoking in enclosed areas children are likely to inhabit (eg the home).

For parents, the possible tasks range from personal actions to participating in social action.

They can:

- actively discourage smokers from smoking in their homes;
- encourage smokers not to smoke where children are present;
- choose non-smoking environments (whenever possible) when supervising children outside of the home;
- encourage independent children not to spend (too much) time in places where smoking is allowed; and
- work with others to pursue and/or maintain smoke-free policies in places outside the home where children spend time (eg schools).

Patterns and Predictors of ETS exposure

The movement towards ETS control started with authoritative reviews of the health effects which concluded that ETS could be harmful to non-smokers. (eg USDHHS, 1986) At a societal level the first steps have been to restrict smoking in public places, particularly in workplaces. Public place smoking bans are now widespread in many countries and appear to be particularly common in places which children frequent, eg schools (Borland et al, 1997).

Remarkably little is known about how widespread practices are to protect children from ETS exposure around the home, and what factors influences who is doing what. The few studies available, covering several countries, show considerable levels of ETS control activities in homes. However, in all cases, only a minority of smokers are taking comprehensive action. For example, Biener et al (1997) surveyed adolescents in Massachusetts in 1993. Fifty-three percent of those living with smokers reported no restrictions on smoking for family members, with 25% reporting smoking bans. Further, 23% reported that visitors were not allowed to smoke. Bans were associated with marked reduction in reported ETS exposure. A study of parents of 3 year olds in Scandinavia (Lund et al, 1998) in about 1995 found that of households with at least one smoker, 57% were reporting some restrictions on smoking, and 30% did not appear to be exposing their children to any ETS at home.

In Victoria, Australia, we have been monitoring indicators of ETS policies in homes since 1989. Our data shows rapid (in societal terms) increases in restrictions (Borland et al, in submission) that in many aspects parallel the increasing prevalence of bans in workplaces which have risen from 17% in 1988 to 66% in 1995 (Borland et al, 1997). For example, rates of discouraging visitors from smoking among all households with children rose from 25% in 1989 to 59% in 1997. Restrictions varied by household composition, being lower when smokers were present, but in all cases restrictions increased over time. In "all smoker" (adults) households restrictions rose from 2% to 32% and in mixed smoker, non-smoker households they rose from 17% to 53%. A similar, though smaller, trend was seen for households without children. The percentage of smokers saying they try not to smoke in the presence of children has also risen from 14% in 1989 to 33% in 1996 (Borland et al, submission). This suggests that part, but not all, of the impetus for the change is due to the desire to protect children.

A small body of literature is developing documenting factors associated with ETS control measures in the home. Clearly of most importance is the smoking status of individuals and/or of households. Other factors include: lower socioeconomic or educational status, single parent status, and lack of knowledge (Lund et al, 1998; Ponsonby et al, 1996; Cook et al, 1994). Not all of these will be important in all contexts, and some have been reported without controlling for smoking status. These factors need to be able to be explained by any comprehensive theory of ETS control. At present no such theory exists. In

the following section theoretical constructs that may be important to such a theory are reviewed.

DETERMINANTS OF BEHAVIOR CHANGE

Theories of behavior change all accept in some way the need to consider both the target behavior and the context in which the behavior takes place. Psychological theories also include consideration of thoughts, beliefs and experiences as important mediating factors. A systems theoretic approach is assumed: systems are organized in hierarchical levels and there are mutual interactions between activities taking place at different levels from the physiological to the broadly societal (Winett, King & Altman, 1989; Stokols, 1992). For example, the behavior of a smoker in not smoking around children can have both direct (obvious) and indirect effects for ETS control. The indirect effects can occur through the actions hopefully influencing others to behave in a more appropriate manner. Such effects can also influence the subsequent likelihood of the smoker persisting with the behavior. Understanding individual actions requires different theoretical models to those involved in negotiating social change. There are also differences in the tasks facing smokers and non-smokers in negotiating with others to achieve smoke-free areas

Overwhelmingly, the strongest prediction of future behavior is past behavior. However, people do have considerable capacity to change behavior patterns when motivated to do so. The challenge for those with an interest in optimising health outcomes is to encourage people to persist with healthy behaviors, not to take up unhealthy and to reduce or eliminate unhealthy behaviors. (In this context, the term behavior is used both to refer to the specific behavior and to patterns of occurrence over time.) The health implications of most behaviors are strongly influenced by their frequency and duration of occurrence. Most research has focussed on behaviors that are hard to change (eg smoking), so an uncritical reading of the scientific literature could give the impression that behavior change is always difficult to achieve. However, in reality behaviors can vary considerably in the ease with which they can be changed.

In a short paper like this it is not possible to do justice to the diversity or the detail of theories of behavior change. The best recent overview is in Glanz, Lewis & Rimer (1997), and a good short synthesis can be found in Kok et al (1996). Contemporary theories of behavior change postulate a role for between three and six broad classes of variables. The six are:

- 1) attitudes and beliefs about the behaviors or the outcomes of change;
- 2) beliefs about self-efficacy or perceived ability to enact and/or maintain the target behavior change;
- 3) the role of contextual factors, particularly social factors, either directly and/or mediated through people's beliefs;
- 4) previous experience with the behavior either directly or indirectly through the processes of modelling (modelling can be seen as an element of social influence);
- 5) priority for action, a person can only pursue a limited number of goals of any one time; and
- 6) the notion of a stage-based or systematic step-like progression towards behavior change.

