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The Collective Lifestyles Framework: A Contextual Analysis of Social Practices, Social Structure and Disease

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présentée par:
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Thèse accepté(e) le : .....

SUMMARY

Social epidemiological studies over the last twenty years have been hugely successful in demonstrating that socioeconomic status, and more particularly, income inequalities, are predictive of a wide range of disease outcomes. While this research is compelling an essential question remains unanswered: How is it that human beings under circumstances of social inequalities become sick?

The dissertation explores this question by trying to situate how social inequalities in health might come about in local areas. The examination of social practices is used to help understand the ways in which social phenomena are related to disease outcomes. I offer one of many plausible ways of theorising the relationship between social context and disease outcomes by building on the relationship between the social structure, social practices, and agency (notions derived from contemporary social theory), and by using smoking initiation and pre-adolescents as the empirical case. I do not try to explain *what* causes smoking initiation in youth, and therefore will not try to generate new risk factors to explain social inequalities in disease outcomes, but rather, *how* it is that smoking initiation prevalence differs from one place to another.

In the dissertation I develop a framework entitled "collective lifestyles" that brings together a number of troublesome assumptions that drive both health inequalities and much of context studies. I define collective lifestyles not just as the behaviours that people engage in, but rather, as the relationship between the social structure and people's social practices. Social structure is here defined as factors that involve individuals' relationships to each other. Social practices, on the other hand, are the reflexive activities that people engage in that make and transform the world. I propose within the collective lifestyles framework that the relationship between social structure and practices is a collective experience, and therefore, may have similar influences on those that partake in this experience. I argue, therefore, that individual and group-level characteristics are not part of a separate process,

but rather, that they jointly shape the phenomenon called the social production of disease. This argument is initially developed in a first theoretical article.

These issues are then further explored in two empirical studies, the first of which examines the relationship between structural attributes of neighbourhoods and local social practices regarding smoking and the potential effects they may be having on pre-adolescents smoking initiation. I use zero-order and partial correlations to examine instantiations of the social structure in 32 communities across Québec and then use focus group materials from four communities to explore how social practices are related to structure. The second empirical article focuses more specifically on whether attributes of individuals and collectivities jointly shape disease outcomes. To do this I use hierarchical linear modelling to analyse data pertaining to 694 pre-adolescents and their households nested within 32 territories in Québec, Canada.

Both empirical studies yield important results. In the second article I report that where there is a high proportion of more socio-economically advantaged people, resources tend to be more smoking discouraging, with the opposite being true for disadvantaged communities. Then, using the narrative materials I find that the social practices in communities do not necessarily reflect the "objectified" measures of social structure. In the third article results reveal important area effects of youth smoking initiation that are largely explained by two types of instantiations of the social structure: neighbourhood resources and neighbourhood-level socio-economic status. Individual characteristics are also found to play a role in bringing about smoking initiation. The relationship between these two levels of explanation is then explored.

I conclude that research regarding the differential distribution of disease outcomes should not be based solely on socio-economic differentials, but more so on how people's practices and material resources are related. Furthermore, I conclude that individual and aggregate-level variables are not part of a separate process, but rather, that they jointly shape the phenomenon called the social

production of disease. The collective lifestyles heuristic is found to be a useful tool for integrating several of the ontological assumptions within social epidemiological research. Finally, I call for an increased use of social theory frameworks to guide research in public health.

RÉSUMÉ

La recherche en matière d'inégalités dans le domaine de la santé a maintes fois démontré que les inégalités sociales entraînent des inégalités de santé au sein des populations. Bien que les résultats de ces recherches interpellent les pouvoirs publics et requièrent un engagement public ainsi que des politiques visant à vaincre les « causes » des inégalités devant la maladie, une question essentielle demeure sans réponse : comment se fait-il que des êtres humains succombent suite à des inégalités sociales?

Dans cette thèse j'explore comment les pratiques sociales expliquent la relation entre les phenomènes sociaux et la maladie. À cette fin, je développe plusieurs idées de la théorie sociale contemporaine et j'utilise, comme étude de cas empirique, les circonstances qui incitent les préadolescentes et préadolescents au tabagisme. Je ne tente cependant pas de commenter les raisons pour lesquelles les jeunes commencent à fumer. Je n'essaierai pas non plus d'identifier de nouveaux facteurs de risque pour expliquer les inégalités sociales et leur rapport avec la maladie. En fait, je cherche à expliquer pourquoi la fréquence avec laquelle les jeunes commencent à fumer diffère d'un endroit à l'autre.

J'aborde le problème des inégalités de santé sous deux angles différents mais néanmoins liés. Premièrement, j'examine la question sous l'angle des relations entre la structure et l'action. On peut en effet classer la littérature concernant le rôle des comportements dans l'explication de la relation linéaire entre le statut socio-économique et les résultats en matière de santé, selon l'importance que l'on donne à la volonté humaine, d'une part, et aux contraintes structurelles, d'autre part. Un premier groupe d'études se basent sur la prémisse voulant que les comportements en matière de santé sont surtout des phénomènes intra-individuels et, par conséquent, qu'ils comportent un élément de libre choix. Un second groupe situe les choix à l'intérieur des conjonctures sociale, économique et historique, examinant la façon dont ces conditions contribuent à modeler les options comportementales. En général, on présuppose que le statut

socio-économique est « à la source » des facteurs de risque comportementaux qui, à leur tour, influencent la santé. Dans cette thèse, je choisis plutôt d'explorer comment les comportements s'ancrent dans des facteurs matériels car j'élabore l'argument que ces deux éléments sont inextricablement liés.

Deuxièmement, j'examine la relation entre le contexte dans lequel les personnes évoluent et la santé en termes des niveaux auxquels l'analyse se situe. De plus en plus d'auteurs abordent la question du contexte comme un problème de niveaux d'explication comportant des effets de composition sur le plan individuel, et des effets de contexte sur le plan collectif. De nombreuses études sur les effets du contexte ont tenté de vérifier si les caractéristiques individuelles jouent un rôle plus important que les caractéristiques collectives pour expliquer les inégalités en matière de santé. Je propose que le contexte est un amalgame d'effets de composition et d'effets de contexte; les deux sont inextricablement liés. Je développe donc un argument théorique concernant la relation et les mécanismes en jeu entre les niveaux individuel et collectif dans la genèse des phenomènes de santé.

La notion d'habitudes de vie, dans son acception essentiellement biomédicale, souffre des deux maux mentionnés ci-dessus: la séparation de l'aspect matériel et de l'aspect comportemental d'une part, et la séparation de l'individu et du collectif d'autre part. Le traitement biomédical des habitudes de vie tend à considérer celles-ci comme des comportements discrets et spécifiques qui influencent la santé. Le tabagisme en est un exemple. Ainsi, le comportement est envisagé en tant qu'activité individuelle que chacun peut pratiquer et contrôler. Chaque individu est donc en définitive responsable de son comportement comme s'il n'existait pas d'influence systémique, de contexte socioculturel ou de signification sociale qui lui soit associé. Ceci implique en grande partie que l'on peut séparer le comportement du contexte social dont il résulte (Coreil, Levin & Jaco, 1985; Dean, 1988).

Afin de contrecarrer la tendance à aborder l'étude des habitudes de vie en tant qu'attributs comportementaux individuels, un cadre conceptuel utile concevrait ces habitudes de vie comme des patrons et des modes de vie en interaction avec des facteurs culturels, sociaux et psychosociaux (Dean, 1988). Dans le but d'élaborer un tel cadre, je me suis tournée vers la théorie de la pratique. Cette théorie tente de comprendre les actions des individus en déterminant un point de référence au sein des pratiques sociales, à partir duquel émergent les croyances et les actions. La théorie de la pratique oriente la recherche vers les configurations des relations sociales qui poussent les personnes à agir, actions qui produisent les phénomènes desquels découlent ces relations sociales (Ortner, 1989). La théorie de la pratique considère donc que les pratiques émergent de la structure et la reproduisent mais aussi qu'elles la transforment. La théorie de la pratique s'intéresse aux moyens par lesquels un ordre social donné modifie l'impact d'événements extérieurs en modelant la façon dont les acteurs expérimentent ces événements et y réagissent. Ces réactions se reflètent dans les contraintes et opportunités structurelles dont les pratiques sociales constituent la trace.

Dans cette thèse j'intègre ces tensions entre les aspects collectifs et individuels des habitudes de vie à l'intérieur d'un cadre théorique que je nomme *collective lifestyles*. Ces *collective lifestyles* ne se définissent pas uniquement comme des comportements que les individus adoptent, mais plutôt comme les rapports entre la structure sociale dans laquelle sont situées les individus et leurs pratiques sociales. La structure sociale est définie ici comme l'ensemble des facteurs liés aux rapports entre les individus alors que les pratiques sociales forment l'ensemble des activités réflexives auxquelles les personnes participent et qui façonnent et transforment le monde. Dans le cadre conceptuel des *collective lifestyles*, je propose que le rapport entre la structure et les pratiques sociales forme une expérience collective et, par conséquent, qu'il peut exercer des influences semblables sur celles et ceux qui y prennent part. Je m'inspire des théories d'Anthony Giddens et Pierre Bourdieu afin d'expliquer le rapport entre la structure et les pratiques incitant au tabagisme.

Aussi, j'emprunte la théorie de la *capability* d'Amartya Sen pour comprendre les raisons pour lesquelles les habitudes de vie sont distribuées de façon différentielle. La théorie de Sen se base sur deux concepts : les *functionings* et les *capabilities*. Les *functionings* représentent différents aspects de l'état d'une personne — par exemple, le fait d'être nourrie — tandis que les *capabilities* reflètent les combinaisons alternatives des *functionings* qu'une personne est en mesure de réaliser. La *capability* représente donc la combinaison des *functionings* qu'une personne croit être capable d'atteindre. De façon implicite, la théorie de la *capability* de Sen soulève la question du choix. De plus, elle reformule le problème de l'accessibilité aux ressources en prenant en considération les variations entre le statut socio-économique des individus et leurs *capabilities.*

La question qui apparaît en filigrane tout au long de la thèse est la suivante: comment se fait-il que la structure sociale et les pratiques sociales parviennent à influencer l'expérience de la maladie chez les individus? C'est pourquoi le cadre théorique qui sous-tend cette thèse comprend deux aspects. Le premier est un modèle théorique permettant d'établir un lien entre la structure sociale, les pratiques sociales et la maladie. Le deuxième utilise l'initiation au tabagisme chez les jeunes afin de tester le modèle.

Le premier article de la thèse présente le cadre des *collective lifestyles* et les théories qui l'alimentent. Je teste des hypothèses découlant du cadre théorique dans deux articles empiriques. Le plan de recherche de cette thèse est une analyse corrélationnelle transversale à niveaux multiples reliant les données des enfants et de leur foyer à un premier niveau et de leur voisinage à un second niveau. Les données concernant les enfants et leur foyer sont imbriquées dans des données sur les voisinages. Les données utilisées dans ces études proviennent d'enquêtes transversales et du recensement canadien de 1996.

Le premier article empirique examine deux propositions. D'abord, je suggère que les caractéristiques d'un voisinage, c'est-à-dire le statut socio-

économique de l'ensemble des membres, et les ressources, c'est-à-dire les objets d'ordre matériel qui encouragent ou préviennent le tabagisme, sont en relation récursive. C'est pourquoi, plus les membres d'une collectivité sont démunis, moins il est probable d'y trouver des ressources encourageant la santé et vice-versa. Ensuite, je suggère que les caractéristiques et les ressources d'un voisinage se reflètent dans les normes et les pratiques sociales. À l'aide des corrélations bivariées et des corrélations partielles entre les variables concernant le statut socio-économique et les ressources de 32 voisinages à travers le Québec, je constate que dans les collectivités où la proportion de personnes socio-économiquement favorisées est plus importante, les ressources tendent à décourager le tabagisme, alors que le contraire est vrai pour les communautés plus défavorisées. Puis, j'utilise les témoignages recueillis dans des groupes de discussion avec des préadolescentes et des préadolescents provenant des voisinages sélectionnés pour examiner les interactions entre les personnes, les ressources des voisinages et les pratiques sociales. Enfin, j'examine la relation entre la structure et les pratiques au sein de ces collectivités pour tenter de comprendre comment cette relation pourrait inciter au tabagisme. Après avoir analysé les informations des groupes de discussion, je constate que les pratiques sociales d'une communauté ne reflètent pas nécessairement les mesures «objectives » de la structure sociale.

Dans le deuxième article empirique j'explore un autre aspect du cadre théorique en analysant les données sur les plans de l'individu et du voisinage. Cet article s'attache de façon plus spécifique à la relation entre les attributs individuels et collectifs en rapport avec le tabagisme. À cette fin, j'ai reformulé le problème du contexte en considérant deux aspects: un premier aspect concerne les effets de composition et les effets de contexte,et un autre aspect concerne les facteurs comportementaux et matériels. Ainsi, je pose la question suivante: de quelle façon les attributs individuels et les attributs collectifs peuvent-ils conjointement modeler la santé? Pour tenter d'y répondre, je me sers du cadre théorique des *collective lifestyles* pour expliquer l'initiation au tabac chez les jeunes. J'utilise les modèles de régressions hiérarchiques pour analyser les

données provenant de 694 préadolescentes et préadolescents et de leur foyer, imbriqués dans 32 territoires du Québec, au Canada. Les résultats révèlent qu'il existe d'importants effets de territoire incitant les jeunes au tabagisme. Ces effets s'expliquent en grande partie par des variables supra-individuelles, mais certaines caractéristiques individuelles incitent également les jeunes au tabagisme. J'en conclus que les variables individuelles et collectives ne relèvent pas de processus distincts, mais plutôt modèlent conjointement le phénomène appelé « production sociale de la maladie ».

En conclusion je propose que les études sur la distribution différentielle des maladies ne devraient pas s'appuyer uniquement sur des différences de statut socio-économique. Ces études devraient aussi examiner comment les pratiques sociales des individus sont liées aux ressources matérielles. De plus, je conclus que les variables qui caractérisent des attributs individuels participent au même processus que les variables qui caractérisent des attributs collectifs; conjointement ces deux types de variables façonnent le phénomène maintenant connu sous le vocable de production sociale de la maladie. Finalement, je plaide pour un accroissement de l'utilisation de modèles issus de la théorie sociale pour guider la recherche en santé publique.

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ACKNOWLEDGEMENTS

It should come as no surprise to those who will read this dissertation that a fundamental belief of mine is that what we are as individuals is a reflection not only of our individual characteristics, but also, importantly, of our past shared experiences with other human beings. I have been most fortunate to have shared countless of these such experiences with incredible family, friends and colleagues and I firmly believe that they have all played a role in shaping my ability to create what is found on these pages.

I could not possibly list these people by order of importance, but I suppose the primary responsibility goes to my mother and father, without whom none of this would ever have occurred. Both my greatest critics, as well as my greatest supporters, they provided the constant forum for the rigorous exchange of ideas, accompanied by a quest for humanitarianism, which has guided me throughout my life. I hope to be able to continue in this tradition.

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There was a child went forth every day,
And the first object he look'd upon, that object he became,
And that object became part of him for the day or a certain part of the day,
Or for many years or stretching cycles of years.

Walt Whitman. (1965). There was a Child went Forth. In Leaves of Grass (p. 364), New York: New York University Press.

Autonomy does not come without the social conditions of autonomy and these conditions cannot be obtained on an individual basis.

Pierre Bourdieu & Loï c J.D. Wacquant. (1992). In Réponses (p. 183), Paris: Éditions du Seuil.

INTRODUCTION

THE PROBLEM: I

Public health is concerned with the substantive issue of health but is often faced with the question as to whether the fundamental conditions that lead to disease outcomes should be of public health concern as well (Link & Phelan, 1995). In this vein, a viewpoint in The Lancet not long ago asked the question whether the mission of epidemiology should include the eradication of one such fundamental condition - poverty (Rothman, Adami & Trichopoulos, 1998). There is increasing debate on this very issue. The debate becomes all the more acute in health inequalities research where time and time again it has been demonstrated that inequalities in social conditions lead to inequalities in disease outcomes. This turns the focus to the "causes" of health inequalities and has many people suggesting that public health is a fundamentally political endeavour (Fassin, 1996; Krieger & Fee, 1994; Pearce & McKinlay, 1998) given that the outcomes seem to be largely due to an unequal societal distribution of material wealth. But an essential question remains unanswered whether we choose to be both public health researchers and public health activists or not. That is: how is it that human beings, under circumstances of social inequalities, succumb to inequalities in disease outcomes?

The field of epidemiology generally, and social epidemiology in particular, has hit somewhat of a cross-roads in trying to respond to this question. We hear increasing pleas for the integration of theory into epidemiology, pleas often met with great applause, but then somehow lost in the empirical imperatives that drive most of public health. As appropriately stated by John McKinlay and Lise Marceau in a recent editorial from the American Journal of Public Health:

> Much of the appearance of public health today has the appearance of tail chasing - the wasteful pursuit of epiphenomena. This pursuit is strongly supported by inductive risk factor epidemiology (the atheoretical search

> for statistically significant but public health-irrelevant disease correlates). (McKinlay & Marceau, 1999).

What befalls much of the field of social epidemiology is a constant search for "the" risk factor, whether it be poverty, locus of control, or social capital. Marmot has recently suggested, in fact, that a caricature of some social epidemiology is the great effort spent on relating an indicator of social structure, such as income or education, to health outcomes without asking why (Marmot, 2000). Now, given the focus on the importance of contextualising risk factors there is even discussion of communities or neighbourhoods as determinants of health (Birch, Stoddart & Béland, 1998), giving the place that we live in the potential to also be a risk factor.

I will not try to generate new risk factors in this dissertation. Instead, I offer one of many plausible ways of theorising the relationship between social context and disease outcomes. I do so by building on several ideas from current social theory. I do not try to explain *what* causes smoking initiation in pre-adolescents, but rather, *how* it is that smoking initiation prevalence differs from one place to another. In so doing, I seek to examine how the risk factors that we know to be related to smoking might operate to bring about differential risk. As such, it is crucial to underscore the fact that smoking initiation is used as an example of a social practice to exemplify the theory that I develop in the dissertation. It is therefore not my intention to engage in an enumeration of the determinants of smoking initiation. Instead, I try to unpack the social "black box" that exists when trying to understand how social phenomena influence disease status.

By unpacking parts of the black box throughout the thesis, I expose some of the basic ontological assumptions underlying epidemiological studies of social inequalities in disease outcomes; assumptions that are frequently unspecified. These assumptions include, for instance, questions such as to whether social class is an attribute of individuals only, or whether behaviour is determined by free

will. In this dissertation I discuss the importance that an awareness of these different ontological assumptions might have in enlightening the body of research that strives to solve as important a problem as social inequalities in disease. I begin the dissertation by discussing two large bodies of research in public health; social inequalities research and research focusing on the study of context. The ontological assumptions found within this literature are broached and then re-framed using some theoretical frameworks borrowed from the social sciences, namely practice theory and capability theory.