Stages Theories

The notion that behavior change follows a series of discrete changes has been suggested by a number of theorists. It has been popularised as a key aspect of the transtheoretical model of behavior change of Prochaska and associates (Prochaska, DiClemente & Norcross, 1992). The TTM has five or six discrete stages which are conceived in terms of readiness to change:

Precontemplation: Where a person has no interest or serious thoughts of changing their current behavior, in this case their smoking.

Contemplation: Where they are thinking seriously about doing something but have not yet made coherent plans.

Preparations: Where the person is actively planning and preparing for behavior change.

Action: The period immediately after initiating the change, where active efforts are

required to maintain the new behavior pattern.

Maintenance: Where less active efforts are required to maintain new behavior patterns; they are, essentially established, but there are occasional contextual situations which could precipitate a relapse to the previous behavior pattern.

In some versions of the model a sixth stage of Termination has been defined which can occur for some behaviors where the behavior is so routinised into day-to-day life that it continues routinely without thought and with no real risk of relapse. This person has become a totally committed non-smoker or would feel intensely uncomfortable if they went to smoke in an inappropriate context and no longer perceives or experiences any serious thoughts about resuming past behaviors. There is currently considerable debate about whether it is necessary to postulate stages at all, and if they exist, how many there are, and whether they are true stages that must be progressed through (McGuire, 1985; Weinstein et al, 1998).

Extra stages might be useful for understanding ETS control. Weinstein (1988) identifies a stage prior to Precontemplation which we might label Blissful-Ignorance. It is the situation where the person hasn't really come into contact with the possibility that their behavior might be harmful which may often be the case in uninformed populations. Weinstein (1988) also differentiates a stage prior to any thought of behavior change, from one for those who have decided not to act for whatever reason, thus dividing Precontemplators into two, the latter being closest to the TTM version. This adds a non-linearity to his model, but in some respects this may better reflect some aspects of reality, especially for risks that are newly known, where some people change as soon as they realize the need, while others resist change. In ETS control where trialling of new behaviors is likely to be important, it may also be useful to combine Preparation and Action into a Stage of Behavioral Exploration. This may be more realistic than postulating a discrete shift from no action to ideal levels of ETS control.

From a communicative perspective stages are useful, as the messages needed differ (McGuire, 1985). For example, to get the person to consider an issue (moving Precontemplators to Contemplation) requires making the information available and salient and encouraging a focus on the implications. By contrast, encouraging trialling of ETS control measures involves providing advice about suggestions and strategies that are most likely to be useful and, if necessary, reframing set-backs as learning experiences.

Attitudes and Beliefs

Knowledge is an essential, but often ignored precursor of directed action. Indeed, it is not a major construct in any of the models discussed here apart perhaps from Weinstein's transition from "blissful ignorance". Relevant knowledge can and does lead to behavior change, notwithstanding a literature showing limited effects of knowledge. In these cases, the knowledge studied is usually irrelevant to action, often because the key knowledge is virtually universally known. The knowledge that appears to be needed is that there is a problem and that there is a behavioral response that can solve or ameliorate the problem. Knowledge of itself is usually not enough to lead to change in the majority of people, indeed it is assumed to have its effects as one of the factors that affect attitudes. Attitudes are evaluative beliefs about the value of their object to the individual.

All psychological theories of behavior change postulate a major, if not primary role for attitudes about the current behavior and/or of an alternative (eg quitting smoking) in motivating behavior change. The basic notion, and one that is shared by economic theory, is that there is some weighing up of the costs and benefits of expected outcomes of behavior change, including the costs of making the change (transaction costs). These theories are often collectively referred to as expectancy-value theories. In the area of health, two such theories have tended to dominate research: the Theory of Reasoned Action of Fishbein and Ajzen (1975) and the Health Beliefs Model (Strecher & Rosenstock, 1997).

The theory of Reasoned Action (TRA) states that intentions to act are the immediate determinant of voluntary behavior. Intentions are formed as a joint function of the persons attitudes to the behavior and their subjective norms about the behavior. Attitudes are a product of beliefs about consequences or outcomes and the personal evaluation of such beliefs. Thus, the belief that smoking may harm others will not be motivating unless it is evaluated as important. For example, a parent who doesn't think they smoke much around their children might believe that that level of exposure is trivial, even though they accept that ETS can be harmful. Subjective norms refer to people beliefs about what important people in their social network believe is appropriate and of their motivation to comply. Thus a woman otherwise

concerned to protect her children from ETS exposure, but who believes her best friend would object strongly if she was stopped from smoking, and who strongly values that friendship would be less likely to act to ban smoking in her home.

The Health Beliefs model (HBM) takes a somewhat different approach. It postulates that the determinants of behavior (the role of intention tends to be implicit in this theory) are an assessment of three proximal factors. First the perceived severity of the health problem and perceived susceptibility (the perceived likelihood of contracting the problem) come together to form one source of motivation to act, the perceived threat. For example, the likely harm to their children or others. There are also separate assessments of the perceived benefits of action (what will be gained) and the perceived barriers (both what will be lost and the transaction costs). These later two are then weighted as some form of decisional balance and with the perceived threat, collectively determine behavior. Environmental cues to action and characteristics of the individual are both postulated to influence behavior indirectly, by affecting assessments of both perceived threat and decisional balance.

The main conceptual difference between the two models is that the TRA has decisional balance separated for attitudes and subjective norms (social factors), while the HBM has social factors incorporated at the level of costs and benefits before the overall weighing up, and has the health benefits (through perceived threat) playing a much more central role. There is no evidence that people universally adopt one way of assessing their situation over another. Indeed, it seems likely that the decisional process is rather more chaotic than either of these models suggests: some would say these models are better thought of as being prescriptive of, rather than descriptive of what people do in coming to decisions. In this regard, it is known that attitudes with strong affective links have a greater impact on behavioral decisions than cold beliefs. Some theories such as Protection Motivation Theory (PMT; RW Rogers, 1983) and Self-Regulation theories (eg Leventhal & Cameron, 1987), focus on the importance of emotional arousal. PMT argues that while emotional arousal usually increased the likelihood of relevant behaviors, under some conditions too much fear arousal can inhibit behavior (see below).

The way the theories cluster the consequences highlights different factors as being potentially important in ETS control. The HBM, through the notion of perceived threat, suggests that compliance with suggestions to reduce ETS exposure in children is likely to be greatest where the child has a condition with known links to ETS, but where this is not so, highlighting potential risks may be an important intervention. The TRA, with its focus on social influence, may be particularly useful for ETS control as many of the behavioral options need to be socially negotiated. This possibility is taken up again in the section on contextual issues, as the weight of evidence suggests that attitudes about the social environment (including subjective norms) are not the only mechanism by which social factors influence behavior.

Three theories tell us that attitudes influence behavior, but not how to change attitudes. Theories of persuasion fill that gap, although how the two interrelate has not been extensively studied for health behavior. Theories of persuasion, or how to change attitudes and beliefs and thus induce voluntary action, have identified two broad paths (Petty & Caccioppo, 1986; Eagly & Chaiken, 1993). These are a central, cognitive route, where the information is processed systematically and decisions are arrived at based on a mixture of logic and empirical evidence. This is the person as scientist, and is rare. More common, in a world where there is no time to fully explore the evidence (for all issues), at least in conjunction with limited central processing, is the peripheral route, which is dependent on using cues as to the validity of points of views or summaries of information. Peripheral factors include the emotional salience of arguments, the credibility of the source, the volume of information, and beliefs about what others think. It is generally assumed that attitude change via the central route is more enduring than that via the peripheral route. However, the strong effects of emotionally charged experiences is at least one exception to this. These ideas suggest that to persuade people of the need to change, attention needs to be paid to getting the peripheral cues right, because without them, compelling evidence will rarely be enough. Levels of emotional arousal may also need to be regulated. Further, the changing social context can provide strong cues that frame arguments which can radically change their persuasive value. The way messages are framed and the relationships between subjects and those attempting to persuade them not only affects the extent of attitude change, but also directly effects intentions and/or behavior change (Burgoon, 1996). ETS control is not intrinsically salient. Tobacco smoke, while unpleasant, does not appear dangerous. We know it to be dangerous because of systematic scientific enquiry, but that of itself has little emotive power. To bring the links between ETS exposure and harm “to life” will require making the links more emotionally salient. Personalizing the science is likely to be a key means of

achieving this.

Self-efficacy

Self-efficacy or the person's belief in their capacity to act is a crucial factor influencing behavior change (Bandura, 1986). People are unlikely to try to act unless they have some reasonable belief in their potential capacity.

The notion of self-efficacy has now been incorporated into the Health Beliefs Model (Strecher & Rosenstock, 1997), other theories that have grown out of the HBM such as Protection Motivation Theory (RW Rogers, 1983), in a successor to the TRA, the theory of Planned Behavior (Ajzen, 1985) and in the TTM (Prochaska, DiClemente & Norcross, 1992). Self-efficacy is central to Bandura's (1986) social cognitive theory. Self-efficacy is generally postulated to impact directly on both intentions and on behaviors. Self-efficacy is not just important for the execution of specific behaviors, it can influence outcome expectancies or beliefs about the net utility of change. Thus, efficacy beliefs about reducing the costs of change (and/or increasing benefits) are likely to have predictive utility over and above belief in capacity to successfully change behavior. Protection motivation theory also argues that self-efficacy mediates the relationship between beliefs and behavior. Where strong beliefs evoke too much anxiety, behavior may be inhibited unless self-efficacy is sufficiently high.

Self-efficacy has been shown to be very important in smoking cessation although some unexpected findings suggest that its role may be complex with different relationships pre and post quitting (Stuart et al, 1994). In smoking cessation, self-efficacy has been typically assessed with regard to overcoming temptations to smoke rather than to changing long-term outcomes. Reducing ETS exposure is likely to be technically easier, so here self-efficacy for the task is likely to be less relevant than efficacy for modifying social and environmental factors, such things as creating situations to provide consistency and finding ways to negotiate practices that everybody feels able to comply with. That its self-efficacy goes beyond things like whether I can ask my friend not to smoke, to whether I can ask him or her not to smoke in my home in a way that won't threaten our relationship. To achieve this involves creating new shared realities, and the difficulty lies here not in the mechanics of the act, but in altogether more complex social dynamics.