ADDRESSING THE PROBLEM

Structural versus Actor-Focused Frameworks or Determinism versus Free-Will

Both Pierre Bourdieu (1980) and Anthony Giddens (1984) begin their seminal pieces on practice theory by explicating their desire to move beyond a long-standing oscillation between overly structural and overly actor-focused frameworks in modern social science. The former of these frameworks tends to view structure as having primacy over action, with the constraining qualities of structure reinforced. This framework is largely deterministic; the structure determines how people act. The structure is seen to be of another form from action, in some way exterior to social agents, creating barriers to people's actions (Eraly, 1990). Furthermore, the objectivism of action tends to view action as a form of mechanical reaction, non-reflexive, and consequently, a-historical. Actor-focused frameworks, or interpretative social science, accord primacy to action and meaning in the explanation of human conduct, oftentimes disregarding the profoundly social nature of human action. This framework tends to give primacy to free-will, or human intentions and desires. Giddens argues that the differences between these perspectives on social science have often been treated as differences of epistemology, whereas he argues that they are more importantly

ontological differences with the concepts of action, meaning, and subjectivity being at issue in terms of their relationship to notions of structure and constraint.

Much of the analyses performed by public health academics adopt a structuralist approach without questioning some of its basic assumptions. Structuralist approaches draw their strength from countering the purely individualist and voluntarist view that social processes are reducible to the apparently unconstrained actions of individuals (Sayer, 1992). In stressing the constraints of conditions not of the actor's choosing, structuralist thinking ignores the activity of the actor so that it appears that the structure alone did the acting. This is not particularly useful for understanding how properties of the structure influence disease outcomes as it assumes that people are but passive receptors of messages and influences. Alternatively, I reason that we need to understand the ways in which actors interpret and interact with the structure to truly understand how disease comes about. The response is therefore not to completely abandon certain conceptions of the structure offered to us by structural analysis. To do so might invite voluntarism, or the view that what happens is merely a function of unconstrained human will (Sayer, 1992). The voluntaristic approach to understanding human action separates individuals from their contexts which is problematic for a public health searching to re-contextualise our understanding of disease occurrence.

Modern practice theory strives to move beyond the argument between overly structural and overly actor-focused frameworks (Boudieu, 1980; Giddens, 1984; Ortner, 1989). The actor is neither viewed as a completely free agent nor is she being manipulated by the structure. Actors are recognised as being constrained, and sometimes enabled, by both internalised cultural parameters and external material and social limits. This dissertation will provide an argument for integrating practice theory into our understanding of social inequalities in disease. It will also empirically test the plausibility of my hypotheses in order to raise some of the problems in the employment of structuralist interpretations of social inequalities in health and social epidemiology in general.

The I/We Paradigm

The issue of determinism versus free-will is not far removed from a second omnipresent dichotomy in both the social sciences and public health; that of whether the effects we study are the result of individual action and attributes, or whether they result from group actions and attributes. In public health this dichotomy is often referred to as a "levels-of-analysis" issue. Etzioni (1990) places this discussion in terms of neo-classical versus de-ontological paradigms. The neo-classical paradigm, he argues, does not recognise collectivities at all, or sees them as aggregates of individuals, without causal properties of their own and as external to the individual. The de-ontological paradigm, on the other hand, assumes that people have at least some significant involvement in the community. At the core of the neo-classical argument is the assumption that individuals are free-standing actors in their decision-making capabilities. Neo-classicists believe that if we assume that preferences of individuals are manipulated by societal forces, one undermines individual liberty. By emphasising the importance of individual liberty, they undercut the recognition of individual decision-making as being socially shaped, steeped in historical, social, and cultural forces. Etzioni proposes the I/we paradigm which highlights the assumption that individuals act within a social context, a context not reducible to individual acts, and furthermore, a context which is not necessarily wholly imposed. A similar argument to that of Etzioni will be defended throughout this dissertation.

Lifestyle as an Example

The notion of lifestyle is used throughout this dissertation as a conceptual "porte d'entrée" into the issues of determinism versus free-will and the individual versus the collective. Lifestyle, as it is currently conceptualised in most of the bio-medical literature, brings to the fore these two tensions by largely being viewed as a choice that individuals make, independent of their social context, and as an individual attribute, rather than that shared by collectives. This biomedical use of lifestyle has been widely debated in the public health literature. I will

argue that while conceptual separations may sometimes help us understand the world, these dichotomies are not usefully viewed as being mutually exclusive.

In parallel to the discussion regarding structure and agency, I turn to the original insights of Max Weber regarding lifestyle (Weber, 1922). Weber's work suggests that lifestyle is comprised of two major components 1) life choices (self-direction) and 2) life chances (structural probabilities of finding life satisfaction). The dialectical interplay between life chances and life choices are critical to Weber's notion of lifestyle determination. People therefore have a range of freedom, but not complete freedom; their freedom is a function of the structural constraints within which they are situated (Cockerham, Rütten, & Abel, 1997). These structural constraints, according to Weber are largely economic--involving income, property, the opportunity for profit, etc.--- but also include rights, norms and social relationships. In this way, Weber argues that chance is socially determined and furthermore that social structure is an arrangement of chances (Cockerham, Abel, & Lüschen, 1993). Weber's life choices and life chances helps bring together these issues and explain their relationship.

In addition to the issue of choice and chance in lifestyle formation, a final conceptual issue is explored in relation to the assumptions often made by social epidemiologists. When we speak of overcoming social inequalities we often turn to redistributive policies as an answer, assuming that a more equitable distribution of goods should overcome the inequalities in disease outcomes. Sen's capability theory (Sen, 1992) suggests that both utilitarian and welfarist notions of equality are insufficient, however, for attaining equality. Rather than basing one's evaluation of equality on access to resources, Sen believes that we must examine the choices structured by the situation that an individual is in, and the effects that these choices have on the ways resources can be used. We must therefore not assume that the same level of equality will result from policies based on these two evaluations. Comparisons of resources or primary goods will therefore be insufficient as a basis for comparing equality.

THE PROBLEM REVISITED: II

The majority of health inequality studies assume that differential disease outcomes are either the result of a lack of material resources[1] (the structural argument) or are the consequence of choice (the agency argument). For example, inequality research that focuses on income inequality assumes that some effect of income influences the chances people have in relation to their health (whether this be through access to health care, education, nutrition levels, etc.). Others have argued that unhealthy behaviours associated with low socio-economic status are the consequence of poor lifestyle management - choices. This latter perspective gained credence through the findings of risk factor epidemiology that many disease outcomes, particularly those associated with chronic diseases, were associated with the daily conduct of people's lives (Berkman & Breslow, 1983). Studies infrequently introduce the notion that life chances and choices are in dialogue and that it is this dialogue that results in the inequalities in disease outcomes observed.

Essentially what most studies of social inequalities and social epidemiology in general attempt to explain is how social phenomena interact with individuals to generate the biological process that we call disease.[2] Most of these studies have failed, however, to acknowledge the dichotomies thus far described. First, the frequent separation of structure from agency is detrimental to our understanding of the differential generation of disease as, I will argue, it is precisely the relationship between them that will most likely help explain this differential. For the most part inequality researchers have operationalised structural attributes as material/structural attributes with agency being operationalised through health

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[1] The term material, unless specified otherwise, refers to the physical, material conditions of life, such as income. It can be distinguished from materialism in that materialism takes into consideration the conditions that result from one's income, that is, the psychosocial and physical factors that arise from one's income level.

[2] Throughout the dissertation the term disease will be granted primacy given that most frequently when we speak of health we are actually studying indicators of morbidity or mortality, rather than health.

behaviours. Rather than treat behaviour and socio-structural factors as separate generators of disease, then, I propose that behaviour be conceived of as being embedded in material conditions or social structural position. In this way the question of interest would become: "how do material conditions/social structural position shape particular clusters of health-promoting or health-damaging behaviours and the health effects of these behaviours?"(Macintyre, 1997, p. 739).

Second, implicit to much of social inequality research is the notion that disease generation is primarily an individual experience. The links between the social and the biological do not simply take place at the individual level but also occur at the aggregate level. By aggregate level it is meant that health inequalities can be produced among groups of individuals exposed to certain shared experiences. In the current literature aggregate level experience is most often referred to as context. While an increasing number of authors argue that social context must be taken into account in order to truly understand the effects of behavioural and socio-structural factors on the generation of inequalities in health (Blaxter, 1990; Glendinning, Hendry & Shucksmith, 1995; Link & Phelan, 1995; Macintyre, 1997), the conceptualisation of context in the literature is still generally lacking, as is an understanding of context's association with disease generation. Numerous studies have demonstrated the effects of context on health differentials by demonstrating that people's health status varies by region (Blaxter, 1990) as well as by country (Wilkinson, 1996). What most studies have not yet succeeded in demonstrating, however, is which aspects of context influence disease outcomes and what the relationship is between the individual and her context in the generation of disease. I propose that individual and group-level variables are not part of a separate process, but rather, that they jointly shape the phenomenon called the social production of disease. This issue will be thoroughly explored throughout the dissertation, and in so doing, insights regarding context will be provided.

The general objective of this dissertation will therefore be to bring together these two large issues in a framework entitled collective lifestyles. This framework

explores the relationship between structure and agency, both at the individual and the aggregate level, and their roles in the contextual generation of disease. Smoking initiation among youth will be used instrumentally to explore the assumptions of the framework. Smoking is particularly pertinent for this endeavour given evidence that certain correlates of smoking among children, such as socio-economic circumstances (at birth, during childhood, and in adolescence), smoking behaviour in adolescence, and health in adolescence, all contribute towards differences in health in young adulthood (Power, Manor & Fox, 1991).

THE DISSERTATION'S FORM

The thesis begins with an initial literature review that briefly exposes the reader to some of the current literature on social inequalities in disease outcomes and on the debates regarding the role and definition of context. The purpose of this review is to raise some of the issues that will be taken up in the articles that follow. Article one sets up the dissertation theoretically. It is a "think-piece", taking up several of the issues raised in the literature review and developing a framework entitled "collective lifestyles". This framework guides the subsequent empirical articles. Following article one is a second brief literature review that discusses the empirical issue of smoking initiation among youth. This review offers suggestions as to how the theoretical framework can be operationalised to address the issue of smoking initiation. After this, follows a methods section that gives an overview of the research project and the methodology. The remaining two articles are empirical articulations of the problems raised thus far. The first one takes up the relationship between the social structure and social practices at the neighbourhood level and the second one focuses more specifically on the relationship between individual and collective attributes in the production of disease outcomes. The dissertation closes with a general discussion and conclusion. The reader will also find, in the Appendices, two precursory publications. These were written before the dissertation and exemplify the development of the collective lifestyles framework. They are included for reference purposes.

LITERATURE REVIEW

INTRODUCTION

There is an increasingly important discussion within public health regarding the determinants of and mechanisms through which class health inequalities arise.[3] This debate was initially fuelled by the authors of the Black Report (Townsend & Davidson, 1988), who divided possible explanations for the association between health and socio-economic status into four categories[4]: 1) artefact explanations; the relationship between health and class is an artefact of measurement; 2) natural and social selection, health determines class position; 3) materialist/structuralist explanations, material conditions contribute to class gradients in health; and 4) cultural/behavioural explanations, health damaging behaviours contribute to social class gradients.[5] Subsequent to the Black Report the artefactual argument has for all extents and purposes been rejected given: 1) extensive developments in the measurement of socio-economic status; of health or of premature death; and of inequalities; and 2) the consistent and marked differentials in mortality, morbidity and risk factors in adult life (Macintyre, 1997).

Most researchers concerned with the debate have turned their interest to the latter three of the explanations, with some focusing on the relative importance of the materialist/structuralist explanations vs. the cultural/behavioural explanations (Blaxter, 1990; Glendinning, Hendry & Shucksmith, 1995; Macintyre, 1997; Stronks, van de Mheen, Looman & Mackenbach, 1996), and others with the role of social selection (Blane, Davey Smith & Bartley, 1993; West, 1991). West has made a particularly important contribution to the debate by introducing the notion of indirect selection. While distancing himself from social Darwinism, West posits that

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[3] Health inequalities refer here to the differences in mortality and morbidity rates between the various social classes.

[4] Differential access to health care services is a fifth possible explanation but given the universal health care system in both Canada and the U.K., it is generally rejected.

[5] Social class gradients demonstrate that for a given cause of mortality there is a step-wise relation between social class and mortality. That is, each social class has a higher mortality rate than the class one step higher in the hierarchy. This phenomenon can be observed for most causes of death.

indirect selection reconceptualises the issue of health to recognise its fundamental social nature. In this way he alters the focus of direct selection, which is strictly biological, to one that considers the role of ideology, policies and discrimination in the creation of health inequalities. Concretely, West lists education, behaviours and physical attractiveness as attributes that might lead to class structure health distribution. These attributes may have long term effects beginning in childhood and adolescence and influencing subsequent social position in later adolescence and early adulthood as well as adult health status.[6]

There are numerous ways of examining inequalities in health status within populations, whether it be by ethnic group, gender or socio-economic status (SES). For the purposes of this dissertation, the focus will be on inequalities in health that arise from differences in SES. While often confused and confusing, the relationship between materialist/stucturalist explanations of the inequalities in health and socio-economic status is that the materialist/structuralist explanations attempt to flesh out those aspects of socio-economic status, such as income and housing, that might be associated with the unequal distribution of health between socio-economic groups - a form of deconstruction of SES. While there is a plethora of studies published monthly about social inequalities in health I will focus most specifically on those that shed light on the material/behavioural debate or that specifically discuss the role of individual versus collective attributes.

Contrasting Behavioural and Materialist Explanations of Disease Inequalities

It was the Black Report, first published in 1982, that became the major advocate for the materialist explanations for health inequalities; "In our view

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[6] An interesting extension of the indirect health selection argument is taken up by Kuh, Power, Blane & Bartley (1997) in their discussion of social chains of risk. This chain begins with a socially compromised start to life, operates throughout the life course partly via educational and other learning experiences, and leads to adult socioeconomic circumstances which affect risk through exposures to causal factors in later life.

much of the evidence on social inequalities in health can be adequately understood in terms of specific features of the socio-economic environment" (Townsend & Davidson, 1988, p. 199). Numerous studies since the Report's publication attest to the inverse relationship between socio-economic status and health at an individual level, among which are: Haan, Kaplan & Camacho (1987); Pappas, Queen, Hadden & Fisher (1993); Wilkins, Adams & Brancker (1989). IN addition to this fury of studies, others have examined the role of behaviours in explaining these inequalities (Peck, 1994; Winkleby, Jatulis, Frank & Fortmann, 1992), and believe that much of the differential in ill health experienced by those in the lower classes can be attributed to individual behaviours (Tarlov & Kehrer, 1989).

This latter view can be put up for question by the findings of Marmot in the first British Whitehall Study (Marmot, Rose, Shipley & Hamilton, 1978) in which no more than half of the observed economic inequalities in coronary heart disease (CHD) mortality between those at the bottom of the civil service hierarchy and those at the top could be attributed to behaviour related factors such as smoking along with other CHD related risk factors such as blood pressure and cholesterol. A healthy discussion has ensued over the years regarding the importance of health-related behaviours in explaining the inequalities in health observed in the Whitehall Civil Service (Marmot, Shipley & Rose, 1984; Marmot, Davey Smith, Stansfeld, Patel, North, Head, White, Brunner & Feeney, 1991). Many now believe that to understand the pathways by which social inequalities in disease are generated one needs to examine the links in the chain between social position and risk factors like smoking, rather than to control for the effects of smoking (Marmot, Bobak & Davey Smith, 1995).[7]

[7] A recent study by Marmot et al. (1997), based on the work of Karasek et al. (1981) and Karasek & Theorell (1990) suggests that a large part of this previously explained variation could, however, be due to the perception of low control at work.

Mildred Blaxter's work Health and Lifestyles (1990), is one of the first systematic attempts to explore the relative importance of behavioural factors versus what she terms social circumstances (social class, income, occupation, etc.). Using data from the 1984/5 Health and Lifestyle Survey carried out in England, Wales and Scotland, in which four measures of health outcomes were used (illness, psycho-social health, unfitness and disease/disability) she suggests that social circumstances seem to play a more important role in the generation of health and disease than behaviour. Furthermore, Blaxter suggests that behaviours may have greater positive effect among the more privileged than among the disadvantaged: ie. that "good" habits do not alleviate disadvantage to the same extent that they increase advantage. There are a few fundamental problems with Blaxter's data, however. First, it is cross-sectional, and therefore no causal status can be attributed to the independent variables. And secondly, regarding the second conclusion, the data does not consistently show this pattern among all behaviours and becomes confused when used to make generalisations.

The work of Stronks, van de Mheen, Looman & Mackenbach (1996) takes inspiration from Blaxter's studies by empirically studying the relationship between behaviour and socio-economic circumstances in disease inequality generation beginning with the premise that behaviour may be in some way embedded in the environment through material differentials (Macintyre, 1997). Employing cross-sectional data from the Dutch Longitudinal Study on Socio-Economic Health Differences, their analyses sought to assess the extent to which inequalities in health associated with socio-economic status (using variables such as crowding in houses, physical housing conditions, neighbourhood conditions, financial problems, employment status and physical working conditions) can be attributed to: an independent effect of the differential distribution of behavioural factors (smoking, average alcohol consumption, physical exercise and body mass index) among socio-economic groups; an independent effect of the differential distribution of structural conditions among socio-economic groups, or the independent effect of the differential distribution of structural conditions which acts through behavioural

factors. They used three indicators of health: a checklist of chronic conditions, a checklist of chronic complaints and a scale of perceived general health. They proceeded by first measuring the contribution of behavioural factors (and confounders) alone to the differential in health outcomes. In this model they found that 37% of the increased risk of the lowest group could be explained by the behaviour. When they included behavioural factors into a model already including structural factors (what they call the independent effect of behavioural factors) the association was much lower, 14%. They summarise by proposing that the remaining part (23%) is explained by behavioural and structural factors simultaneously, defined as the contribution of structural factors through behaviour. Their conclusion is that observed inequalities in health can be largely explained through structural conditions. This study's predictive ability is severely limited, however, due to its use of cross-sectional data. Furthermore, their inappropriate division of risk ratios into a "crude" risk ratio (Miettinen, 1972), casts into serious doubt the integrity of this study's findings.

In a series of later papers, these same authors improve their methodology by employing cohort data from the Longitudinal Study of Socio-Economic Health Differences in the Netherlands (van de Mheen, Stronks, Looman & Mackenbach, 1998; Schrijvers, Stronks, ven de Mheen & Mackenbach, 1999). They ask similar question with reference to the relationship between SES and behaviour, but this time by analysing childhood SES in relation to adult health and education level and mortality over a 5 year period respectively. While empirically intriguing, their studies give little theoretical explanation as to the mechanisms that might be responsible for their findings that socioeconomic circumstances influence behaviour. Similarly Lynch, Kaplan & Salonen (1997) examine the SES patterns for an array of adult behavioural factors in relation to SES during childhood as well as adulthood. Using data from the Kuopio Ischaemic Heart Disease Risk Factor Study, they have measures of SES in childhood as well as adulthood with a large inventory of information regarding health behaviours in adulthood for 2682 Finnish men. Their results show that a large number of adult health behaviours exhibit similarly graded

associations with SES at temporally distinct points within the lifecourse. Despite passing reference to Bourdieu in the discussion section, there is little elaboration, however, on the relationship between these material and behavioural attributes.