One important means of enhancing efficacy is to analyse the task and break it down into a series of more manageable sub-tasks. Thus a systematic analysis of the context and the task is important in situations where self-efficacy might be low. Such an analysis will reveal that smokers and non-smokers face different challenges in, say, making their homes smoke free (see below).

Context and Experience

The social and environmental context has a major influence on what people do. The context ranges from the person's past experience of behaving, through their experiences of others behaving, to rules and regulations and social sanctions relating to the behavior. In addition, physical aspects of the environment can play an important role.

Past experience is generally one of the strongest, if not the strongest, predictor of future behavior. Experience need not be direct, vicarious experience; seeing others act can also influence subsequent behavior (Bandura, 1986), and thus can also facilitate the trialling of new behaviors. The models that are most likely to influence behavior are ones that perform the relevant behaviors in contexts closest to that of the observer. Thus a family of non-smokers with mainly non-smoker friends may not be a good model for a household with smokers who have a range of smoker friends. Where the model is seen as credible for the task and the behavior is seen to bring benefits to the watcher, the watcher is more likely to initiate the behavior, both because they can see the potential benefits and have some ideal of how to achieve them. In the same way, seeing others fail, or not achieve desired outcomes can inhibit or discourage change. Allowing smokers, either directly or vicariously, to experience that not smoking in their own home or in a friend's home is acceptable, can go a long way towards increasing both their self-efficacy and sense that the task is worthwhile. For people wanting to discourage others from smoking in their homes the experience of seeing smokers happily refraining from smoking or going outside to smoke, can provide a model for attempting to extend such practices to their own homes.

Aspects of the environment that can influence ETS control include cues as to when to act or not act, resources that are necessary to act and anticipated and/or actual reactions of others, particularly smokers. Cues about the acceptability of smoking around the home can range from there being no ashtrays, to

having signs such as “This is a smoke-free home” prominently displayed. For smokers who want others not to smoke, not lighting up themselves or going outside to smoke can act as cues to other smokers that smoking inside the home is not desired. The existence of rules about not smoking in other places, eg workplace smoking bans, may also act as cues that smoking is not acceptable in other contexts, if the rationale for such bans is generalized to the home.

One important factor affecting movement toward smoke-free environments is likely to be the number of smokers in a person’s social environment as they constitute the people who need to change their behavior. One of the most difficult tasks in instituting smoking bans in the home is to negotiate them with friends and others who have an expectation that they can smoke. As smoking prevalence is higher in lower socio-economic status groups, the task of negotiating smoke-free environments is likely to be harder for these groups because there is likely to be more people who have to change their behavior if non-smoking rules are instituted. This possibly explains at least part of the lower levels of ETS control found in lower SES households.

At present, we have not well developed psychologically grounded theories or systematic bodies of data describing the mechanisms by which social values change. One theoretical approach that does relate in this area is Everett Rogers’ (1983) theory of diffusion of innovation. Bandura (1986) in his social cognitive theory has incorporated many of Rogers’ insights, but does not spell out how these ideas link in with the other components of his theory.

Diffusion theory (EM Rogers 1983,1995) differs from the other theories described so far in that it is a descriptive social level theory. It describes and attempts to explain the pattern of uptake of new innovations. The theory argues that the diffusion of an innovation follows a lawful sequence, and that a graph of usage of an innovation with time can be described as an ogive: that is a curve that rises slowly, then rapidly, followed by a slowing rate to an asymptote. Translated into adoptions in any period of time, this gives a normal distribution. The first 2.5% of changers are labelled innovators, the next 13.5% are labelled early adopters. These are the people who drive the innovation. However, who they are and why they innovate and why others do not are not well explained. The only mechanisms clearly articulated are access to knowledge, and for technological innovations, having the financial resources readily available. The theory is stronger in drawing attention to characteristics of the innovation that affect diffusion rates. These include: trialability, observability and complexity, all of which are relevant to ETS control. The theory also draws attention to the changing social context created by the degree of diffusion. Nowhere is this more so important than in social innovations that relate to communication or to social relations. For example, the telephone or, an innovation of today, the Internet. In these cases potential usage is limited if others in one’s social network don’t also adopt the innovation. This slows initial innovation, but hastens the uptake in the middle period, as there is social pressure to follow the innovators to maximize (for them) the utility of their innovation, and perhaps a feeling of not wanting to miss out.

Social psychological research tells us that the behavior and judgement of individuals is affected by behavior of others in the group (both majorities and minorities, see Eagly & Chaiken, 1993). Thus minority behavior can influence us, although we are more influenced by the behavior of majorities. Applied to controlling ETS exposure, it suggests that any exemplars among a person’s social set who ban smoking in their homes or around their children are likely to impact on the likelihood of others doing likewise, but once a critical mass do so, movement for change is likely to be accelerated by the changed social values. If the results of these changes are perceived as being negative, then any level of resistance is likely to lead to further rebellion. To facilitate uptake of ETS control in the home it might be useful to ‘seed’ communities with influential individuals who have been trained in the skills of effectively implementing and selling the innovation.

In the history of tobacco use by western societies, use went from the restricted (eg the smoking rooms of Victorian England) to virtually the unconstrained. The realization that ETS harmed others has gradually changed that, and we are now progressing towards a society where more and more public situations are non-smoking. Smokers are in retreat. In this context, expecting non-smoking in smokers’ homes can be seen by smokers as something of a threat. Until recently, to expect smokers not to smoke in the home and around their children was not normative. That is, the expectation was that they could smoke when and where they wanted to. In this context, attempting to enforce a smoking ban on others was likely to have been seen as unnecessary and thus unreasonable. Further, from the perspective of smokers, even if they personally believed in the need not to smoke around others, to act on such a belief would have been seen

as unusual by others. Now, as the social climate is changing, the environment is (for many) one where the expectation is that smokers will not smoke in their homes, or especially in those of others, and it now requires a radical stance to smoke. The patterns of change in expected behaviors and requirements sketched out above have meant that it is now easy to institute bans in societies which have moved to it being normative, but likely to be much harder where this is not (yet) the case. Thus the changing expectations can lead to a fundamental reframing of the issue: from an unusual exception to what is generally expected, and thus assumed as reasonable. This shift is likely to reflect a critical point in the adoption trend for any population.

Priorities and Change

Health protective behaviors have a chronically low priority for successful implementation, whereas responses to illnesses which disrupt lifestyles tend to be rapid and often all consuming. Kaplan (1990) points out that it is behavior or the capacity to behave or “do things” that is the goal of almost all individuals and that health concerns are really only important to the extent that they affect people’s capacity to achieve their desired behavioral outcomes. Most of the time it is our capacity to successfully live our lives to the fullest extent possible that drives what we do. Health tends to be in the background, and will only be attended to if and when it starts to interfere with our goals and priorities.

That many people remain in the Contemplation stage (or some equivalent) for health behavior change demonstrates that there are people who are aware of the need for behavior change but have not yet adopted such changes. While some of these may not be fully convinced, others have not acted because they have more important or pressing priorities in their lives that are taking all their energy. In this regard it needs to be understood that health behavior changes are not just competing against each other, but are also competing against all the other activities and goals of the individuals. Health often gets a low priority because most unhealthy behaviors have their main negative impacts delayed by some years or even decades, and/or because any immediate negative effects are probabilistic and generally not salient until after they happen.

Weinstein (1988) suggests that the prioritization of life is like a person working with a messy desk. Something comes into the in-tray and gains some attention but usually something else comes in before the item is fully processed and it is put back onto the desk. Subsequently, it is often overlaid by a variety of other priorities. Sometime reminders will come from different sources which will lead to a searching on the desk for the appropriate paper work and it will come back to the top. The process is largely unsystematic, responding to the demands of the moment, not a reflection of some long-term well thought out plan that is executed regardless of the exigencies of the moment. This is partly because the motivation to act with regards to some goal increases as the proximity to that goal increases. This explains why proximal goals can take higher priority than health behavior change, as those goals become close, even though at some point moderately distant, health behavior change was seen as a higher priority. That is, people often have good intentions, but somehow never get around to it.

This analysis suggests that, given a clear direction or valiance for an attitude (pro or con an action), it may be the frequency with which relevant thoughts occurs that determines progress towards behavior change. The TTM postulates a central role for processes of change; the frequency of thoughts, behaviors and experiences in driving behavior change. Different processes are important for each major stage transition. Frequency of change-related thoughts are likely to be especially important leading up to stage transitions which require some deliberate decision about behavior change and perhaps in the period immediately after such changes. That is, the frequency of pro and anti thoughts may be more important at this time than the strength of those beliefs assessed in some neutral context, because they reflect the priority that the issue has for the individual.

Towards an integrated theoretical framework

The best theoretical framework to try and integrate all these issues is probably Bandura’s (1986) Social Cognitive Theory (SCT). This conclusion is based on its heuristic usefulness, rather than on the extent of empirical support as there is insufficient evidence to decide in this area. The basic tenet of social cognitive theory is that there is reciprocal determinism between the person (including thoughts), the situation and behavior. The major limitation of SCT, and its source of utility here, is that most of the relationships between variables are not as precisely specified as they are in other, generally less comprehensive, theories.

SCT highlights the importance of both direct and vicarious experience and of efficacy beliefs not only for

the rather routine behavior change skills required, but skills to change the nature of the outcomes by reshaping the social context. SCT postulates a central role for goals which emerge from outcome expectancies or a decisional balance. Motivation to achieve goals is mediated by affective self-evaluation, self-efficacy for goal attainment, and ongoing readjustment of internal standards (Bandura, 1989). Self-evaluation provides the affective drive in relation to internal standards. Standards can change as a result of changing social mores, indeed some standards may be set to follow socially sanctioned behavior. This is one mechanism by which the changing social context can affect behavior, by changing the desirability of goals and thus their priority. Stage notions can be incorporated within SCT (De Vries et al, 1995) although Bandura argues they are unnecessary (Weinstein et al, 1998). However conceived, personal readiness to change is likely to interact with the extent of diffusion. A precontemplator in a period of little uptake is in quite a different position to a precontemplator after most of the population have changed.