The literature on the role of health behaviours in understanding the graded association between SES and disease outcomes pursuant to Blaxter's work can be broadly classified according to how much emphasis they place on the role of human volition versus structural constraint (Lynch et al., 1997). One model is based on the premise that adult health behaviours are largely intra-individual phenomena with an implication of free choice involved. The other model situates choices within the social, economic and historical situation, underlying the role that these conditions play in shaping behavioural options. Regardless of the explanatory model that guides these research agendas, methodologically the most frequent path chosen is to assess in regression models the relationship between SES and the health outcome after adjusting for behavioural risk factors. Much of the time the presupposition is that SES is somehow "causing" the behavioural risk factors which, in turn, influence disease outcomes. While there is undoubtedly interest in empirically testing the relative roles of material versus behavioural factors in the generation of health inequalities, to date most studies have been mired with methodological problems of causality and tend to conceptually separate out what is behavioural from what is material. Later in the section on lifestyles I will discuss how some of the conceptual problems with the category behaviour, as well as the artificial separation between behavioural and material explanations of disease inequalities, may also be responsible for some of the problems in the examination of this question.

Individuals and their Social Environments

From the point of view of prevention interventions, Syme (1994) makes some important observations when reflecting upon the results at year six of the Multiple Risk Factor Intervention Trial (MRFIT), a randomised experiment designed to reduce the death rate from coronary heart disease in the USA. Taking 12,866 men found to be in a high risk category by reason of their cigarette smoking,

high blood pressure, and high serum cholesterol levels, half were exposed to MRFIT clinics, in which they were given enhanced care in attempts to reduce their risk factors, and the other half were sent back to their regular care. Despite the fact that at the six year mark 42% of the smokers in the treatment group had stopped smoking, perhaps the best record ever achieved in a smoking cessation program, Syme (1994) reflects on the implications of such findings for population level change. He suggests that despite these results, the distribution of coronary heart disease is unlikely to change pursuant to the MRFIT given that there will always be new "at-risk" people to take the place of those who have changed their behaviours. In order to have a "true" population effect then, one would have to modify societal forces that might induce people to engage in high risk behaviours in the first place. Essentially he argues for a preventive approach, not unlike that of Geoffrey Rose (1992), which would go beyond preventive strategies that focus on risk factor interventions among populations at risk towards interventions that focus on entire populations, whether at risk or not, and those forces that might bring about risk factors. Syme cites examples of such forces within the social environment such as community and peer pressure. What Syme does not confront is the exact definition of this social environment. It is unclear whether social environment is a place, a macro system or something else.

Findings pointing to the potential role of the social environment on myocardial infarction, have been found by researchers involved in the Roseto study (Egolf, Lasker, Wolf & Potvin, 1992; Lasker, Egolf & Wolf, 1994; Stout, Morrow, Brandt & Wolf, 1964). An article ensuing from initial observations demonstrated that Roseto, Pennsylvania, a small town of 1,630 people, of whom 95% where of Italian origin, had myocardial infarction rates significantly lower than three surrounding towns whose populations were more demographically heterogeneous (Stout et al., 1964). To test whether the differential rate of myocardial infarction could be explained by dietary, ethnic or genetic factors, subsequent studies measured fat intake, obesity, cigarette smoking and serum cholesterol concentration (Wolf, Grace, Bruhn, & Stout, 1973) only to find that there were no significant differences

between the towns. Between 1955 and the early 1960s it was remarked that Roseto was characterised by ethnic and social homogeneity, close family ties, and cohesive community relationships; aspects of social behaviour that the researchers speculated could be associated with myocardial advantage. Investigators also observed that there was potential for major change in Roseto given that the town was becoming more typically "American" in its behaviour, and furthermore, that the accompanying loosening of family ties and community cohesion could be accompanied by a loss of this protective effect. In a 50-year comparison of mortality rates, Egolf et al. (1992) found a progressive rise in the mortality rate from myocardial infarction among Roseto men and women between 1935 and 1964 followed by a period between 1964 and 1974 where the earlier myocardial advantage that Roseto had had in relation to the other community disappeared. The most recent study comparing Roseto and one of the control towns, Bangor, found that as Roseto became less homogenous, endogamous and locally active, coronary disease rates rose (Lasker et al., 1994). This finding is particularly striking given that the secular trend for coronary disease rates in the United States was going down during this period. While one cannot attribute causality to these findings given the ecological nature of the methodology, the lack of a true cohort, and the lack of solid theoretical grounding, some important insights, such as the importance of context on disease, are worth retaining.

Both of the examples, Syme's musings on the MRFIT and the results from Roseto, raise the crucial issue that disease outcomes are not purely individually determined, but rather, that some aspect of the environment surrounding individuals, whether it be the physical environment or the social environment (i.e. people's relationships to each other), influence individual's health status. These insights are very much in line with the reasoning of Geoffrey Rose (1992) who suggests that:

> In order to grasp the principles of public health one must understand that society is not merely a collection of individuals but it also a collectivity, and the behaviour and health of its individual members are profoundly influenced by its collective characteristics and social norms (Rose, 1992, p. 62).

Studies of Context

Since the early Roseto studies focus has largely turned, in the public health literature, to what is now termed context or the study of the social environment on disease outcomes. Many pursuant studies have attempted to test the effects of context on individual disease outcomes. These studies are, however, confusing as there are frequent conceptual and methodological problems. For analytical purposes I divide the next section into two issues that are being broached by researchers concerned with the study of context: 1) What is context?; and 2) How can we know what context is? While there are an increasing number of studies that broach this very large topic, I have chosen only to discuss those studies that exemplify major conceptual or methodological problems or those that offer future solutions.

What is Context?

Context is now most frequently studied as either geographical region (Blaxter, 1990; Diez-Roux, Link & Northridge, 2000; Duncan, Jones & Moon, 1993, 1996, 1998, 1999), municipality (Karvonen & Rimpela, 1996), government district (Shouls, Congdon & Curtis, 1996) or Census tract (Béland, Stoddart & Birch, 1998; Ennett, Flewelling, Lindrooth & Norton, 1997; Reading, Langford, Haynes & Lovett, 1999). The decision to study context in terms of pre-defined geographical units is largely a function of the fact that these same studies are interested in using administrative data to model their effects on health outcomes; administrative data which is collected based on pre-defined geographical units. These studies therefore end up defining context largely as places in which one can obtain information about the characteristics of the people living therein. As such, "place" is used essentially as a unit of analysis within which to capture variation. In this way, either the studies enter area as a variable to be studied, without further defining its attributes (Blaxter, 1990; Duncan, Jones & Moon, 1993, 1996; Haan, Kaplan & Camacho, 1987), i.e. they study the variance in disease outcomes that can be attributed to a difference between municipalities. Alternatively they aggregate the responses of individuals and use the mean to determine properties at the

community level, using data such as unemployment rates, rate of work force participation, education and average income (Béland et al., 1998). Either way, the intrinsic properties of place are not fully explored.

While conceptually these studies may not be fully satisfying, they have focused the discussion of context somewhat by articulating two major issues. First, context can be studied as places where people live, whether that be neighbourhoods, municipalities or countries. Indeed, increasingly researchers concerned with social inequalities in disease outcomes are turning to geographical comparative analyses. Second, these studies highlight the importance of examining structural causes of social inequality (Lynch, Davey Smith, Kaplan & House, 2000) by using aggregate level measures such as unemployment, thus moving away from focusing solely on the relationship between individual measures of SES and disease outcomes.

Ways of Knowing Context

In parallel to the studies that question what context is, others have focused on how we can know context or how we characterise what comprises context. A selected review of some of these studies follows.

Coulton, Korbin & Su (1996) approached the question of knowing context by aggregating individual perceptions of neighbourhood qualities. In their study they were concerned with the effects of neighbourhood properties on child abuse and neglect. They explored neighbourhood effects by collecting the perceptions of individuals in the neighbourhood on a large number of socio-structural and socio-environmental characteristics such as: availability of resources and services, participation in neighbourhood activities, social interactions with neighbours, neighbourhood quality, neighbourhood stability, direction of neighbourhood change, neighbourhood disorder and fear of violence and neighbourhood identity. The authors then aggregated the results from the answers individuals gave, thus creating aggregate perception scores, which they then analysed as neighbourhood properties. While this study was exemplary in attempting to deconstruct what the social

environment, or context, might be, they unfortunately confront an important methodological impasse; the confounding of individual perceptions with neighbourhood properties.

Rather than analyse context in terms of perceptions of individuals, a different approach to the contextual discussion has been the suggestion that contextual effects may be largely supra-individual or ecologic, that is, effects that are due to properties of areas for which there is no individual equivalent (Ellaway & Macintyre, 1996; Macintyre et al., 1993; Macintyre & Ellaway, 1998; Sooman & Macintyre, 1995). These aforementioned studies examine the socially structured features of four areas in Glasgow, Scotland in terms of the local social and physical environments to determine how these environments might be enhancing or inhibiting people's opportunities to have healthy lives (Macintyre, 2000). They examine qualities of these neighbourhoods such as the price and availability of healthy foods, crime rates, facilities for physical recreation, and many more.[8] By taking "objective" measures of neighbourhoods, rather than individual perceptions of neighbourhood qualities, these authors overcome the methodological problems faced by Coulton et al. (1996).

Other context studies have examined context in terms of two things: the attributes of individuals and some underlying attribute of the "living environments" of these individuals. Blaxter's study of Health and Lifestyles (1990) is one of the first examples of an attempt to understand how we can know contextual effects by introducing information from more than one level (the individual and the area). The underlying question Blaxter asks is: "What difference does the individual's SES position make in different types of areas? She attempts to answer this question by calculating standardised health outcome ratios for different social class subgroups (manual and non-manual) and then compares the subgroups on various behavioural variables, such as diet, according to where they live (North, South or East). The

[8] I take license here in extending these hypotheses to disease states whereas in the studies cited the health outcomes are either self-reported health status measures or what were termed health promoting activities (physical activity).

results are shown as the illness ratio, stratified by area, and then compared by social class subgroup. While well executed, and a reflection of methodological knowledge of the time, the methods she uses forces her to work at the single aggregate level by analysing individual attributes such as social class and higher-level attributes such as locality, on the same level, thus confounding the two.

Karvonen & Rimpela (1996, 1997) encounter similar problems to Blaxter when examining the relationship between regional/small area, individual level characteristics and health behaviour (smoking, alcohol use, dietary fat intake and physical activity). They analyse their data by including all level variables into multiple logistic regressions and use interaction terms between the individual level variables and those at the small area level to determine whether individual level socioeconomic differences vary by small area. Again, in so doing, they confound individual-level characteristics with higher-level characteristics due to the fact that the error terms of individuals in the same context are correlated.

These studies bring to the fore a number of important issues. First, the social environment, or context, can be operationalised as being other than aggregate SES variables. Second, these studies caution against the confusion that can arise when trying to distinguish between different levels of effects. While appealing to think in terms of individual and aggregate effects in public health research, the methodological fact remains that aggregate measures are comprised of a mathematical product of individual measures and therefore we must be aware of the dangers of confounding the two. This methodological setback for studies such as those of Karvonen et al. (1996, 1997) and Blaxter (1990) have becoming increasing addressed as an issue of contextual versus compositional effects.

Compositional and Contextual Effects

Many of the latest studies of context attempt to overcome both conceptual and methodological problems by distinguishing compositional from contextual effects on disease outcomes. For many of these authors compositional and

contextual effects are associated with processes operating at different levels: a lower level compositional effect and a higher level contextual one (Duncan et al. 1998). Compositional effects operate because of the varying distribution of types of people whose individual characteristics influence their health. That is, people with similar characteristics will have similar health experiences wherever they live. For instance, upper-class individuals have similar disease experiences whether they live in lower-class or upper-class areas. Contextual effects, on the other hand, operate where the health experience of individuals depends not only on their characteristics but also on the attributes of the area where they live, so that similar people have different health status from one place to another (Shouls et al., 1996). Taking up the same example, contextual effects would dictate that an upper-class person living in an upper class area would be in better health than an upper-class person living in a lower-class area. Such effects have been reported by Haan et al. (1987) who found that residing in a neighbourhood designated as a poverty area was a risk factor for subsequent mortality above and beyond the characteristics of the individual.

Hierarchical linear modelling has been particular useful in partialling out the proportion of variance explained by compositional versus contextual effects. Generally, studies using these techniques have found that most of the variation one would presume to be inter-contextual variation is explained by compositional differences (Béland et al., 1998; Duncan et al., 1993, 1996, 1998), although significant associations of contextual characteristics with individual health outcomes have been found (Duncan et al., 1996, 1998, 1999; Shouls et al., 1996). Duncan et al. (1998) are careful not to reject such methods by suggesting that one must investigate the interaction between contextual and compositional effects in terms of health outcomes. In their most recent article (Duncan et al., 1999) these authors find that differences in smoking behaviour are detectable as the result of the social class composition of areas; an effect that is uniform across different types of people and thus operating primarily at the contextual level.

While the above mentioned studies have been very informative with regard to the attribution of variance ascribed to compositional and contextual effects, they

have conceptually been confined to studies of SES and perhaps more importantly, are largely concerned with teasing out whether contextual effects are artefacts of compositional effects (Diez-Roux et al., 2000; Duncan et al., 1999; Soobader & LeClere, 1999). These studies model both composite SES variables at aggregate levels and individual socio-stuctural characteristics at the individual-level in an attempt to control for the potential confounding. While methodologically compelling, these studies have been less helpful in pushing forward the agenda of conceptually defining context. They are not actually concerned with the effects of place, per se, but with determining whether individual or aggregate attributes of people are most informative with regard to their explanatory power of disease rates.

Essentially researchers in public health tend to be interested in examining *where* there is variance, in terms of levels, rather than *why* there may be variance at the different levels. I propose, then, to examine *why* there may be variance at different levels by expanding the notion of contextual effects to make it double-barrelled; involving both the aggregate characteristics of people in places, as well as the supra-individual or ecologic characteristics of places. Furthermore, the argument will be developed that context is the reflection of what is now called compositional and contextual effects, as they are inextricably linked. I will therefore develop some theoretical arguments for the relationship and mechanisms between individual and aggregate levels. This problem is approached in this dissertation through the development of a theoretical model that proposes a re-framing of the compositional/contextual debate.

COLLECTIVE LIFESTYLES

A useful heuristic concept for comprehending the relationship between the two fundamental problems discussed above is that of collective lifestyles. The term "lifestyle" is adopted here so as not to create an ontological gap with the current literature in sociology, and particularly health promotion, which are rife with its use. The concept developed here will distance itself from the current use of the term by

introducing both behavioural and materialist components to it and by arguing that it is not just an attribute of individuals, but also of groups of people (please refer to Appendix 7 for a further elaboration of this aspect of collective lifestyles).

Some History of Lifestyle and its Current Use

The current conceptualization of lifestyle has moved far from its origins, some of which lie in the writings of Max Weber (Weber, 1922). While Weber's interests were not behaviours per se, he made an important contribution to our understanding of the relationship between income, occupational status and particular styles of life. Lifestyle for Weber comes about, and is enhanced, by one's status in society. Groups with different statuses have distinct lifestyles and the distinction between these groups lies for Weber in what they consume. He makes a further useful distinction between choice and chance in the discussion of lifestyle. In operationalising lifestyle, Weber surmised that choice is the major factor, with the actualisation of choices being influenced by life chances. Cockerham, Rutten & Abel (1997) interpret Weber's life chances as not being a matter of pure chance, but rather, the chances people have because of their social situation. Lifestyles for these authors, therefore, are not random behaviours unrelated to structure, but are choices influenced by life chances.

Uses of the term lifestyle have digressed from these roots in two important ways. First, the interplay between life chances and life choices is absent; lifestyle focuses primarily on life choices. The concept of lifestyle has thus come to be used to refer to a few habits of daily living measured and discussed as essentially discrete unrelated behaviours (Coreil, Levin & Jaco, 1985; Dean, 1988). The drive towards this usage of the term has been encouraged by socio-medical research into risk factors for chronic diseases, those that occupy much of the research in Occidental countries. Concretely this has led to lifestyle research being that which associates behaviours measured discretely (i.e. smoking, alcohol consumption, dietary habits, and physical activity) with mortality and morbidity (Dean, 1988). This reductionist approach not only focuses attention on a limited number of practices, but it also

separates individual behaviours from the social and situational context, stripping individual action of any contextual meaning.

As a result, behavioural explanations of social class inequalities have argued that independent and autonomous behaviour on the part of individuals generates ill health. While one cannot deny that individuals engage in individual behaviour such as smoking, by denuding the explanation to behaviour alone individuals are viewed as being "at fault" for having engaged in such practices and are thus individually responsible for the health outcomes of inappropriate behaviour. Again, the argument is not to condone certain types of behaviours or to suggest that individuals should not be considered responsible for the practices that they engage in, but rather that by ignoring the social conditions associated with certain behaviours, there is a decided tendency for the usage of lifestyle to "blame the victim".

Second, lifestyle has diverged from its original connotation to take on an individualistic connotation. Weber's notion of lifestyle was one that was shared by groups of people having similar status. Lifestyle as it is currently understood views behaviour as an individual activity governed by individual decision-making, not necessarily a practice that is shared by others. This conceptualisation definitively isolates the individual from those around her.

The concept of collective lifestyles that will be developed in the next section is therefore an attempt to bring context back into behaviour. A collective lifestyle is not just the behaviours that people engage in, but rather, the relationship between people's material, or socio-structural circumstances, and their behaviours. Material resources, in principle, should increase the choices that individuals can make in their behaviour. This does not suggest, however, that certain behaviours will necessarily follow from given material conditions, but rather that choice may be limited when material conditions are limited or lacking. Furthermore, the idea of collective lifestyles proposes that this relationship between the socio-structural and the behavioural is also a collective experience, and therefore, may have similar influences on those that partake in the experience.

As such, the concept of collective lifestyles can be applied to experiences shared by social groups in specific contexts (Coreil, Levin & Jaco, 1985) and strives to elucidate the relationship between the material conditions and behaviours within that context. Collective lifestyles, then, provide a framework in which to understand the social generation of disease by extending it across levels and explaining how individual- and group-level attributes jointly shape disease.

In response to the issues raised in this literature review, the next section develops the theoretical framework that guides the remaining part of the dissertation. The framework integrates issues faced by studies of lifestyle, context and social inequalities in disease outcomes.

ARTICLE 1:
A THEORETICAL PROPOSAL FOR THE RELATIONSHIP BETWEEN CONTEXT AND DISEASE

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ABSTRACT

Studies of "context" are increasingly widespread. These studies often become entrenched in methodological debates rather than being conceptually satisfying. We argue that part of the problem lies in an inappropriate use of "classic" epidemiological methods in the study of context and that it may be useful to study, instead, the relationship between agency (the ability for people to deploy a range of causal powers), practices (the activities that make and transform the world we live in) and social structure (the rules and resources in society). We utilise two examples from the current literature to illustrate these problems; the study of lifestyles and social inequalities in disease outcomes. We propose the notion of collective lifestyles as a tentative solution, inspired by Pierre Bourdieu's theory of social action, Anthony Giddens' structuration theory and Amartya Sen's capability theory.