SCT has been elaborated to encompass aspects of social interdependence in Social Action Theory (Ewart, 1991), which pays attention to how choices and behaviors of one member of a group can constrain the choices of others. Social interdependence effects can occur in all forms of social interaction from direct interaction to mediated communication (eg mass media). ETS control needs to be socially negotiated in each new context. This usually needs to happen through explicit negotiation, although in some contexts, and perhaps increasingly, smokers may presume restrictions, so that in these cases a smoke-free area appears to “just happen”. Where there are frequent prompts not to smoke or ambiguous situations where decisions are needed, the smoker will frequently be confronted with a need to decide what to do. Under such circumstances they may feel the need to adopt strategies that will be always acceptable, ie, in this case always smoking outside and/or not exposing others to noticeable amounts of their ETS. The only problem with guessing others’ views is that unnecessary, but uncontested, changes may occur. This is not likely to be a problem in ETS control where the public health goal is always the same, even if some individuals don’t personally see the need to enact change in their own lives.

In all negotiations of socially acceptable behaviors, outcomes will be influenced by beliefs about the legitimacy of both the goal and the process, and of the necessity to comply. Because ETS exposure is a social activity, understanding how social mores operate is extremely important. Basic rules of etiquette and politeness that are essential to a civilized society need to be considered and invoked as central reasons why the person should behave in the appropriate way. The act of exposing somebody to tobacco smoke needs to be construed as a rude and offensive act, and at its extremes, as a minor assault. The norms need to be that nobody pollutes enclosed environments, which other people might have to pass through or live in.

IMPLICATIONS FOR ETS EXPOSURE

Some possible implications of theories to ETS control have been highlighted in the previous sections. In this section, the focus turns to an analysis of the tasks involved in ETS control. While the majority of effects of ETS exposure are general and often long-term, there are some effects of ETS exposure that are immediate and highly salient. For example, the impact on people with some respiratory conditions. Where somebody in the person’s immediate environment is obviously suffering, then there are strong and immediate cues that something needs to be done and in such cases pointing out appropriate strategies for the individual to eliminate the exposure might be sufficient. However, where the exposure is having no noticeable ill effects, there are not the immediate cues available as to the inappropriateness of the behavior. In this context, there may be other contingencies at work which make ETS control a low priority. Strategies are needed to increase the relative salience of engaging in ETS at least until it becomes habitual.

Adverse long term health effects clearly justify systematic efforts at ETS control. However, it is also likely to be useful to focus on proximal reasons as ways of making the issue more immediately salient. The vast majority of people (including many smokers) find ETS unpleasant, both the direct experience and the residual smell (eg on clothes). ETS can lead to irritation of the eyes, throat, and, in susceptible individuals, acute respiratory problems (eg asthma attacks). Smoking in the home causes significant mess, from dropped ash and smoke settling on surfaces. These increase cleaning needs and contribute to the stale odour of rooms that have been smoked in. There may also be other benefits of banning smoking from the home or around children that are not so obvious, but which could be pointed out. Children learn the rituals associated with smoking by watching adults smoke, so not smoking in their presence may play a role in denormalizing smoking. Research as to whether this was so could provide new rationales for action. Drawing smokers attention to these more immediate effects can help them to see immediate

benefits of their decisions not to smoke and will provide benefits that might not have, of themselves, justified restricting when and where smoking occurs.

Tasks for the smoker

If cigarette smoking were a desirable social activity, or even one of mixed merits, then all of the focus on ETS reduction would rightly be on encouraging people to engage in the habit in places where they were not going to create undesirable levels of ETS exposure to others. However, tobacco smoking is extremely harmful to the smoker, indeed for the average person much more harmful than it is to those who are passively exposed. Thus, an important strategy for ETS reduction must remain encouraging those people who currently smoke to quit the habit. Because nicotine is addictive, this is not a simple task but is one that needs to be pursued not just for the benefits that it will produce in reducing ETS exposures but for the benefits to smokers' long-term health. However, we need to be realistic and accept that many smokers will opt for other means of ETS control, at least in the short term.

Engaging in ETS control behaviors can be inconvenient for the smoker: not smoking may have many of the same challenges as quitting, and going outside has costs that have to be accepted. Smoking outside in inclement conditions can be unpleasant, as can having to interrupt valued activities to go outside. In addition, having to move away from children to find somewhere to smoke can be difficult at times. Under almost all circumstances it is not appropriate to have doors opened as it is likely to result in at least some of the smoke being blown back into the house. When the smoker is responsible for supervising the children such requirements can constrain and in some cases effectively eliminate possibilities for smoking. For example, where children cannot be supervised from outside (no acceptable line of sight), or where the children actively seek close contact. This analysis explains why the task of ETS exposure reduction seems to be harder for smoking parents, especially for single parents where there is reduced opportunity to go "off duty" (Ashley & Ferrence, 1998). Because smoking outside has costs, smokers may be highly motivated to increase the secondary gain associated with going out to smoke. In such cases they may exert pressure, implicit or explicit, on other people to join them outside and/or make some attempt to glamorise the activity, denying its negative attributes and focusing on exaggerating its positive attributes. The alternative to this is for the smoker to acknowledge that they have to continually disrupt their activities simply because they are driven by a physiological addiction.