THE PROBLEM

In its origins public health was essentially ecological, relating environmental characteristics to disease outcomes in relation to infectious diseases. John Snow's findings in 1854 that the Broad Street Pump was associated with the cholera epidemic is a classic case in point; the number of deaths in each area of London was associated with the degree of pollution of the part of the Thames River from which the company obtained its water (Rosen 1993). The growing importance of non-infectious, chronic diseases in industrial nations this century (such as heart disease, cancer and diabetes) caused a shift in risk factor research from environmental factors to individual-level factors such as behavioural and biological characteristics (Syme and Balfour, 14th edition). This brought about a tendency in epidemiology to explain disease patterns oftentimes solely in terms of the characteristics of individuals (Diez-Roux 1998).

But to date individual-level factors fail to account fully for the rise and prevalence of non-infectious, chronic diseases, as well as most diseases of importance to public health. In response to the shortcomings of individual-level factors, and particularly what are called health behaviours, many public health researchers have returned to public health's origins and reconsidered the role of the environment; these studies now being termed studies of context (Macintyre *et al*. 1993, Duncan *et al*. 1996, 1998, Diez-Roux 1998). In order to move away from the perpetuation of the notion that risk is solely individually determined, rather than socially determined (Diez-Roux 1998), these contextual analyses have for the most part been concerned with the effects of collective or group characteristics on individual-level health outcomes. In doing so, "context" researchers hope to move away from the individualisation of risk that views disease status purely as a result of individual choice and as being disassociated from its social context.

Context is currently mostly understood to be the role of group or macro-level variables in the determination of disease in populations. Perhaps because of the importance of existing databases, such as the Census, in providing group-level

variables, these contextual studies have primarily focused on the role of place on disease, treating context primarily as a geographic space within which aggregations of individuals' attributes can be studied in relation to disease outcomes. This phenomenon is often replicated in studies regarding context and social inequalities in disease. Findings from various studies have suggested that material deprivation within regions is associated with disease rates or perceived health (Haan *et al*. 1987, Blaxter 1990), taking the focus away from an individual socio-economic status (SES) based analysis (focusing solely on personal income or education), to one that examines also regional levels of income, unemployment, housing, and other qualities of the physical environment. Given the interest in regional analyses, health inequalities researchers have tended to equate context with place.

While these studies have certainly helped question the epidemiological tendency towards methodological individualism, there are still shortcomings with contextual analyses. Most importantly discussions of context tend to become entrenched in debates regarding how it should be operationalised; are collective features of society reducible to the aggregated attributes of individuals living within areas (eg. unemployment rates in a census tract) or are they characteristics of a group derived from something other than individual characteristics (eg. no-smoking regulations in neighbourhoods) (Cheadle *et al*. 1992, Chaskin 1997, Yen and Kaplan 1999)? While this issue is critical, it has turned attention away from equally important issues of a more substantive and explicative nature, such as the mechanisms that bring about differential disease rates in different contexts. By studying context solely through macro-level variables (such as average education level), a deterministic position is favoured, that is, researchers implicitly postulate that average education levels influence disease outcomes in a uniform fashion across places and that these types of variables comprise context.

The shortcomings in the current literature raise many questions. What is this context that we are analysing? Does it go beyond the notion of area or place? What are these processes that are trackable by epidemiologists through disease outcomes? In this paper we examine the notion of context using practice theory

in which the social structure and people's practices are conceptualised in a recursive relationship[1]. In so doing, we hope to yield a more dynamic comprehension of how context influences disease rates as well as the mechanisms that bring about different distributions of disease across contexts. Otherwise stated we discuss how context studies could attempt to understand both the factors as well as the mechanisms that put people at risk of risks (Link and Phelan 1995).

Beginning with a critique of social epidemiological methods generally, and the notion of context and lifestyle more specifically, this paper will propose the integration of some current social theory into a framework entitled collective lifestyles with a view to improving our understanding of how context shapes disease outcomes.

MOVING BEYOND THE ENUMERATION OF VARIABLES: AN EPISTEMOLOGICAL AND METHODOLOGICAL QUESTIONING OF SOCIAL EPIDEMIOLOGY

We propose that one of the fundamental barriers to understanding how context is related to disease outcomes stems directly from the epistemological and methodological assumptions inherent to social epidemiology, social epidemiology being the study of the social determinants of health. We argue that for the most part, social epidemiologists have transposed to the study of social phenomenon and disease the assumptions of "classic" epidemiology and that this shortcoming is restraining our ability to give greater meaning to context. In order to comprehend the origins of this problem, a brief critique of social epidemiology is required.

Epidemiology is taught and primarily practised as a series of methods whose purpose is to generate knowledge regarding the distribution and determinants of human disease using prevalence, incidence rates, incidence density and numerous others. With regard to causes of disease, analytic epidemiology permits the identification of a certain number of risk factors that are consistently associated with particular disease outcomes. Typically, epidemiological approaches yield a predictive model; one in which the objective is to identify and isolate a certain number of risk factors. The objective is to create the most comprehensive

list of factors associated with risk modification and to estimate the isolated effect of each factor while controlling the effect of the others, all of this with a view to increasing the predictive capacity of the model (Potvin and Frohlich 1998). While concerned with the modelling of the oftentimes complex relationships among risk factors in the etiology of disease, however, modern epidemiology has a tendency to overlook why these risk factors exist, how they are interrelated (Krieger 1994), and why they affect the people they do; or, more simply put, epidemiology tends to shy away from theory, choosing instead to focus on study methodology (Krieger and Zierler 1996).

This theoretical weakness becomes an epistemological problem when engaging in *social* epidemiological studies in particular. These studies, like those of classic epidemiology, are concerned with the distribution and determinants of disease but with reference to the social world, and it is here that the field becomes fuzzy. As noted by S. Leonard Syme in the foreword to a recent textbook dedicated to the exploration of social epidemiology (Berkman and Kawachi 2000), a significant distinction between social from other kinds of epidemiology is that the former turns the focus to social groups, whether they be families, neighbourhoods or communities. By looking at groups, however, we are confronted with two important issues. First, the relationship between individual and collective characteristics. Second, how to examine social relations; that is, the social practices involved in group formation and functioning. Whereas classic epidemiologists may be able to confirm associations between biological phenomena and disease outcomes (take for instance the knowledge we now have regarding the effect of cigarette smoking on lung cancer, or our knowledge regarding the determinants of infectious diseases), it is a different endeavour when attempting to understand, for instance, how social constructs such as "race"[2] influence health and disease.

Social constructs are different, first, because the causal link is not direct; being of a particular race does not directly *cause* disease, and indeed, the analogy with effective chemical agents such as tobacco may be inherently flawed. So, for instance, recent social epidemiologic research on the relationship between race

and mortality outcomes (Geronomius *et al*. 1999), while demonstrating important descriptive outcomes of large health disparities between rural and urban dwellers, as well as between white and African-Americans, does not delve into what it is about one's race category, nor one's place of dwelling, that might be leading to these disparities.

Second, race is a social construct, one that exists as a social convention devised for categorising people. Rather than being an "objective" variable, then, race is a set of social relations and practices (Bartley *et al*. 1998; Nazroo, 1998). Given this, race is not consonant with direct biological determinants such as cigarette smoking in the case of lung cancer.

Among the social epidemiological studies in which this epistemological problem is most striking are the studies regarding health inequalities and, more recently, studies concerned with context. Over the last ten years this former body of research has been largely driven by a search for explanations of the relationship between social inequality and health/disease. Four initial explanations were explored in the Black Report (Townsend and Davidson 1988); artefact explanations (a problem of measurement), theories of natural or social selection (sick people become poor), cultural/behavioural explanations (poor people have poor health habits) and material/structural factors (life circumstances associated with poverty make people more vulnerable to disease). Since the initial report was published, material/structural explanations for health inequalities, operationalised often as education, income, housing, etc., have largely dominated the literature.

Macintyre (1997) offers a helpful nuance in relation to materialist/ structural explanations of health inequalities. She suggests that there is a confusion between "materialist" and "material" explanations for these inequalities. The latter views the physical, material conditions of life, such as income, as being directly responsible for the outcomes observed. The former, on the other hand, considers the conditions that result from one's income, that is, the psychosocial and physical factors that arise from one's income level.

We take inspiration from the "materialist" explanations and suggest that the study of the relationship between SES and disease could be analysed as an exemplar of the social relations and practices in a society. For the most part, SES is often still analysed in line with the "material" explanations, and thus, employed in such a way that the embodied individual is evacuated from the social system and materialises, temporarily as she passes through variable categories[3]. Consequently, material/structural factors in health inequalities research are frequently studied as proxies for social structure and in typical epidemiological fashion, each variable is not understood in terms of its relation to other elements in the system nor in terms of how it is manifested in and reinforced by social practices.

Recent work from Britain illustrates this common occurrence in social epidemiological studies. Pattenden et al. (1999) examine the relationship between inequalities in low birth weight and parental social class, area deprivation, and "lone mother" status. The authors argue that to monitor inequalities we must control for socioeconomic confounding at either the individual or the collective level. They concur that their measures of SES are but "blunt instruments" for measuring the effects of deprivation on health, but do not, themselves, endeavour to highlight what social processes might underlie their findings.

The issue thus stated is that we need to go beyond the enumeration of, and the attribution of direct causation to, variables in social epidemiology. The variables used in social epidemiology represent social relations rather than objectified concepts. What is missing is a discussion of the relationship between agency (the ability for people to deploy a range of causal powers), practices (the activities that make and transform the world we live in) and social structure (the rules and resources in society). Without such an understanding, factors associated with people's disease experiences within a context tend to be denuded of social meaning. In the following section we will demonstrate that while context studies strive to move away from methodological individualism by examining group characteristics, rather than individual attributes, they too often fall prey to the epistemological problems inherent to social epidemiology studies by treating

social variables in an equivalent fashion to biological determinants. Oftentimes this becomes an exercise in searching for "new" risk factors rather than a theoretical quest to explain the mechanisms through which risk factors influence health outcomes (McKinlay and Marceau 1999). We will therefore highlight some of the difficulties in defining context in a sociologically meaningful way. We then move on to discuss the notion of lifestyle, analysed as a prime example of the shortcomings of many social epidemiological studies when applied to context studies.

CRITIQUE OF THE EPIDEMIOLOGICAL USE OF CONTEXT

Many of the latest studies of context associate the determinants of health as operating at two different levels: a lower level compositional effect and a higher level contextual one (Duncan *et al*. 1998). Compositional effects are said to operate because of the varying distribution of types of people whose individual characteristics influence their health. That is, people with similar characteristics will have similar health experiences wherever they live. For instance, upper-class individuals have similar disease experiences whether they live in lower-class or upper-class areas. Contextual effects, on the other hand, operate where the health experience of individuals depends not only on their characteristics but also on the attributes of the area where they live, so that similar people have different health status from one place to another (Shouls *et al*. 1996). Contextual effects for example would dictate that an upper-class person living in an upper class area would be in better health than an upper-class person living in a lower-class area. Such effects were reported by Haan *et al*. (1987) who found that residing in a neighbourhood designated as a poverty area was a risk factor for subsequent mortality above and beyond the characteristics of the individual.

These contextual effects have been recently developed under the rubric of supra-individual or ecologic effects; effects due to properties of areas for which there is no individual equivalent (Ellaway and Macintyre 1996; Macintyre *et al*. 1993; Macintyre and Ellaway 1998; Sooman and Macintyre 1995). These aforementioned studies examine the socially structured features of four areas in Glasgow, Scotland in

terms of the local social and physical environments to determine how these environments might be enhancing or inhibiting people's opportunities to lead healthy lives (Macintyre 2000). They examine qualities of these neighbourhoods such as the price and availability of healthy foods, crime rates, facilities for physical recreation, and many more.

There is an increasingly large body of literature dedicated to the "teasing out" of these compositional from the contextual effects (Diez-Roux *et al*. 2000; Duncan *et al*. 1998). We would argue that while context studies strive largely to move away from the adoption of an individualistic perspective, by examining what Syme entitles social groups, they tend to follow other classic epidemiological traditions nonetheless. First, little attempt is made to understand how these effects might be influencing health outcomes, that is, what the mechanisms are. So while contextual studies may look at "new" determinants such as ecologic factors, they mostly do not delve into *how* these determinants influence health. Second, compositional and contextual effects are largely viewed to be separate phenomena. The main thesis of this paper is that the theoretical reconciliation of these two phenomena may provide a mechanism through which we can comprehend how the social gets under the skin. As such, we suggest that compositional and contextual effects are mutually reinforcing and jointly influence health outcomes.

LIFESTYLE AND CONTEXT

The artificial separation between contextual and compositional effects is paralleled by the manner in which the bio-medical literature stripped the notion of lifestyle from its social context to focus exclusively on its behavioural, volitional aspects. The concept of lifestyle, much inspired by Max Weber's comments in *Economy and Society* (1922), has changed significantly since first conceived (Cockerham *et al*. 1997). Variation in lifestyle for Weber came about as more than just a function of economically determined social class. Weber conceptualised a holistic notion of lifestyle that included income, occupation, education and status. Weber also discussed lifestyle in terms of choices and chances. He did not consider life chances to be a matter of pure chance, but instead, as the opportuni-

ties that people encounter in life due to their social situation. It follows from this that lifestyles are not random and unrelated to structure but are choices influenced by life chances (Cockerham *et al*. 1997). Life chances and hence life choices are both socially determined.

Despite these origins the term lifestyle, widely adopted by researchers in health promotion, social epidemiology and other branches of public health, has taken on a very particular and different meaning from that intended by Weber. When lifestyle is currently discussed within the socio-medical discourse, there is a decided tendency for it to be used in reference to individual behavioural patterns that effect disease status (Badura 1984). These patterns are most often operationalised as habits of so-called "behaviours", measured discretely and independently (Coreil *et al.* 1985, Dean 1988; Dean *et al.* 1995), quantified as behavioural risk factors then subsequently targeted for strategic planning in public health interventions (eg. smoking, physical activity, diet and alcohol consumption). Lifestyle then is derived from, and directly related to risk factors. Examined in this way lifestyle is conceptualised as a pathology, based on a number of discrete and specific behaviours that epidemiologists deem risky (Frohlich and Potvin 1999a).

The behavioural determinism that the term lifestyle has taken on has several ramifications within the field of public health generally and more specifically with reference to our understanding of how disease may come about in contexts. Indeed, it suffers from a similar problem to that of health inequalities research; behaviours are studied independently of the social context, in isolation from other individuals, and as practices devoid of social meaning.

We suggest that what are now entitled "behaviours" by some proponents of the bio-medical lifestyle discourse can also be understood as social practices; practices that are instantiations of the social system. Many researchers who utilise the notion of lifestyle as a number of individual health-related behaviours are guided by the belief that behaviour change comes about primarily through some form of self-regulation, whether this be through cognitive factors (Becker

1974, Ajzen and Fishbein 1980) or through volition and self-control (Baumeister and Heatherton 1996). Implicitly by analysing behaviour from this angle it is not understood in relationship to its position within the social structure, i.e. with regard to the rules and resources of society, but rather, as some form of activity which is ultimately under the individual's control.

Not only is lifestyle often understood to be a behaviour or a set of behaviours practised and controllable through the self, but it is further implied that behaviour can be divorced from the social context from whence it ensues (Coreil *et al*. 1985, Dean 1988). The individual is seen to be ultimately responsible for her behaviour as if there were no systemic influences, sociocultural context, or social meaning ascribed to the behaviour. This has led to an understanding of lifestyle that views the individual in a sort of behavioural vacuum; outside of socio-cultural influences, struggling to master her vices.

LIFESTYLE AS A SET OF SOCIAL PRACTICES

To overcome the tendency to approach the study of lifestyle as an individual behavioural attribute estranged from the context, a useful framework might conceive of lifestyles as patterns and ways of living or as behaviours and their interactions with cultural, social and psycho-social factors (Dean 1988). To develop such a framework we turn to practice theory, theory that attempts to understand people's actions by locating the point of reference in social practice from which the beliefs or actions emerge. Practice theory seeks out configurations of social relations that move people to act in ways that produce the effects we observe (Ortner 1989). Furthermore, practice theory understands practices as emerging from structure, reproducing structure, but also capable of transforming structure. Rather than viewing structure as some sort of building, machine or organism[4] acting on people's practices, structure is doubly practised, being both informed and structured by people's practices as well as being embodied by people, in the sense of being a framework of dispositions (Ortner 1989). With practice theory we are concerned with the ways in which a given social order mediates the impact of external events by shaping the ways in which actors expe-

rience and respond to these events. Much of the response can be understood as structural constraints and opportunities, these constraints and opportunities being reflected within social practices. Social practices are therefore defined here as any form of human action or interaction insofar as they are recognised as reverberating with features of power relations (Ortner 1989).

Building on practice theory, then, we suggest that lifestyles could be understood as generated practices, practices that both reinforce and emerge from the context. Williams (1995) has similarly explored how to theorise the structure-agency problem in relation to health-related behaviour. He draws on the work of Pierre Bourdieu in an attempt to construct a theoretical model of social practice that includes consideration of the social structure and patterns of social life. Rather than focus on health-related behaviours, Williams favours a conceptualisation of such "behaviours" as "part and parcel of this implicit, routinised, practical logic of daily life" (Williams, 1995: 598).

Similarly to Williams, then, rather than viewing lifestyle as a set of individual "behaviours" we will argue that the analysis of social practices that generate lifestyles would yield a richer understanding of how context is related to disease status. Context in this sense is analogous to what is referred to as structure by sociologists; a set of any elements between which, or between certain sub-sets of which, relations are defined (Lane 1970). By examining the elements of relations, contextual analyses would be concerned with the effects of characteristics that define groups by taking into account the social practices within a context, moving the field away from the individualisation of risk and from viewing context simply as the aggregation of individual traits.

This change leads to a reconceptualisation of lifestyle as a collective attribute given that individuals are not alone in creating and re-creating the social structure through their practices. In so doing, we firstly move from methodological individualism to a contextualised study of disease. Second, we may be better able to link with social theory to provide an explanation as to how social context may influence disease patterns.

Lifestyle viewed as a collective attribute, or what we henceforth will call *collective lifestyles*, then becomes an analytic tool with which we could strive to understand how structure and practices influence disease outcomes. While we are conscious of the limits of the term lifestyle, and the connotations that the word carries, we re-appropriate it and offer a collective dimension. Collective lifestyles are defined here not just as the behaviours that people engage in, but rather, as the relationship between people's social conditions and their social practices. Social conditions are here defined as factors that involve an individual's relationship to other people. This includes positions occupied within the social and economic structures of society, such as one's race, SES, gender, etc. (Link and Phelan 1995). Furthermore, the idea of collective lifestyles is that the relationship between social conditions and practices is a collective experience, and therefore, may have similar influences on those that partake in this experience (Frohlich and Potvin 1999b). This does not imply, however, that everyone within a context will have the same manner of expressing collective lifestyles. There will, rather, be patterns of expression amongst people in similar contexts.

SOME THEORETICAL CONSIDERATIONS

To overcome some of the epidemiological shortcomings in relation to social variables such as lifestyle, we draw on the world of the social sciences generally, and on practice theory more specifically. Using existing social theory we endeavour to develop upon this corpus of knowledge to explain how collective lifestyles might come about and to provide a framework with which future studies could better analyse context and disease.

Capability theory and health inequalities

One of the fundamental questions asked by those interested in social inequalities in disease is how social inequality produces health inequalities. Context researchers, similarly, are concerned with what aspects of contexts produce health inequalities. Those particularly interested in ecologic variables ask themselves how to better distribute these resources. We suggest that both types of studies may benefit from asking a precursory question, that is, what

exactly is meant by inequality - or alternatively - inequality of what? In so doing, we seek to contextualise the impact of material resources on health outcomes.

Amartya Sen has tackled the thorny issue of inequality for many years positioning himself firmly among, but in distinction from, existing theories of distributive justice. On the one hand, adherents to the Rawlsian[5] theory of distributive justice hold that equality comes about when primary goods (such as income) are equally distributed in a society. Utilitarians, on the other hand, are more concerned with the utility yielded from goods and the distribution of utilities amongst a population. Sen's notion of equality moves beyond a conceptualisation of equality based on goods themselves or on the utility extracted from goods. He focuses instead on what people are actually able to extract from goods given their particular needs and abilities (Sen 1992).

Sen's theory is based on two concepts; functionings and capabilities. "Functionings represent parts of the state of a person…some functionings are very elementary, such as being nourished…others may be more complex such as achieving self-respect. The capability of a person reflects the alternative combinations of functionings the person can achieve, and from which he or she can choose one collection" (Nussbaum and Sen 1993: 31). Capability, therefore, represents the combination of functionings that a person considers herself capable of attaining. To exemplify the distinction between the three notions of equality, the example of food is particularly helpful. Rawlsians would consider access to an adequate food supply a requirement for equality whereas utilitarians would take into consideration the utility rendered by the consumption of food. Sen argues that equality should be evaluated based, instead, on the nutritional level that an individual extracts from the food supply.

This notion of equality is particularly sensitive to the variation in capabilities that individuals enjoy. Given that there is important inter-individual variation in the ability to convert primary goods into the achievements of well-being, Sen argues that traditional notions of equality that focus too heavily on primary goods alone miss this critical component of equality. "Once it is recognised that the

relation between income and capabilities varies between communities and between people in the same community, the minimally adequate income level for reaching the same minimally acceptable capability levels will be seen as variable-depending on personal and social characteristics" (Nussbaum and Sen 1993: 41). So, for instance, the capability of a single working woman with three children who earns $25,000 per annum will not necessarily be the same as that of a post-doctoral student without children earning the same amount on her scholarship. The difference is not simply inherent to the primary good, the amount of money, but what that good can be converted into by the individual in virtue of her situation. In other words, differently constructed and situated peoples require different amounts (and perhaps types), of goods to satisfy the same needs.

Implicitly Sen's capability theory raises the issue of choice. Rather than basing one's evaluation of equality on access to resources we must examine the choices structured by the situation that an individual is in and we must not assume that the same results arise from the two evaluations. Comparisons of resources or primary goods will therefore be insufficient as a basis for comparing equality as they are but the instruments of achieving freedom. Capability reflects the freedom to pursue these elements. What is crucial to grasp is that there are inter-social variations in the relation between incomes and capabilities.

Sen offers, through capability theory, a crucial insight for studies of context. As described previously, much of what we currently examine as context is either articulated as compositional or contextual effects, both of which are generally viewed to have a certain generalisability. In this way, contexts with fewer resources would generally be thought to yield populations in less good health. Sen argues that we must ensure an understanding of how the resources are used before making normative judgements as to whether or not the resources are yielding the outcomes that we might expect. Following the arguments made earlier in this paper, this would imply an examination of the relationship between people's practices and the structure.

The question that remains to be tackled therefore is how we could operationalise these capabilities, that is, in what way can we determine variation? To do so the proceeding section of this paper borrows some basic notions from Pierre Bourdieu's notion of *habitus* and Anthony Giddens' structuration theory. The contrasting views of these two writers regarding the genesis of social practices in relation to social structure has received particular attention and refinement in recent years. Furthermore they help shift away from explanations of health-related behaviour simply in terms of health beliefs by grounding actions in people's daily lives (Williams 1995).

Structuration theory and Giddens

Giddens defines three major components of his social theory for conceptual clarity: structure, system and structuration. Structure is a set of rules and resources marked by the absence of the subject. Social systems, on the other hand, comprise the situated activities of human agents. When analysing the structuration of social systems we study the modes in which such systems are produced and reproduced by agents by drawing upon rules and resources. In *The Constitution of Society* (1984), Giddens describes structural properties of social systems as being both the medium as well as the outcome of recursively organised social practices. There is no uni-directionality between structure and agency, they are recursive and co-dependent. Structure is not possible without action because action reproduces structure. Action is not possible without structure because action begins with a given structure that was the result of prior actions. An agent is not a dependent subject of action but an active individual who constructs social behaviour (Cockerham *et al*. 1997). This is the basis of Giddens' structuration theory.

An essential element of the theory, in distinction from traditional structural/functionalists is the emphasis given to "practical consciousness", an individual's tacit understanding of the "goings on" in the context of social life. Structure has no existence outside of the knowledge that agents have regarding their daily activities. This is embodied, for Giddens, in his notion of routinisation,

the everyday activities that are continually being produced and reproduced. Routine, he argues, is integral both to the continuity of the personality of the agent, as well as to the institutions of society. The routinised activities do not just happen, but are "made to happen" by the habitual model of reflexive monitoring of action which individuals sustain in circumstances and co-presence (Giddens 1984: 64). Agents therefore are conscious individuals, a distinction with structuralist thinking which tends to posit that agents are subordinate to the dictates of greater structural forces, often implying a certain non-reflexivity. Giddens proposes that action comes about as a result of the purposive, reasoning behaviour of agents and to its intersection with constraining and enabling features of the social and material contexts of that behaviour. Routinisation operates on two levels. At the level of the individual it provides for ontological security in the predictability of events. At a collective level, routinisation is critical to the workings of institutions which exist by virtue of the continued reproduction of routines.

Giddens has also tackled certain issues regarding the current understanding of lifestyle in *Modernity and Self-Identity* (1991). According to him lifestyle is a set of more or less integrated practices embraced, in part, to give material form to a particular need for self-identity. Lifestyle is furthermore not something forced upon an individual, but rather, adopted. There is, thus, again, an important element of reflexivity involved. Lifestyle is therefore a cluster of habits and orientations that are routinised into; "habits of dress, eating, modes of acting and favoured milieux for encountering others"(Giddens 1991: 81). Interestingly, he notes that lifestyle variations between groups are elementary structuring features of stratification, not just the results of class differentiation (ibid). Furthermore, lifestyles are characteristically attached to, and expressive of, specific milieu of action; giving some credence to the notion that lifestyles may be the expression of context.

Habitus and Bourdieu

Bourdieu affords us with a slightly different theory of social action that helps to explain the recurrence of social practices over time. He does this by examining individuals' routine practices as influenced by the external structure of their social world and the contribution that these practices then make to the maintenance of the same structure. His theory of practice seeks to escape the objectivism of action viewed as a mechanistic reaction devoid of the agent, while concurrently avoiding subjectivism which describes action as the deliberate accomplishment of a conscious intention (Bourdieu 1992). It becomes clear, however, that Bourdieu awards epistemological priority to objective conditions over subjectivist understanding and the reflexive nature of agency, although he considers both to be important (Cockerham *et al*. 1997; Williams 1995).

The epistemological privilege awarded to objectivism is particularly clear when plunging into his conceptualisation of *habitus*. Bourdieu defines *habitus* as; "systems of durable, transposable dispositions, structured structures predisposed to operate as structuring structures, that is, as principles which generate and organise practices and representations that can be objectively adapted to their outcomes without presupposing a conscious aiming at ends or an express mastery of the conditions necessary in order to attain them" (Bourdieu 1980: 53). *Habitus* is a form of transcendental historic, a socialised body, a structured body, a body that has incorporated the immanent structures of this world and that, in response, structures perception and action in this world. The *habitus* is a; "system that is socially constituted of structured and structuring dispositions that are learned through practices"(Bourdieu 1992: 97).

The *habitus* is produced by the objective conditions of existence combined with positions in the social structure, it is a system of schemes that generates practices and schemes of perceptions and tastes that together result in a lifestyle. Lifestyles are viewed as a set system of classified and classifying practices involving different tastes. These practices consist of particular forms of dress, food, music, art, sport, leisure activities, etc. - all of which express class, gender,

and ethnic distinctions (Cockerham *et al*. 1997). While individuals choose their lifestyle they are, however, predisposed by their *habitus* toward certain choices; thereby proposing a certain determinism. Agents' choices tend to be consistent with their *habitus*.

Two aspects of Bourdieu's theorising are striking. First, the agent is oddly absent; being somewhat passive in the process of structuring perception and action. Indeed the notion of *habitus* has been criticised for being the reflection and replication of exterior structures rather than a locus for voluntary action (Alexander 1995). Meaning therefore appears not to be of much concern to Bourdieu as the *habitus* merely translates material structures into subjective entities in a non-interpretive way; actors are in a continuous adaptation to their environment rather than actively and consciously interacting with it. Second, the emergence of *habitus*, when examined at one point in time, indicates that structure structures practices. When looked at over time, however, there is a certain recursivity between agent and structure, as practices re-feed into the structure to maintain or bring about an evolution of the structure. It is quite clear, however, that Bourdieu gives priority to the influence of structure on social practices.

HABITUS, STRUCTURATION THEORY AND COLLECTIVE LIFESTYLES

The notion of *habitus* has a certain resonance vis. à vis. collective lifestyles. *Habitus* proposes a template that defines people's social practices that goes beyond the behavioural notion of lifestyle; one that considers only "behaviours" believed to be associated with disease outcomes (smoking, physical activity, etc.) The *habitus* is closer to a notion of lifestyle, as discussed by Williams (1995), that links together in a theoretically meaningful way lifestyle choices (agency), practices and the broader social and material determinants (structure). However, Bourdieu is rather deterministic in his philosophy; lifestyles are somehow predetermined by *habitus*. Although Bourdieu claims that individuals choose their lifestyles, they are not completely free in this endeavour as their *habitus* predisposes them towards certain choices.

We believe that epistemologically it may be useful to consider a structure-agent recursivity with reference to collective lifestyles, rather than the *habitus* of Bourdieu which structures the practices of agents and thus is clearly a precursor. A recursive conception of the relationship between structure and practices moves us away from the predominantly deterministic approach taken by researchers in social epidemiology and other sub-fields of public health. It has been noted, within the field of health promotion particularly, that there is a tendency to have a non-resolution with reference to the roles of free will and determinism in explaining human behaviour (Kelly & Charlton 1995). Bourdieu gives emphasis to the importance of class and taste in bringing about lifestyle, whereas it will be argued that collective lifestyles arise, quite frequently, from a structure-agent recursivity which produces and reproduces tastes, values and behaviours. Collective lifestyles are an expression of a shared way of relating and acting in a given environment, and therefore it is this expression that is the collective lifestyle; a form of meta-lifestyle.

CONTEXT, COLLECTIVE LIFESTYLES, AND HEALTH INEQUALITIES

We thus propose that collective lifestyles could be analysed as the observable aspects of context; observable through individuals' practices. Methodologically we also propose, in distinction from classic epidemiological studies, that a recursive aspect be added to the study of context. The mechanisms of recursivity are therefore, at once, both individual and collective, as the individual "acts out" the practices that feeds into a larger system. It is not only the context (or structure) that acts on individuals, but individuals are constantly re-creating the conditions that make this structure (the context) possible. This proposal puts up for question the formerly discussed assumptions made by many current researchers interested in context; that context is either the reflection of the varying distribution of types of people whose individual characteristics influence disease (that is, similar types of people will have similar types of disease experiences wherever they live) or that the disease experience of particular types of individuals depends primarily on the attributes of the area, so that similar types of

people have different disease status from one place to another (Shouls *et al.* 1996). We adhere to a notion of context that is more dynamic than either of these propositions and suggest that context is the reflection of both place and the characteristics of people of the place, and that this relationship is recursive and influences disease states. Contexts will be reflected in the collective lifestyles of people living there, both in terms of people's relationship to the attributes of the area as well as their similitude to each other in terms of their social practices. Place cannot influence social practices without groups of people who are influencing place through their social practices. Furthermore, a recursive account of collective lifestyles leaves room for change, change that takes place because alternatives become apparent or because actors have or gain the power to bring them into being (Ortner 1989).

This brings us to the relationship between collective lifestyles and social inequalities in disease. To examine inequalities as a function of context using Sen's notion of capability we could presumably not just examine resources, but also what people are able to do with the resources in their environment. We would therefore argue that these aspects are not reducible to the enumeration of material goods, but also include people's social practices as they are a critical empirical aspect of the social structure. It may well be that by evaluating resources (whether they be individual aggregate or ecologic) researchers make an insufficient account of social inequality. It is not simply a question of equating more resources (or particular types of resources) with more opportunities or fewer resources with constraints. We would therefore suggest taking Sen's argument and introducing it to structuration theory to understand what context is, how it is reproduced, and how social inequalities in disease arise in different contexts.

Lastly, the theoretical arguments raised here attempt to reconcile the distinction made in the context literature between contextual and compositional effects by suggesting that "cultural context" (shared reinforced practices) and "structural context" (local institutions and their rules and ability to distribute resources) are very much intertwined. Indeed, the context that influences health outcomes is a combination of both social practices and social structure.

AN EXAMPLE IN LIEU OF A CONCLUSION

Suppose that we are interested in understanding if and how smoking initiation rates are differentially distributed among pre-adolescents in several neighbourhoods. In traditional context studies we might operationalise context as the neighbourhood and develop statistical models that would enumerate a certain number of aggregate variables, such as education or income that would classify the neighbourhoods based on deprivation levels, etc. We would then develop a model based on its ability to predict the variation in smoking rates that we observe across our neighbourhoods. Others might examine the relationship between smoking initiation rates and traditional "lifestyle" factors such as exercise or alcohol consumption amongst teenagers.

Neither of these procedures, however, inform us as to how the smoking rates came to be differentially distributed or how these macro-level aggregate variables are translated, and reinforced, by practices. If we were, instead, to employ the notion of collective lifestyles we would examine the relationship between structure and practices in these neighbourhoods and endeavour to understand how this relationship impinges on smoking initiation. So, for instance, we could examine structural aspects of the neighbourhood, or the rules and resources, in relation to smoking. Examples might include non-smoking public places, the number of stores that sell cigarettes, the number of bars present in the area, etc. But this too will be insufficient. By simply giving an enumeration of the resources available in the various neighbourhoods we have no idea as to how they are used. Indeed, an enumeration tells us little about how individuals interact with their resources; what their social practices are. Nor does an enumeration tells us anything about the population's agency or their capabilities. So, for instance, in one neighbourhood it may be the local norm to smoke in non-smoking public places to demonstrate one's ability to oppose authority. Or in a seemingly "non-smoking" neighbourhood where teenagers' access to cigarettes is made difficult by stores' stringent adherence to laws prohibiting sales to minors, there is an illicit trade between older teenagers and pre-adolescents, with the former

providing the latter with cigarettes for profit. These two examples elucidate aspects of the collective lifestyles in each of these neighbourhoods.

This approach differs from a more traditional social epidemiological model in that it examines the social practices related to smoking in an attempt to understand how smoking is practised in that area; what rules and resources people draw on to smoke, or not, and the ways in which people, through their practices reinforce these rules and resources. One examines, then, the routine aspects of smoking in neighbourhoods: the sale of cigarettes, the places in which people smoke, who is smoking together, and how smoking is perceived.

Together these aspects give us an idea of the collective lifestyle of each of these neighbourhoods. We suggest that through this analytic tool we may be better able to understand how it is that disease rates distribute differently across areas, and that it could also serve to improve the development of more "context dependent" public health intervention efforts.

NOTES

1 Recursivity is taken here to signify that the social structure is both the medium as well as the outcome of social practices.

2 The concept of "race" and its utilisation in public health databases has been highly criticised (Krieger *et al*. 1993, Krieger and Fee 1994) for its underlying biological determinism and its racist potential. It will be used here given its ubiquitous use in the public health literature but with full knowledge that it is a highly controversial term.

3 An example of this is the Burnam scale which is used to classify people's socio-economic status through their education using three categories: no qualifications and less than ordinary level (exams usually taken at age 16), ordinary level and equivalents, and advanced level (exams usually taken at age 18) and equivalents or higher.

4 This is a classic structuralist position that can lead to deterministic conclusions such as those we question in social epidemiology, ie. structure constrains actors and determines how they will act.

5 John Rawls' book *A Theory of Justice* (1971) has greatly influenced thinking in 20th century political philosophy. Rawls argues that under conditions of impartiality, individuals would choose to distribute primary goods so that the worst off were as well off as they could be. This is what he terms the difference principal.

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THE EMPIRICAL PROBLEM:
SMOKING INITIATION AMONG PRE-ADOLESCENTS

The model that undergirds the empirical part of this dissertation is an operationalisation of the previous theoretical chapter. The theoretical argument hereinbefore will be operationalised using the example of smoking initiation among pre-adolescents (aged 11-14) in neighbourhoods and villages across the province of Québec, Canada. A cautionary note is warranted at this time. The example of smoking initiation among adolescents is used to test the theoretical framework of collective lifestyles. The interest is not in smoking initiation per se, but in its illustrative ability with reference to the framework. What follows then is a non-exhaustive discussion of smoking initiation, but one that highlights the pertinent elements of the phenomenon of smoking initiation with regard to the theoretical framework.

According to the Second Report on the Health of Canadians in 1996-1997 21% of adolescents aged 12-14 had tried smoking at least once (Health Canada, 1999). While not all adolescents who experiment with smoking will go on to become addicted, experimentation is a necessary step and is a key marker of eventual smoking uptake (Choi, Pierce, Gilpin, Farkas & Berry, 1997; Jackson, Henriksen, Dickinson, Messer, Bridges & Robertson, 1998). Furthermore, earlier initiation of smoking is associated with developing heavier use and earlier onset of related illnesses (Dovell, Mowat, Dorland & Lam, 1998). A recent Québec study also highlights the long term effects of smoking on populations reporting that from a list of cancers and cerebro-vascular illnesses, 29.4% of deaths among women and 51.2% of deaths among men can be attributed to smoking (Lévesque, Rochette & Gingras, 1998). As such, early adolescence is an important period in terms of the initiation to tobacco, and furthermore, smoking has serious long term public health consequences.

A vast literature exists regarding the determinants and predictors of smoking, some of which could be useful in modelling smoking initiation in children. Flay, d'Avernas, Best, Kersell & Ryan (1983) have designated five categories of correlates of smoking behaviour in youth: social, socio-demographic, personality, psychosocial and biological. More recently Conrad,

Flay & Hill (1992) identified six other domains of determinants (some of which are similar to Flay's but use different terminology) which are associated with the onset of smoking in adolescents: social environment, social bonding, social learning, pharmacological effects, intra-personal variables and knowledge, attitudes and behaviours. What these two sets of categories have in common is the inclusion of two subsets of determinants: those that focus on individual attributes, and those that cannot be attributed solely to the individual herself.