For a smoker who lives alone or with non-smokers and has few smoker friends who visit, ETS control is largely a personal choice. For most other smokers the task is more of a collective one. To maintain ETS control also means doing it when other people are smoking. This involves the smoker adopting different criteria for their behavior to that which occurs for others. In some cases the disparity can be reduced by persuading others not to smoke, but that can be difficult if others don't share a sense of the legitimacy of the request.

Social Action Theory gets to the nub of several key issues in negotiating smoke-free households. Firstly, in all houses where it is consequential there is more than one person involved within the household. Even if the household agrees to eliminate smoking inside there is the problem faced in dealing with friends who visit and the need for smokers to maintain behavioral consistency if it is going to be feasible to expect friends not to smoke when they visit. Take the case of a smoker who reluctantly agrees to have his household smoke-free, but then goes and smokes at a friend's place whom subsequently visits and goes to light up. What does the person do? Asking the person not to smoke violates the principle of reciprocity, yet allowing it violates an agreement with his/her family. This highlights the fact that a ban on smoking in one's home can change the nature of a person's relationships with all affected people (eg, smokers who visit). In a social context where smoking around others is not implicitly accepted as an issue, negotiating such a change in relationships with a range others is likely to be difficult as there may be no shared reason to justify the act. However, in a social context where most people expect smokers not to expose others, the opposite would be the case, and it would be difficult to sustain a pattern of smoking, it would be unlikely to receive acceptance, let alone support from their friends.

Negotiating smoke-free environments

Attempts to get parents to reduce levels of ETS exposures to their children need to be considered within an historical context. In particular, consideration needs to be given to the public discourse about the issue and to prevailing social values about the acceptability of attempts to restrict smoking and/or of the normative nature of self-restriction. One reason for this is that it effectively restricts the range of possible stances a smokers might take. Logically, there are at least six possible positions:

- a) I will smoke when and where I please.

- b) I will smoke until asked to stop.
- c) I will ask and then smoke if it is accepted.
- d) I will wait for others to smoke, then do so if it is accepted.
- e) I will not smoke unless invited.
- f) I will not smoke.

The task of a person wanting a smoke-free environment varies from having to do nothing if no smoker holds a position higher than d), through to dealing with an open rebellion if any hold position a). In between, it should be possible to gain compliance by either refusing requests to smoke or by actively asking those who smoke to stop.

Smokers in groups b) and c) represent the difficult cases. Here, from a non-smoker's perspective, the smoker will acquiesce; however, the possibility exists that they would be offended and that the refusal or request to desist could threaten relationships. For the smoker there is also the possibility of disrupting relationships if they end up smoking where it is not appreciated, because their friends feel unable to express their desires.

Most people try to act in ways that maintain social cohesion so it is likely that most smokers would choose not to smoke in a home where they thought it likely that the inhabitants would not like it. If they thought the request unreasonable, it might influence their evaluation of the requesters, but if the response was normative, such a re-evaluation would be far less likely. Indeed, if a non-smoking preference is assumed, then the smoker may not even bother to test it out.

One unanswered question is of the relative contributions of smokers and parents to the increasing levels of ETS control that is apparent around the home and around children. For smoking parents it is clearly not an issue, but for non-smoking parents it is.

The innovators in non-smoking households are likely to be those individuals who are prepared to actively confront smokers. This requires both good social skills and a preparedness to risk friendships. It is unlikely that most people could be persuaded to be so proactive, particularly if change can be achieved in other ways. This is likely to be the case if there are sufficient innovators, including sufficient innovating smokers who adopt ETS control activities on their own, to lead to a change in smokers beliefs about what is normative.

This analysis suggests that some households will have formally adopted rules about smoking, but most households will have a more laissez-faire approach. They might politely refuse requests to smoke and would not have ashtrays around. They might also, in transitional stages, have put up a "sticker" or sign designating the house smoke-free. However, under exceptional circumstances, they might allow occasional smoking without feeling they had really compromised their essentially smoke-free home. The final aspect of ETS control to mention is ETS control in public places and in institutions frequented by children. Here there is a need for coordinated local action. Organizing and lobbying decision-makers is an important part of this strategy. To do this effectively requires information of community concern. In the early stages arguing for the importance of the changes will be crucial and demonstrating public concern is one way to do this. At some point, if society has moved sufficiently, or if the lobbying is successful, the importance of an issue may suddenly become assumed and the focus will then need to be on keeping the issue on the agenda and on the practicalities of implementation.

To begin to understand the context in which attempts at behavior change are made, it is critical that information is available about the social climate, as reflected in people's beliefs and in the practices they adopt (Borland, 1992). There is a parallel need to systematically explore the settings in which the behavior occurs and how it has its effects. For ETS control, people's beliefs about the acceptability of both behavior and its outcomes and data on trends in both the beliefs and actual behaviors will be important factors to consider before planning any sort of intervention.

Strategies for ETS control

There are a range of possible interventions to further ETS control.

These include:

- Public education, through the mass media.
- Community programs.

- “Clinical” interventions, ie specific behavioral interventions provided through face-to-face contact.
- Policy development.
- Legal and/or regulatory measures.