While the importance of research regarding individual attributes will not be disputed here, such research, when examined alone, tends to relate human behaviour to either fixed personality traits or pre-programmed psychological mechanisms. As a result, behaviour change focuses entirely on the individual. Often in epidemiological studies behaviour is examined in purely objective terms; prevalence or incidence rates of discrete social practices such as smoking or physical activity. These studies tend to examine behaviours, or what I have termed "social practices", in isolation from the norms, values, and ultimately the meaning ascribed to these practices. The reductionist and individualist approach that characterises this perspective divorces individual behaviour from the social and situational context in which it occurs (Dean, 1988) in a way analogous to the current use of lifestyle in the bio-medical literature. To address this shortcoming some researchers have attempted to reduce the tendency to blame the victim by turning their attention away from individual psychological correlates of smoking to interpersonal and social correlates. Interpersonal factors are those that demonstrate an association between an individual's relationship with others (what I refer to as social conditions) and the individual's behaviour.

An example of social conditions is the collective nature of smoking among children. Smoking is primarily practised as a group; both in its initiation and in the initial phases of its uptake. What most of the literature tends to focus on, is the environment or setting in which children feel inclined to take up and practice this collective activity. For the most part the settings that are most frequently studied are families and schools. Only one study examined the role of other

settings on smoking by including in their analysis participation in social activities or membership in organisations such as churches, clubs or sports clubs (McGraw, Smith, Schensul & Carrillo, 1991).

Of all the subsystems, the family environment is the primary intimate social network for diffusion of health-related knowledge to individual members. Sallis and Nader's model of mechanisms of family influence on health-related behaviours is an excellent example of a model that links various contextual processes to the patterns of interactions of family members and ultimately to their health-related behaviours (Sallis & Nader, 1988).

Cohort studies of the influence of families also demonstrate that exposure to smoking in the home (Pierce, Choi, Gilpin, Farkas & Berry, 1998) as well as parent/child relationships were found to be associated with occurrence of children's risk behaviour (Bertrand & Abernathy, 1993; Cohen, Richardson & Labree, 1994). Glendinning, Shucksmith & Hendry (1997) similarly found in their cohort of 13 and 14 year olds that perceptions of family support were inversely related to smoking. Intra-familial concordance and positive significant correlations between behaviours of different family members, including family aggregations of smoking behaviour, has also been documented (Patterson, Sallis, Nader, Kaplan, Rupp, Atkins & Seen, 1989). Bailey, Ennett & Ringwalt (1993) as well as Jackson et al. (1998) showed that parents' smoking role modelling behaviour has an indirect effect on children's initiation and escalation of smoking behaviour in grades five, six and seven. In addition, the attitude of parents towards children's smoking was found to be associated with the probability of being a current smoker for children in ninth grade (Murray, Kriyluk & Swan, 1985).

There is also an important gender effect explored in some of these studies. Whether within schools or outside of schools, several papers reinforce the importance of examining smoking initiation as a gender issue (Charlton & Blair, 1989; McGraw et al., 1991; Michell & Amos, 1997). Studies of a more epidemiological nature have also found that being a girl is strongly associated with

the uptake of smoking between the ages of 11/13 and 14/16 (McNeill, Jarvis, Stapleton, Russell, Eiser, Gammage & Gray, 1988). Parental influences appear to be more important in the case of girls; particularly with regard to their mothers (McGraw et al., 1991). It is suggested that girls tend to be home more often than boys, and hence, the reinforced importance of the family environment for girls. Boys, on the other hand, tend to be more easily influenced by social network members given that they generally spend more time outside of the household. Two studies also raise the issue of sport as a potential protective factor for boys (McGraw et al., 1991; Michell & Amos, 1997).

Within the school setting the most striking finding in the literature is the importance of peers. In some of the most recent literature several authors have attempted to identify typologies of peers either in the form of friendship groups (Michell & Amos, 1997) or youth types within schools (Glendinning, Hendry & Shucksmith, 1995) as a way of typifying those who adopt or reject smoking. According to these studies, different groups portray images and identities all of which are hierarchically structured. It is well known amongst children which groups smoke and which do not and the significance of smoking is highly related to pecking order, style, image and social identity.

While there is a substantial and growing literature on the influence of interpersonal factors on children’s smoking uptake, little is known about whether socio-structural variables, such as socioeconomic status (SES), affect the distribution of such risk behaviours among children (Lowry, Kann, Collins & Kolbe, 1996). Some research, however, has begun to examine the roles of behavioural versus socio-structural correlates of smoking among youth, but with contradictory findings. Using longitudinal data from The Young People's Leisure & Lifestyles Project, a study of Scottish youth, Glendinning, Shucksmith & Hendry (1994) examined the impact of both the individual family's social class and parents' smoking on adolescents' regular smoking (defined as currently smoking more than one cigarette per week). Interestingly, they find that adolescents' smoking is positively associated with parents' smoking independently of class background. Other studies find that

adolescents of low socio-economic status between the ages of 12-16 in the Netherlands tend to have social environments in which their parents and siblings are more likely to smoke than those in higher socio-economic groups (de Vries, 1995).

In a later study Glendinning et al. (1997) continue to question the relationship between social class and family behaviour by adding a deprivation index variable to characterise the deprivation level in the young person's neighbourhood from Census data and by using several other variables regarding family structure and perceived type of family relationship. Using data from a longitudinal survey of two age cohorts (13/14 and 15/16) conducted first in 1987 and then in 1989, the predictors of youths' regular smoking, defined as currently smoking at least one cigarette per day, was examined. In the final logistic regression model parents' smoking and family neighbourhood were both associated with smoking at follow up while family social class was not. As with the studies regarding context examined earlier in this dissertation, however, given that parents' social class and the indicator of social deprivation are both used in a logistic model, the observations are not independent and therefore there is an intraclass correlation that we cannot model.

In terms of neighbourhood resource-based correlates of smoking initiation, little is found within the literature beyond discussions regarding the local availability of cigarettes (McGraw et al., 1991; Wolfson, Forster, Calxton & Murray 1997) and particularly of cigarette advertising (Oakley, Brannen & Dodd, 1992; Pierce et al., 1998). Within a particular neighbourhood issues regarding the accessibility of tobacco products also underline the important role that adolescents play in the provision of cigarettes to their peers. The provision of cigarettes from one adolescent to another is not only a resource, but also may play a role in signifying group membership and standing. Another aspect of cigarette accessibility that can be considered is the ease with which cigarettes are procured locally from merchants (Altman, Wheelis, McFarlane, Lee & Fortmann, 1999; Lewis, Paine-Andrews, Fawcett, Francisco, Richter, Copple & Copple, 1996).

The association of neighbourhood and household attributes with smoking initiation in children is of particular interest for several reasons. Firstly, as we have seen, the household and the neighbourhood seem to play important roles both materially and behaviourally when studying smoking initiation. Secondly, studies have found that people who tend to be most connected to their locality are the young and the old (Heller, 1989). Children are captive audiences that is, for the most part, their practices are the reflection of their most direct environments, the home and the neighbourhood (Bronfenbrenner, 1986). They do not yet have the mobility that adults do which complicates the study of environment-person interactions. Given that young adolescents are likely to be mostly exposed to the environment that is in "walking distance" (Coulton, Korbin & Su, 1996), the relationship between neighbourhood attributes and smoking uptake in this population is a promising area of research.

By applying the argument developed in the first part of this dissertation to smoking initiation in pre-adolescents it will be demonstrated that the interaction between the interpersonal and the socio-structural, for any individual person, is in dialogue with both the meaning that she gives to smoking and social practices related to smoking; all of which influences the likelihood that she will begin smoking. The meaning given to smoking, and the attendant social practices of others, reinforce the interpersonal and the socio-structural aspects of this same environment. By testing the framework with the example of smoking initiation I place emphasis on the structural constraints and choices that individuals encounter in their day-to-day lives.

THEORETICAL FRAMEWORK

Components of the Framework

This dissertation is concerned with the relationship between social structure and social practices, which, in public health terms, can be expressed as the relationship between the individual experience of disease and the collective

generation of disease. The question that threads its way throughout the thesis is: How is it that social structure and social practices come to influence the disease experience of individuals? There are two facets to the framework underlying this dissertation. The first is a theoretical model for linking social structure, social practices and disease. The second is the utilisation of youth experimentation with smoking to test the model.

Theoretically I have proposed the heuristic of collective lifestyles to help understand the generation of disease that comes about from the interplay of social structure and social practices. One of the premises of the theoretical argument is that an examination of social structure (the rules and resources in society) and social practices (the activities that make and transform the world we live in) helps to understand how diseases might come to be differentially distributed amongst populations. Furthermore I argue that collective lifestyles are not random behaviours unrelated to structure but are choices influenced by, and influencing, structure. Within the theoretical framework I further develop the argument, in relation to collective lifestyles, that collective lifestyles are both the reflection of the structure and practices of groups as well as that of individuals, given that not every individual is influenced and contributes in the same manner to the structure and social practices in the environments in which they live and work. To pay homage to this premise I will examine both collective and individual attributes in relation to smoking initiation.

To operationalise the framework I adopt a distinction between the exclusive use of discrete variables to explain health phenomena and the utilisation of instantiations of the social structure and social practices. While I will utilise classic indicators of SES (variables such as income and education) to explore the empirical problem, I endeavour to contextualise these indicators in several ways. First, I explore the types of smoking-related resources that one finds in neighbourhoods. This provides for a partial unpacking of the social conditions related to SES that exist in each area. These resources are considered instantiations of the social structure. Then I explore people's social practices by examining the activities that

people engage in in their neighbourhoods in relation to smoking. Again, this contextualises SES by providing information about how it is lived. These activities are the practice side of the discrete variables; they are instantiations of social practices.

One of the first critical elements of the framework is a setting in which people's shared characteristics can be examined. For the purposes of the dissertation this setting is the neighbourhood. The definition of neighbourhood adopted here is similar to that of community given by Cheadle, Wagner, Koepsell, Kristal, & Patrick: "a group of individuals who share certain social, cultural or economic ties, and who may share a physical location" (1992, p. 345), but with one important distinction. Unlike a community, a neighbourhood by definition imposes certain geographical restrictions (Coulton et al., 1997). It cannot involve any group of individuals, but instead involves those living within its geographical boundaries. Most definitions of neighbourhood imply a degree of social cohesion that results from shared institutions and space. Indeed, much of the current work that uses neighbourhood as a unit of analysis derives its rationale from the fact that the interrelated needs and circumstances of families and individuals are grounded in a specific context of relationships, opportunities and constraints, which are to a large degree spatially defined or limited (Chaskin, 1997). Although the nature or extent of social interaction is not always specified in definitions of neighbourhood, there is often a connotation of connection that is inherent to them. This latter aspect of neighbourhood life will be an important attribute of the definition used here. The goal then is to analyse how attributes[9] of individuals, as well as attributes of neighbourhoods, can eventually generate, or not, disease states.

The aspects of neighbourhood life presumed to be associated with smoking initiation are analytically divided into three categories as an operationalisation of part of the collective lifestyles framework; characteristics,

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[9] All future references to "attributes" will denote all of the groupings of variables at either the individual or the neighbourhood levels.

resources and social norms (see Figure 1, p. 89). The neighbourhood characteristics include what Cheadle et al. (1992) have termed individual-aggregated measures. These measures are derived from individual-level information and are available only in aggregated form. Neighbourhood resources include those neighbourhood attributes that are over and above individual-aggregate measures, what has been termed supra-individual variables, (Macintyre et al., 1993), environmental indicators (Cheadle et al., 1992), or integral variables (Diez-Roux, 1998). These resources are the attributes of a neighbourhood that encourage or impede smoking. Finally, social norms are the collective social practices and meaning ascribed to smoking.

Within these neighbourhoods individuals are situated within households. For the purposes of the dissertation the household is chosen as the closest proximal unit to the individual given that our individuals are pre-adolescents and that the household probably best reflects the structural and behavioural attributes of and influences on them. At the household level characteristics include individual-disaggregated measures such as income and education. Household resources, in an analogous way to neighbourhood resources, are those material attributes that are supra-individual. These attributes will not, however, be examined in this dissertation. Meanwhile, family behaviour includes rules, norms and behaviours of family members in relation to smoking. The final link in the model is the individual who ultimately experiences disease. The result of neighbourhood and household attributes, and ultimately her individual characteristics, is expressed through exposure to risk factors.

In the second article of the dissertation, "Determinism versus free-will: Neighbourhoods, smoking and youth", I examine the left-hand side of the theoretical framework, that is, neighbourhood characteristics, resources and social norms. This article endeavours to examine the relationship between social structure, social practices and agency at the neighbourhood level. Furthermore it addresses the issue of what comprises context. Two arguments were developed in the first article that will be explored in the second article. First, community

characteristics and resources are in a recursive relationship and thus, for example, the more impoverished the members of a neighbourhood are, the less likely that there will be neighbourhood resources that are health-encouraging, and vice-versa.[10] Second, neighbourhood characteristics and resources are reflected and reinforced by social norms or practices. I examine in this article the relationship between the structural aspects of the neighbourhood, or the rules and resources (what are called neighbourhood characteristics and resources in the framework). Then, within the same article and using narrative materials, I examine how pre-adolescents interact with their resources; what their social practices are. By examining the relationship between structure and practices in these neighbourhoods I endeavour to understand how this relationship might impinge on smoking initiation. The interplay between these neighbourhood attributes brings about a risk rate and eventually a disease rate.

In the third article, 'Disentangling contextual from compositional effects. The I/we problem", I examine a greater part of the framework by analysing individual and neighbourhood level data. This article focuses more specifically on the relationship between individual and collective attributes in disease development by exploring the role of household characteristics and behaviour as well as neighbourhood characteristics and resources in generating the individual level risk factor, smoking initiation. I examine two things in particular. First, the joint role of household behaviour and household characteristics in influencing smoking initiation is explored. Second, I test the assumption that both neighbourhood level and household level attributes influence pre-adolescents initiation to smoking.

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[10] While the notion of recursivity is at the heart of my argument throughout the dissertation I am not able to test its veracity given the cross-sectional research design of the studies. I can therefore only examine the assumption that practices and structure function in a recursive relationship in terms of associations.

Hypotheses

Two sets of hypotheses drive the following two articles:

1. In the second article the hypotheses are two-fold:

a. Resources and characteristics of neighbourhoods are correlated; the more advantaged the neighbourhood the more smoking-impeding resources there will be.

b. Social norms will differ from one neighbourhood to another and will illustrate the complex relationship between rules, resources and people's agency in each neighbourhood.

2. In the third article the hypotheses are three-fold:

a. At the individual level of analysis (the household) characteristics and behaviours jointly shape the probability of being initiated to smoking.

b. There are aspects of the neighbourhood level (resources), other than classic indicators of SES, that influence the probability of being initiated to smoking at the individual level.

c. The effects of neighbourhood resources and characteristics on smoking initiation prevalence will explain some proportion of the variance in the individual likelihood of being initiated to smoking above and beyond household-level characteristics.

METHODS

CONTEXT OF THE STUDY

The empirical work carried out to support the theoretical propositions of this dissertation was conducted as part of a research program developed within the context, and as a spin-off of the Quebec Heart Health Demonstration Project (QHHDP), NHRDP 6605-3754-H which took place between 1993 and 1997. The QHHDP was a multisite, multifactorial, multisectorial community health project which aimed to reduce the prevalence of cardiovascular disease risk factors among the general population in Québec, Canada by decreasing cigarette smoking and dietary fat consumption and by increasing the regular practice of physical activity and the clinical control of high blood pressure. The project involved six sites, two in an urban area (Montréal), two in a suburban area (Laval) and two in rural areas (Bas St. Laurent). Three of the sites were experimental and three were control, with each one comprised of many communities matched on socio-economic variables (Potvin, Paradis, Laurier, Masson, Pelletier, & Lessard, 1992; Potvin, Paradis, & Lessard, 1994).

A cohort of children and their families was assembled from the classes of fourth grade children from the elementary schools in the six sites of the QHHDP in 1995. This cohort was being followed up in 1997, 1999 and 2000 as part of an ancillary study, NHRDP #6605-4006-210 and MRC study #97030P-35878-PSB-CFCA-38212. The former study's aim is to test a number of hypotheses regarding the intermediate role that families play between community health promotion and individual behaviour modification. In addition to the cohort project another ancillary study was conducted (NHRDP #6605-5254-002) between 1997-1999 to examine how community resources are associated with families' health-promoting capacity.

RESEARCH DESIGN

The research design of this dissertation is a cross-sectional, multi-level correlational analysis that links data from the children, their households and their

neighbourhoods. The children and their households are nested within cross-sectional neighbourhood surveys. The first level of analysis involves the children and their parents and the second level includes cross-sectional surveys of neighbourhood characteristics and resources performed respectively in 1996 and 1998/1999. It was paramount to be able to link all children and their parents with the higher-level units (the neighbourhood) in which they are nested.

The data used in this study therefore issues from several databases and several different points in time. There are certainly some methodological limitations, but also some advantages to using this research design. The child and household data is cross-sectional but I will be associating it with neighbourhood level data from two points in time; 1996 and 1998/1999. The assumption that I must make is that neighbourhood characteristics and resources are relatively stable over such a short time period. Given that this is a study interested in associations however, and not one that seeks to predict, I am less concerned with the question of causality over time.

POPULATION

The population of interest for this study is a group of pre-adolescents composed of all children of the 1995 cohort who were retraced in 1997, as well as their classmates in 1997, in all six of the sites participating in the QHHDP across Québec. The sampling unit is taken from this population and recruited through the 47 schools in the QHHDP sites. From this sampling unit we accessed households by soliciting the participation of the children's parents. Using both households' postal codes and the schools from which the children were sampled, 32 neighbourhoods were later constructed by the research team.

Two hierarchical levels of data make up the data bases. The observation units at the first level are constituted by the child and her/his parent(s)/caregiver(s). These two units of observation could be understood as two hierarchical levels, but for the purposes of this dissertation they are collapsed analytically into one level

given that there is only one child per family. Given this, the individual and household data are both used at the first level. The neighbourhood in which clusters of households are grouped form the second level of observation.

The overall number of eligible children in 1997, which includes all grade six children in the participating schools in addition to the children who were part of the original cohort in 1995, across the three sites was n = 1935. In addition to children who refused to participate, the non-respondents include children who were absent the day the questionnaire was administered, children from the cohort that we were unable to locate given that they had moved since 1995, and those whose parents refused to have them participate. Among the number of eligible children the response rates were 68% (n = 1313) and 49% (n = 954) for at least one of their parents. Given that data from both the child and at least one parent in 1997 is critical in order to construct the household variables and to locate the families within neighbourhoods, our sample was further restricted. Of the 954 families for which we had data for one parent/guardian, 810 provided a postal code that corresponded to one of our territories (please see the methods section of Article 2 for information on the ascription of territories). After collating the data from the remaining 810 parents' and children's questionnaires, we had the necessary parental data for n = 694 children; n = 296 from the remote area, n = 218 from the suburban area and n = 181 from the urban area. The attrition is due to missing data on any of the parental variables used in this study. Our final sample at level one is therefore 694 pre-adolescents and their households.

The representativeness of the sample of children and their households is somewhat of an issue. Many of the children from the initial eligible sample were lost given that we did not obtain the postal codes from their parents and therefore could not assign a territory to them. Given that the postal code is the only way of knowing where the child lives, I am not able to relay non-respondent data. I therefore cannot truly estimate whether the final sample is biased (for instance, it is plausible that parents who did not want to reveal their postal codes were more likely to be smokers). There is a further shortcoming to this study with regard to

the number of territories. While efforts were made to divide the postal codes obtained from the parents into the largest number of territories possible, 32 was the largest meaningful number of territories that could be created. Given the multi-level nature of the study design, 32 does not provide for much power when introducing variables at the second-level. This is primarily an issue for Article 3 and creates a limitation with respect to the number of variables that I could introduce into the model in this article. Future studies of this kind would do well to ensure as large a number of meaningful neighbourhoods as possible.

DATA COLLECTION

The data for children and their households was collected in the spring of 1997 from self-administered questionnaires distributed through the classroom. The neighbourhood level data issues from three data sources; the 1996 Canadian census, observation and interview data collected in the winter of 1998 and the spring of 1999 concerning community resources and finally qualitative data collected in the spring of 1999 through focus groups concerned with neighbourhood/town social norms.

Children's Data Base

All questionnaire data was collected in the spring of 1997. The children were guided by trained research assistants in class to complete the questionnaire (see Appendix 1 for the 1997 questionnaire) which was adapted to their age and their language of instruction (English or French). Each child's questionnaire was coded in advance with the same number as her/his parents in order to collate the data from members of the same family. The codes also served to maintain confidentiality and to prevent misclassification errors.

All children to whom the questionnaire was administered brought home with them a package which contained an explanation letter, a consent form, two questionnaires to be filled out by the two parents (or other responsible adults), and a return envelope within which the parents returned the questionnaire and the consent form (see Appendix 2 for a copy of the parent questionnaire and Appendix 3 and 4

for copies of the explanation letter and the consent form). The child brought back to her/his teacher the completed questionnaire(s) and consent form. The envelopes were retrieved by the person in charge of the data collection in the school and recalls were conducted as required. If neither a refusal to participate nor a response to the questionnaire was received from the parents within three days, a note was sent with the child to remind the parents about the questionnaire (see Appendix 5 for a copy of the recall letter). If no response to the reminder was received within the following five days, the child was given a new kit with similar contents and the same code number as the original. The household's six-digit postal code was requested from the parents in the parent questionnaire to permit a linkage between individual households and the Canadian census data from 1996.

Neighbourhood Data Base

What follows is a summary of the various pieces of the neighbourhood data base. For more elaborate detail of the neighbourhood data base construction the reader is referred to the methods section of Article 2.

The data at the family and neighbourhood levels were linked through the identification number attributed to the child and her/his parents and through the household's postal code. The neighbourhoods were first devised by plotting the postal codes of respondents. Using these geographic co-ordinates, we mapped them out and then traced a perimeter as a function of the "life" of the community, that is a 10-15 minute displacement time from the elementary school. This method was used to ensure that only the data from those families that fell within our created perimeters was used in the analyses. As an initial criterion at this stage, ten households were used as the minimum number of households necessary to create a territory. Two final adjustments to the neighbourhoods' boundaries were made first by extending the perimeters to natural barriers such as large green spaces,

large boulevards, railway lines and municipal limits.[11] Second we aligned the final boundaries to fit as closely as possible with the Canadian census tract limits (for the suburban and urban areas) and for enumeration areas in the remote areas. In our data there is frequently more than one Census tract per neighbourhood.

The postal codes provided by the parents also allowed for the construction of meaningful geo-statistic units in the rural communities. In these communities, postal codes correspond to municipalities; with each municipality corresponding to a 6-digit postal code. Using this methodology for ascribing territories, 32 meaningful territories were plotted around the 47 elementary schools from which the children and their households were recruited; 13 in an urban area; five in suburban areas and 14 in remote areas. The sample at level two is therefore 32. The household's six-digit postal code, permitted for a linkage between the individual households and the 32 territories defined above. Aggregated data for each of our 32 territories was then requested from Statistics Canada based on the long form from the 1996 Census. From this file, variables were created using the 1996 Census Dictionary as a guide (1996 Census Dictionary, 1997). Neighbourhood resources were inventoried in each of the territories by two trained research assistants and one senior researcher in the winter of 1998 and the spring of 1999 using a standardised observation grid developed for this particular project. Focus groups were also conducted in the spring of 1999 with sixth grade children from eight of the participating territories.

VARIABLES AND INSTRUMENTS

Individual Variables (Children)

Reported smoking was measured among all children (see Table 1, p. 104 for a list of all databases and variables). The question for smoking seeks to determine

[11] To increase the empirical validity of the meaningfulness of these final boundaries, a sample of urban and suburban territories were walked through with boundaries assessed through observation. When possible, local people were also asked to validate the boundaries of what they perceived to

whether the child has been initiated to smoking. Smoking initiation is the risk factor of the model. The child's gender and age are also assessed in the same questionnaire.

Household Variables

In the collective lifestyles model there are three categories of household attributes; resources, characteristics and behaviours. For the purposes of this protocol, however, household resources will not be assessed. This particular category requires further theoretical development. In the 1997 questionnaire, information on both household behaviours and characteristics was collected using the parent questionnaires. The behavioural variables are used as proxies for social practices and the household chracteristics are proxies for material attributes. Regarding household characteristics, the variables to be employed include: total household income and parents' education (see Table 1). Given that some children have two parents, and therefore two responses to each of the household variable questions, we chose the total household income reported by the father (in the case of two-parent heterosexual households), or the income reported by the single parent. It was decided that the household income reported by the father probably had the highest validity given the tendency for men to control household finances. We also analysed the highest level of education of one of the parents, regardless of gender. While there is a large literature with reference to the relative validity of male and female parents' education level with reference to children's health outcomes, I felt that in terms of the collective lifestyles of the household, the highest level of education of either parent would probably be most telling. With reference to family behaviour, parents' smoking status was used as a behavioural variable. Whenever at least one parent reported being a current smoker, the household was considered a smoking household.

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be their territory. In the remote areas the limits of the villages were considered the "natural" borders.

Neighbourhood Variables

Characteristics

In the collective lifestyles model there are also three categories of neighbourhood attributes; characteristics, resources and social norms. Resources and characteristics are considered instantiations of the social structure, with social norms instantiations of social practices. The distribution of the following variables from the 1996 Census permitted for an assessment of the territory's characteristics including: labour force unemployment among persons aged 15-24; the percentage of single parent, female households; the percentage of people with a university education, and the median household income. While some of these variables are the same as those at the household level, at the neighbourhood level they are aggregate, rather than individual, which permits for an analogous analysis at two levels in the third article of the dissertation.

Resources

The data collection which took place in the winter of 1998 and spring of 1999 provides an assessment of the neighbourhood resources pertaining to smoking in each of the neighbourhoods under study. While not all of the resources inventoried may have a direct impact on children's smoking initiation it has been found that resources that are generally available to families also have an impact on children's development (Coulton, Korbin, & Su, 1996). (refer to Article 2 for a more extensive discussion of the resource data collection and variables).

Social Norms

In the spring of 1999 focus groups were conducted with children in grade 6 from the schools that had participated in the 1997 study to evaluate the social norms of the territories with regard to smoking. Focus groups were conducted

with pre-adolescents from eight of the territories under study.[12] Focus groups were considered an optimal way of exploring norms and practices as group-based data collection methods are most propitious for evaluating collective characteristics. The interactive format of focus groups also permits for a potentially elaborate description of norms and practices as the members of the group react and add detail to each others responses. The territories chosen for the focus groups were selected based on extreme values for two sets of variables; the prevalence of smoking initiation among grade six students in the territory, as reported in the 1997 questionnaire, and the SES of the territory (estimated by comparing the unemployment rate and median household revenue for each territory) (see also Article 2 for further details).

DATA ANALYSIS

Article 2: Determinism versus free will: Neighbourhoods, smoking and youth

The first hypothesis of this article is that resources and characteristics of neighbourhoods are correlated; the more advantaged the neighbourhood the more smoking-impeding resources there will be. Given the relatively small number of territories in our study, zero order and partial correlations were used to examine the role that resources and characteristics play in the territories. The partial correlations were conducted to control for the effect of SES on the resource variable correlations.

The second hypothesis, that social practices will differ from one neighbourhood to another and that these practices will illustrate the relationship between rules, resources and people's agency in each neighbourhood, was analysed using both the quantitative and focus group materials in an iterative process. First,

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[12] It was deemed unnecessary to conduct focus groups in all 32 of the territories as the focus groups are used to illustrate the importance of examining social practices, not as a way of confirming any hypotheses regarding our study population.

the focus group materials were analysed through the lens of the collective lifestyles framework developed in Article 1 (please refer to the methods section of Article 2 for a complete description of the themes used to analyse the focus group data). Stories were created for each site. Then the correlational analyses were "re-read" as a function of the stories, that is, I sought to give meaning to the correlational data based on the information related to me by the children about local practices in relation to smoking.

Article 3: Disentangling contextual from compositional effects? The I/we problem.

To test the three hypotheses in Article 3, hierarchical linear models (HLMs) were used. HLMs allow for the analysis of hierarchically structured data, that is, data that is nested within higher level units. By adopting a multilevel approach, researchers are no longer restricted to working at a single level. Furthermore, by combining individual and aggregate levels together in one analysis, both the ecological and atomistic[13] fallacies can be avoided (Diez-Roux, 1998). HLMs constitute a generalisation of the linear model underlying multiple linear regression. The technique, however, allows for the analyst to relax the usual assumptions of constant slopes and intercepts and to test the adequacy of a variety of models that include fixed, non-randomly varying, and randomly varying slopes and intercepts (Bryk & Raudenbush, 1992).

In HLMs, the outcome measure is related to a set of individual level predictors X_i by the coefficients β_0 and β_1. The random effect for the level one model is given by e_i. It is assumed to be normally distributed with mean 0 and variance σ^2. The level 1 regression coefficients may be fixed or may vary randomly across participants. Any between subject variation in the regression coefficients is modelled via the level two model as a function of territory level predictors W_i and random effects μ_0 and μ_1. These random effects are assumed to

[13] This is also called individualistic by some authors.

be normally distributed with means 0 and variances τ_{00} and τ_{01}. For a model with only randomly varying intercepts, the percentage of the residual variance attributed to between subject variation (i.e., interclass correlation, ρ) is given by $\tau_{00/}(\tau_{00} + \sigma^2)$. This is also referred to as the variance component ratio where σ^2 is the within subject variance components and τ_{00} is the between subject variance component. The fixed effects γ are the average intercepts and slopes across all participants.

The final HLM equations for article 3 will therefore take the following forms:

Level 1

Equation: Dependant variable smoking initiation (0,1)

$Y_{ij}=\beta_{0j} + \beta_{1j}$Gender $+ \beta_{2j}$Age $+ \beta_{3j}$Household Characteristics $+ \beta_{4j}$Household Behaviour $+ e_{ij}$

where the Household Characteristics to be tested include the variable for total household income and the variable for parents' education level. Household Behaviour includes the variable for parents' smoking status.

Level 2

$\beta_0=\gamma_{00} + \gamma_{01}$Neighbourhood Characteristics $+ \gamma_{02}$Neighbourhood Resources $+ \mu_{0j}$

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$\beta_4= \gamma_{40} + \gamma_{41}$Neighbourhood Characteristics$_j + \gamma_{42}$Neighbourhood Resources$_j + \mu_{4j}$

where the Neighbourhood Characteristics to be tested include the % of university educated adults in each territory and the mean household income of each territory. The Neighbourhood Resources to be tested include, per territory: the % of private agents, the % of public agents, the % of community agents, the % of agents that permit smoking on their premises, the % of agents that sell smoking-related

products, the % of agents that forbid smoking on their premises, the % of agents that inform the public about the hazards of smoking, the % of agents with signs banning smoking, the % of agents with signs indicating that they do not sell to minors and the % of agents that survey for smoking on their premises (please see the Methods section of Article 2 for a full description of agents and Article 3 for greater detail on the steps taken to test the three hypotheses).[14]

[14] There is potential for confusion given the terminology used here. In this dissertation agents are established collective entities who by their actions permit the regulation or transformation of smoking. An example of an agent is a convenience store where cigarettes are sold. Agency, on the other hand, is the ability for people to deploy a range of causal powers. I maintain the utilisation of the term agents, despite the confusion that this might engender, given that it has become a commonly used term among members of the project from which this conceptualisation has arisen. For the sake of consistency then, I do as well.

ARTICLE 2:
DETERMINISM VERSUS FREE WILL: NEIGHBOURHOODS, SMOKING AND YOUTH

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ABSTRACT

Many studies are currently addressing the issue of contextual effects on health and disease outcomes. The majority of these studies fall short of providing a theoretical basis with which to explain what context is and how it effects individual disease outcomes. We propose a theoretical model, entitled collective lifestyles, which brings together three concepts from practice theory; social structure, social practices and agency. We do so in an attempt to move away from both behavioural and structuralist explanations of the differential distribution of disease outcomes among areas. Using the empirical example of smoking and pre-adolescents in 32 communities across Québec, Canada we illustrate the relevance of this framework. Social structure is operationalised as characteristics and resources; characteristics being the socio-economic aggregate characteristics of individuals culled from the 1996 Canadian Census, and resources are what regulates and transforms smoking practices. Information about social practices was collected in focus groups with pre-adolescents from four of the participating communities. Using zero-order and partial correlations we find that a portrait of communities emerges. Where there is a high proportion of more socio-economically advantaged people, resources tend to be more smoking discouraging, with the opposite being true for disadvantaged communities. Upon analysis of the focus group material, however, we find that the social practices in communities do not necessarily reflect the "objectified" measures of social structure. We suggest that a re-conceptualisation of accessibility and lifestyle in contextual studies, may enable us to improve our grasp on how differential rates of disease come about in local areas.

Keywords: Lifestyle, Context, Socio-economic factors, Social theory, Smoking

INTRODUCTION

It was well over ten years ago that Haan *et al*. (1987) reported their results from the Alameda County study supporting the hypothesis that properties of the socio-physical environment may be important contributors to the association between low socio-economic status (SES) and excess mortality. Later studies have also confirmed that the type of local neighbourhood is associated more strongly with perceived health than the larger region in which the neighbourhood is located (Blaxter 1990). Dramatic industrial restructuring and neighbourhood decline has also spawned increased concern for the measurement of community context (Coulton *et al*., 1996) in relation to disease outcomes. These studies converge to suggest that it may be fruitful to examine features of local areas that are potentially health damaging.

Since the publication of these important studies much attention has turned to the study of contexts as determinants of ill-health (Duncan *et al*., 1993; 1996; 1998; 1999; Macintyre *et al*., 1993; Popay *et al*., 1998). There remain, however, some fundamental problems with the notion of context. What is it? How do we know what context is? How do we theorise this concept and how can we operationalise it? The general aims of this paper are to highlight some of these problems, to suggest a theoretical model with which these issues can be addressed, and then to demonstrate empirically how the theoretical model can be examined.

Some Shortcomings of Context Studies

For the most part context studies tend to conceive of context in two ways: 1) as the defined area within which we capture variation by analysing the aggregate characteristics of individuals that happen to live there; and/or 2) as a location for particular environmental factors found within it that influence disease outcomes. Essentially, most studies view areas as being mediators of the social determinants of health, and thus, use areas as vehicles for exploring hypotheses

about the role of material deprivation (the former) or physical exposures (the latter) in the etiology of ill health (Macintyre *et al.*, 1993). In both cases areas are employed as the unit of analysis. In so doing these context studies make two assumptions: that context is either the reflection of the varying distribution of types of people whose individual characteristics influence disease (that is, similar types of people will have similar types of disease experiences wherever they live) or that the disease experience of particular types of individuals depends primarily on the attributes of the area, so that similar types of people have different disease status from one place to another (Shouls *et al.*, 1996).

So for instance when researchers engage in studies involving different contexts, such as neighbourhoods, they often include measures for the SES of neighbourhood residents. This practice has two flaws. First, it uses census-type classifications of areas as if they actually describe properties of the areas rather than characteristics of their residents (Macintyre *et al.*, 1993). Second, it uses SES as a proxy for neighbourhoods' conditions and processes and neglects any further conceptualisation of what these conditions and processes might entail such as institutional strengths and resources, availability of role models, etc. (Coulton *et al.*, 1996).

Alternatively, others have studied context by emphasising what have recently been termed "community-level indicators" (Cheadle *et al.*, 1992; Cheadle *et al.*, 2000), indicators that measure aspects of the physical, legal, social and economic environment in a community. Using Alameda County data Yen and Kaplan (1999) also examined area-based data which includes data such as the number of common commercial stores as well as the number of injury motor vehicle crashes and parks in each neighbourhood.

Such attempts to assess supra-aggregate attributes of areas assume the existence of area properties that are not based solely on individual characteristics (Macintyre *et al.*, 1993). They have been useful in pushing forward a comprehension of the role of context, but have remained in a conceptual void.

The difficulties in producing such studies are numerous. First, little work has engaged in the conceptualisation of what context is. Second, there is inappropriate data for this kind of inquiry. Most of the studies are largely driven by empirical observation leaving enormous room for speculation as to how the attributes explored, whether they be census data, or resource inventories, effect disease rates. Indeed, these community-level indicators are used in much the same way as SES; as a proxy for social structure.

One avenue that may assist us in understanding how context influences disease outcomes is by analysing context using practice theory, that is, the theory of the relationship between the social structures of society on the one hand, and the nature of human action of the other (Ortner 1989). Attention to the meaning people attach to the experience of place and how this shapes social action could help us understand what context is and how it might be related to disease outcomes.

We will therefore add a dimension to the study of context by exploring the relationship between social structure, social practices and agency to understand some of the mechanisms through which social phenomenon influence disease rates. An identification of plausible mechanisms may help avoid the confusion over the role of person and place characteristics on disease outcomes (Sampson, forthcoming). Guided by practice theory, we will examine a potential mechanism through which area of residence might influence ill-health using the example of smoking and pre-adolescents.

THE THEORETICAL FRAMEWORK: COLLECTIVE LIFESTYLES

Three major aspects of social theory enable a greater articulation of context's components; social structure, social practices and agency. The first component, the social structure, is defined as the factors involving individuals' relationships to each other and the attendant power relations. The structuration theory of Anthony Giddens (1984) explores structure as the rules and resources produced and

reproduced by agents in their everyday activities. "Rules relate on the one hand to the constitution of meaning, and on the other to the sanctioning of modes of social conduct" (Giddens 1984: 18). Resources on the other hand, "...refer to the modes whereby transformative relations are actually incorporated into the production and reproduction of social practices" (ibid). Rules and resources include positions occupied within the social and economic structures of society, such as race, SES, gender, etc. (Link and Phelan 1995). We purport that rules and resources should not be seen as external, inert materials possessed by individuals, but as a part of a process or set of relations. Rules and resources can enable and constrain and are differentially distributed (Calnan 1994). It is through the utilisation of rules and the access to resources that power relations are enforced and reinforced. However, using the methods that are normally employed in studies of context we generally cannot infer how these rules and resources manifest themselves or how they are employed by populations.