Focussed, clinical-style interventions for ETS control have had mixed success. The earliest was an Australian study of Woodward et al (1987). They tried to get smoking parents of new babies to quit, but failed to find evidence of an effect. Chilmonczyk et al (1992) used a low intensity intervention of a single phone call from a physician, followed up by a letter about infants’ urine cotinine levels to encourage reduced exposure, but again failed to find an effect. Eriksen et al (1996), in a Norwegian study of parents of infants and young children (aged 4 or less), provided brief health professional advice and 3 brochures, but failed to find any evidence of increased parental protective activities in the intervention group over a control. In both groups 15% did things to reduce exposure between baseline and 1 month follow-up.

Greenberg et al (1994), in a USA study with parents of well babies, used an intense intervention based on social learning theory. It involved multiple nurse visits and written resources. This intervention was successful in reducing the number of cigarettes exposed to, but there was not a significant reduction in measured urinary cotinine or illnesses reported. Hovell et al (1994) tested an intense 6 months of behaviorally oriented counselling against self-monitoring and ordinary control groups with parents of asthmatic children in the USA. They found evidence that the intervention resulted in superior protection at 6 months. Walgren et al (1997) followed up the intervention group at 2 years and found the effect sustained. They also found reduced exposure in the control groups which had been provided with self-help materials after the main study ended.

Taken together, this data could be used to argue that intensive interventions are necessary to get behavior change. The Australian data on trends in ETS control suggest that this may be a set of behaviors that can be readily adopted by all or most of the population. If this is so, population-wide programs will be an important component of any behavior change strategy. It may be that intensive interventions are only needed to achieve more than prevailing social conditions can induce. Given that social conditions seem to be rapidly changing, the utility of undertaking intense interventions needs to be questioned, perhaps with the exception of situations where children are at greatly increased risk (eg respiratory disorders) and parents are not “spontaneously” taking appropriate action. Instead, mass-based intervention to hasten social change may be more effective in the long run.

Our experience in Australia was that a mass-media led campaign to encourage ETS control in the home probably accelerated adoption of protective practices. A campaign was run in 1992 which included TV advertisements and “This is a smoke-free home” stickers as inserts in newspapers. At the time belief in the harmfulness of ETS was high, albeit higher in non-smokers. Immediate evaluation (Mullins et al, 1995) indicated widespread awareness and a very positive response from non-smokers, but some evidence of reactance among smokers. Consistent with this, reports of discouraging visitors from smoking rose markedly in non-smokers, but less so in smokers. However, two years later (when we next surveyed) there had been a marked rise in smoker households reporting discouraging visitors smoking (Borland et al, in submission), suggesting that any reactance was short-lived. Beliefs about the harmfulness of ETS remained constant throughout this period.

Strategies designed to make ETS control around children more socially acceptable and eventually normative may be more likely to be effective than intervention focussing on strategies for actually implementing the practices. Before attempting to encourage ETS control at a society-wide level, ETS reduction needs to be assumed (or at least accepted) as desirable in public discourse. In Western societies at least, television is the major medium of public discourse for society-wide issues and TV based interventions can both speak directly to the individual affecting their views, but as importantly, change subjective norms because people know that “everybody else” is being similarly persuaded. Being on TV also means that an issue is important enough to be on the public agenda, adding further impetus towards change, as subjective norms are likely to change as well.

Mass media interventions also need to operate in harmony with social reality. People look to others in their immediate social environment for examples of adoption and to discuss the merits of arguments they hear. If people do not understand the rationale for the move to ETS control, they are more likely to reject it. Similarly, if they see problems with adoption or hear stories about problems, they are also less likely to try the practices themselves, or if they do, to do so in a much more limited way. However, if the

rationale is well understood and the reports and experiences of early adopters are good, then action is more likely. Pre-contemplators may be prone to reactive rejection of new ideas and if supports are not sufficiently prevalent, may change the social climate to be anti-change. However, at least in the context of majority acceptance of the need for action, any reactive effects may be temporary (Buller et al, 1998). This points to the importance of having role models and advocates in the community. This will be especially important if there are potential problems with implementation which can be readily overcome. Stories about the benefits of smoke-free homes to smokers themselves, and how they negotiated smoking bans with smoking friends without compromising friendships, are likely to be important ingredients of this mix.

As indicated earlier; clinical-style interventions are unlikely to be a cost-effective strategy. Exceptions to this may include cases where there is a greater than unusual need and low preparedness to act. In such cases complementary intense interventions may help laggards up to community standards. One possible use of intense interventions would be with potential innovators to assist them to become role models for the rest of their community.

Promotion of ETS control in the home through use of the mass media is likely to be the most effective strategy once there is widespread community acceptance that passive smoking is harmful and ETS control practices occur in enough households for there to be some exemplars who can act to reinforce the propositions raised in the mass media. Progress towards acceptance that there is a problem also needs to utilize the media, as the problems associated with ETS control are not immediately salient.

Finally, some consideration needs to be given to formal regulatory solutions. It is likely that enforcement of ETS controls for households would be difficult. However, laws can have a symbolic value, even where enforcement is problematic. The key questions are whether laws would hasten social change towards ETS control. Given the rapid change that has occurred, at least in Australia, a case can be made that laws are not necessary, at least at this stage. In future it may be worth considering laws to institutionalize social consensus, and to provide impetus for laggards. Alternatively, it may be sufficient to restrict regulation to public environments and leave homes for families to regulate themselves.

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