The social structure is not directly observable as it is but the objectification of a system of meaning. While well aware that there are numerous ways in which structure may be conceptualised, we choose to operationalise some aspects of structure in this paper using a few commonly used indicators of structure. First, we employ aggregate characteristics of individuals, which in most of the literature on context include indicators of SES such as income, deprivation or inequality indices, percent in poverty etc. (Duncan *et al*., 1993; 1996; 1998; 1999; Soobader and LeClere 1999; Diez-Roux 2000). Second, other instantiations of the social structure are what we entitle social "agents" and "resources"[1]. Given that our empirical interest is smoking and pre-adolescents, social "agents" are defined as established collective entities who by their actions permit the regulation or transformation of smoking. So, for instance, a store selling cigarettes is considered an agent. The influence of these smoking-related social agents on people is exerted through the provision of symbolic/material "resources" that either promote or impede smoking. Resources are that which qualify agents and permit the regulation or transformation of smoking. Cigarettes sales are thus considered a resource as is a non-smoking zone.

As with all concepts that characterise the social structure, the meaning ascribed to these concepts is best grasped by analysing people's social practices- their actions. We define social practices as the reflexive activities that actors engage in that make and transform the world. Anthony Giddens adds to his structuration theory the notion of "practical consciousness", individuals' tacit understandings of the "goings on" in the context of social life. Structure has no existence outside of the knowledge that agents have regarding their daily activities. This is embodied, for Giddens, in his notion of routinisation, the everyday activities that are continually being produced and reproduced. Routine, he argues, is integral both to the continuity of the personality of the agent, as well as to the institutions of society. The routinised activities do not just happen, but are "made to happen" by the habitual model of reflexive monitoring of action which individuals sustain in circumstances and co-presence (Giddens 1984: 64). We therefore operationalise social practices as the routinised activities of people, and the meaning ascribed to these activities, as related by the pre-adolescents. Within the literature on smoking an example of routinisation might be the places that people accept as smoking places, moments during the day when people smoke, etc.

The final key concept in this framework is agency. Agency is defined as the ability for people to deploy a range of causal powers; to "make a difference to a pre-existing state of affairs or course of events" (Giddens 1984; 14). Agency concerns events of which the individual is the perpetrator. Intrinsic to agency is power, as agency is the ability to produce an effect, and thus, to exert power. Furthermore, practice is inextricably linked to agency for even in circumstances where it appears that people have "no choice" they still have agency.

We developed a heuristic tool entitled collective lifestyles (Frohlich *et al.*, submitted) which brings together notions of social structure, social practices and agency to explain how health outcomes may come to be differentially distributed. The bio-medical treatment of lifestyle tends to view it as discrete and specific behaviours (such as smoking or physical activity) that influence disease

outcomes. Behaviour viewed in this way is stripped of most of the meaning ascribed to it, whereas the analysis of "behaviours" as social practices situates the behaviour in its social context. We therefore define collective lifestyles as not just the behaviours that people engage in, but rather, as the relationship between the social structure and social practices (Frohlich and Potvin 1999). As such, the act of smoking (frequently termed a behaviour) is re-conceptualised here as a social practice; one among other social practices in relation to smoking. Furthermore, smoking practices are not simply viewed as reactions to the social structure, but as both a re-creation and reaction to the rules and resources that are structured by and structuring people in their everyday activities. As such, collective lifestyles comprise both structure and practices. Lastly, we do not consider action to be solely constrained by the structure but as transformative. The power to transform structure through practices will be analysed in terms of agency.

Neighbourhood Smoking as a Reflection of Collective Lifestyles

In order to direct attention to the role of collective lifestyles in the production of ill-health, delimiting areas significantly focuses the task. One area in which we can examine this relationship is the neighbourhood given that neighbourhoods are where individuals encounter social structure, live out life courses, and interchange with many of the people having profound influence on their life choices (Bartley *et al.*, 1998). Using neighbourhood as the unit of analysis we can ask ourselves how people make sense of and act upon their environments with regard to their health and, furthermore, what is the relationship between material risk, individual experience and action at the individual and collective levels (Popay *et al.*, 1998).

By focusing on neighbourhoods as the nexus of collective lifestyles we will also be emphasising the importance of the micro-contexts of social life. It should be made clear that collective lifestyles are a local manifestation and mediation of societal and personal processes. These local settings are not just

simply reflective of macro-level socio-economic and political forces but also rework these forces to varying degrees (Kleinman 1995). Each neighbourhood is influenced by larger societal forces while the materialisation of these influences will differ based on local particularities. Collectives lifestyles can thus be viewed as local ways of being which work through individual and collective involvement in local rules, resources and practices.

To illustrate this theoretical framework, collective lifestyles will be examined with the example of smoking and pre-adolescents. Rather than operationalising context solely through aspects of the individuals living in areas (census data) or the material attributes of the area (such as community-level indicators), we suggest an examination of the relationship between the aggregate characteristics of individuals (herein called characteristics), neighbourhood attributes (herein called resources) and people's social practices to help grapple with the mechanisms that bring about differential rates of disease outcomes. Generally within the public health literature it is held that the relationship of deprivation levels and resource availability will be negatively related; with more affluent neighbourhoods tending to have residents who are more aware of, and who have greater access to, facilities and services (Chaskin 1997). This hypothesis has rarely been tested, however. Furthermore, inventories are beginning to appear of resources available within defined areas, yet we are unable to determine whether and how they are used by people within the area.

To move the research in this area forward we firstly examine the relationship between the characteristics and resources of the neighbourhoods participating in our study with the hypothesis being that they are highly correlated; the more advantaged the neighbourhood the more smoking-impeding resources there will be. Second, using focus group materials obtained with pre-adolescents we evaluate the relationship between structure and agency through the pre-adolescents' descriptions of people's social practices in relation to smoking. The hypothesis is that the social practices will elucidate the relationship between

the rules and resources and people's agency in each neighbourhood and that this relationship will differ based on local particularities.

RESEARCH DESIGN AND METHODS

The Study and Neighbourhoods

The study results presented here are part of a project examining how community characteristics are associated with families' and children's health behaviours (cigarette smoking, physical activity and fat consumption). More specifically, the objective of this project was to develop a methodology to characterise neighbourhoods in order to understand the links between community characteristics and individual ill-health outcomes.

A cohort of families was assembled in 1995 based on the selection of a fourth grade index child in 47 participant elementary schools in municipalities across the province of Québec, Canada (Potvin *et al*., 1997). These same children were questioned again in 1997, when in the sixth grade, as were their classmates who were not participants in the original cohort. Children's smoking status was assessed at this time by their response to the following question, 'Have you ever smoked a cigarette, even just a puff?". All children who responded with one of the following options were deemed "initiated to smoking"; "Yes, 1 or 2 times"; "Yes, 3 to 10 times"; or "Yes, more than 10 times". Otherwise, the children maintain their "uninitiated to smoking" status. Representation from a remote part of Quebec, a sub-urban area and an urban area was ensured. Given our interest in characterising the different neighbourhoods, we began by clustering families based on the postal codes provided by children's parents in a separate questionnaire. Using these geographic co-ordinates, we mapped them out and then traced a perimeter as a function of the "life" of the community, that is a 10-15 minute displacement time from the elementary school. This method was used to ensure that only the data from those families that fell within our created perimeters was used in our analyses. By following this procedure we constructed

32 territories[2] : 13 in an urban area; five in suburban areas and 14 in remote areas. Two final adjustments to the territories' boundaries were made first by extending the perimeters to natural barriers such as large green spaces, large boulevards, railway lines and municipal limits[3]. Second we attempted to align the final boundaries to fit as closely as possible with the Canadian census tract limits (for the suburban and urban areas) and for enumeration areas in the remote areas.

Components of the Framework

Agents and resources

Given that the population of interest in this research was pre-adolescents, we chose to collect resource information regarding how conducive the immediate environment is towards smoking for youth. With this in mind, we chose seven resource variables, two of which encourage smoking and five of which discourage smoking. The former include whether agents: permit smoking on their premises (permit); and sell smoking related products (sale). The latter include whether agents: forbid smoking on their premises (forbid); inform people about anti-smoking products or about the hazards of smoking (inform); have signs banning smoking on their premises as required by the Provincial law (signs-ban); have signs indicating that they do not sell to minors (signs-minors); and have a person responsible for the surveillance of smoking within the agent (surveillance).

All the resource variables represent the proportion of agents in a territory that provide the given resource. To collect this data, an exhaustive list of agents that could potentially be involved in the reproduction of smoking in the 32 territories was drawn up based on lists of public institutions, community organisations and private businesses provided by municipal administrations. Brief telephone interviews were conducted with each agent during which we asked whether they offered products, services or information concerning tobacco and smoking. Having established a comprehensive list of all agents involved in the regulation of smoking in the 32 territories we created groupings of agents for sampling purposes based on their hypothesised relationship to the reproduction of

smoking[4]. For each of the territories we randomly sampled up to three agents for each of these groupings present in the territories. In the case of territories that had fewer than three agents per grouping we sampled the maximum available. A consequence of this sampling strategy is that, in theory, the sampling proportion for any given agent category varies across territories. Because the corner/grocery store category is the most common, and varies remarkably across the territories, this is the category most affected by this issue. In order to reduce the bias introduced by this sampling scheme, the denominator for each of the resource variables was derived using only relevant agent categories (see Appendix A for a listing of the agent categories used as the denominator for each resource).

Three trained research assistants, with the aid of an observation grid, visited the agents to evaluate the presence or absence of each of the smoking-related resources. With the exception of signs-minors and sales, assessed using observation only, resources were evaluated through both interviews and observation.

Characteristics

1996 Canadian census data was requested from Statistics Canada for each of the 32 territories. Two variables used as indicators of SES were chosen based on past research in which they were found to be powerful predictors of health-related outcomes (Frohlich and Mustard 1996): the proportion of unemployed persons aged 15-24 (unemployment) and the percentage of single parent female households (single-mom). Given the frequent utilisation of income and education as indicators of SES, median household revenue (income), as well as the percentage of people with a university education (education), were also examined.

Social practices

Focus groups were conducted in the spring of 1999 with pre-adolescents from eight of the territories under study[5]. The territories chosen for the focus groups were selected based on extreme values for two sets of variables; the

prevalence of smoking initiation among grade six students in the territory, as reported in the 1997 questionnaire, and the SES of the territory (estimated by comparing the unemployment rate and median household revenue for each territory). Results are given from the focus groups of only four of these territories given space limitations.

The principals and teachers from each of the selected territories were contacted. Only one school refused to participate. The teachers were then requested to choose two sets of six children; one set of which they suspected had begun experimenting with smoking and the other group for whom the teacher believed the children had not yet begun to smoke. The groups were comprised of boys and girls with a heterogeneity requested within each group (loners, groups of friends, etc.)[6]. A consent form was sent to the homes of each of the selected children. At this stage there was a 100% participation rate.

The focus groups all took place at the school during school hours. The discussion was tape-recorded with permission from the children. The focus groups ranged in length from 35-75 minutes. Each focus group began with a general discussion about the territory. This was followed by an exercise which served to centre the discussion that followed. Each child was requested to draw his/her neighbourhood paying particular attention to the parts of the neighbourhood where people spend their time. (See Figure 1 for an example of the drawings). The remaining part of the focus group was structured around several themes: the settings in which people smoke, the role of peers in smoking, the meaning of smoking in the territory and the accessibility of smoking. By discussing the smoking habits of all members of the territory these questions sought to evaluate the general significance of smoking in the territories. The interviews were then transcribed verbatim.

Analyses

All data regarding both characteristics and resources were entered and analysed using the Statistical Package for Social Sciences for Windows Version 9

(SPSS/Windows). Given the relatively small number of territories zero order and partial correlations were used to examine whether context is the reflection of both resources and characteristics of the territories[7]. The partial correlations were conducted to control for the effect of SES on the resource variable correlations.

The focus group materials were analysed through the lens of the collective lifestyles framework developed in the earlier part of this paper. Stories were created for each of the four territories by searching for the following themes; the smoking-related routinised activities of people in the territories; the ways in which people were described to use smoking resources as a medium through which to express power; how smoking practices are related to constraints and opportunities in the territories; and how capable people are perceived to be to deploy smoking resources.

After highlighting the pertinent materials from the focus groups, both the quantitative and qualitative data was analysed together in an iterative process to give meaning to the quantitative data and to situate the qualitative data in a larger context.

RESULTS

Resources

Table 1 gives the distribution across the 32 territories of the variables examined in this study and highlights the relative position of the four territories that participated in the focus groups. There is important variation in all of the variables under study here.

Table 2 shows the results from the correlational analyses. The results suggest considerable consistency among smoking resource variables. Generally speaking, where there are greater proportions of agents that have smoking-encouraging resources there are also smaller proportions of agents that offer smoking-discouraging resources.

The three dominant and structuring smoking-resource variables are permit sale and forbid, as all three are significantly correlated with an important number of other resource variables. The larger the proportion of agents that permit smoking on their premises, the more agents that sell cigarette-related materials in a territory and the smaller the proportion of agents having signs indicating that they ban smoking. There is a further consistency in that the higher the proportion of agents that forbid smoking on their premises in a territory, the smaller the proportion of agents that sell smoking related materials and the greater the proportion of agents that inform people about the hazards of smoking. There is, however, a lack of significant correlation between the proportion of agents that sell smoking-related materials and the proportion of agents who exhibit signs indicating the non-sale of cigarettes to minors in a territory. This absence of correlation suggests a random pattern of compliance with the federal law C-71 which makes the sale of cigarettes to youth, and the non-compliance with the obligatory utilisation of signs indicating that the owner does not sell cigarettes to minors, an offence in any public place as well as in places where people normally have access.

Resources and Characteristics

With regard to the characteristics, the unemployment rate for those aged 15-24, the percentage of female single-parent led families, as well as the proportion of university educated people in a territory are the socio-demographic characteristics most significantly associated with the resource variables. Concerning education, its relation to agent regulation of smoking is in the expected direction; the greater the proportion of university educated people there are in a territory, the lesser the proportion of agents that permit smoking on their premises (r = -.39) and that sell cigarette related products (r = -.46). Interestingly, the same relation holds for single parent female-led families. Otherwise, the higher the proportion of unemployed 15-24 year olds in a territory, the more likely one is to find resources that are discouraging of smoking such as

agents that forbid smoking (r = .49) and that control smoking through surveillance (r = .38). There is little correlation between income and the resource variables.

These results are both expected and surprising. With reference to education, an image begins to form of territories where there are both large proportions of socio-economically advantaged people as well as large proportions of smoking-discouraging resources. Both of these instantiations of the social structure go in the direction that one might have suspected from past literature. The results in relation to single-moms and unemployment are both surprising, however. In most research female single-parent status is associated with low SES. In our territories, however, there is a significant correlation between the proportion of female single parents and the proportion of those having a university education (r = .52). This correlation is most striking in the urban and remote territories.

Partial Correlations

The partial correlations are useful to highlight the relationship between characteristics and resources at the territorial level. Education was partialed out as it is the SES variable most correlated with the resources and for which we have the most power of explanation. These analyses reinforce the earlier zero-order correlations in that pairs of smoking discouraging resources tend to be more present when either a territory has higher proportions of university educated people or a higher proportion of single, female-led households.

In the partial correlations the positive relationship between the proportion of agents that permit smoking in a territory and the proportion of agents that sell cigarettes is diminished when education is controlled for (with the r going down from .72 to .67). The proportion of university educated people in a territory also decreases the relationship between the proportion of agents that have no-smoking signs and the proportion of agents that permit smoking (r changing from -.52 to -.46). Partialing out education thus leads to an attenuation of the relationship between resources thus suggesting that the pattern of resources in a territory is in

part a function of the education levels of its population. This same attenuation is witnessed between these two resource variables where there are large proportions of single parent female-led households, in this case the *r* changing from -.52 to -.42. Lastly, the relationship between the proportion of no-smoking signs found in a territory and the proportion of agents that sell smoking related materials is attenuated by both the proportion of university educated people in a territory as well as the proportion of single, female-led households (*r* = -.60 changing to -.54 and -.51 respectively), again suggesting that these characteristics are related to the proportion of smoking discouraging messages being emitted by agents in a territory.

Focus Groups

Steinback[6]

Steinback was originally chosen for this study because of the grade six children in this territory participating in the study, 48% had already been initiated to smoking, the unemployment rate for people aged 15-24 was very high at 29% and the median household income low at $26,478. It is situated in a remote area. In 1996, the village of Steinback had a total population of 1660 people.

In the focus groups the children reported that pre-adolescents and adolescents have a complicit relationship with respect to smoking; the older children encourage, and often initiate the younger ones to smoking. The older ones also help buy cigarettes for the younger ones. According to the children, there is also a local store that sells cigarettes to anyone regardless of age. There is no stigma attached to smoking, smokers are perceived to be normal. Furthermore, adolescents walk openly in town with cigarettes in their hands. There is a general tolerance and lack of surveillance regarding smoking in the village and smoking is not viewed to be a "marginal" activity.

Children report that they can smoke in public places without being disturbed, as evidenced by the local practices of youth. The quantitative data

reinforces this given that Steinback has the highest proportion of agents that permit smoking on their premises (55%) of the four territories under study. There is a bowling alley attached to the local bar where children are under no surveillance. They often frequent this spot to smoke. Young people smoke nearly everywhere. In fact, there is even a special place dedicated to smoking in the village called the "wall". The "wall" is a large cement block, named as such by the children, where they go to smoke. The local children all know that if they go there they will find others who are smoking.

The children further reported that they are not allowed to smoke in and around the primary school. The quantitative data also reveals that there is quite a lot of surveillance amongst the agents that were part of our sample (50%). What transpires, however, is that the moment children enter junior high school (age 11-12), there is no longer any surveillance of pre-adolescents' smoking on the school grounds (the primary and junior high school are adjacent to one another). According to the children interviewed, most children begin to smoke seriously at school around this age during the breaks between classes. Indeed the children voiced a fatalism with reference to their future abilities to refrain from smoking once they began secondary school; "As soon as we arrive at the other side (secondary school), we will start to smoke". The choices structured by the situation that youth find themselves in are limited. There is an expectation that once one moves from one school to another one will smoke. This fatalism is echoed by the children's elaboration of their belief that adults are incapable of influencing or stopping their children's smoking habits as there are simply too many children who smoke and therefore any attempt to ban smoking is too monumental a task.

Ellenburg

Ellenburg is a relatively wealthy suburb of Montréal with a median household revenue of $53,732 and a low unemployment rate for those 15-24 years old at 10%. Its population in 1996 was 13,905. The population is largely

comprised of young families. Ellenburg's child respondents to our questionnaire in 1997 were initiated to smoking in relatively low numbers (20%).

Interestingly, the moment we began to speak of smoking in their territory the children from the focus groups in Ellenburg began to describe the use of illegal drugs, citing marijuana as well as heroine. Along with a discussion regarding drug use and smoking, the children also spoke of adolescent gangs, gangs who terrorise the territory with violence, graffiti and drug selling. Indeed they went so far as to suggest that these gangs have a total reign on the territory.

It is not surprising, then, that according to the interview material the adolescents are not at all bothered if seen smoking. Adults would not intervene anyway given that they could be physically attacked by the teens if they attempted to intercede in someone's smoking. Generally the children feel that adults in the territory do not know how to handle teens and particularly the situation with the gangs.

To procure cigarettes the children are aware of a black market of sorts that exists in what they call "basement stores". These stores sell cigarettes to anyone, regardless of age. The children therefore find it easy to obtain cigarettes if they desire. The children also mentioned that the adolescents help the younger children get cigarettes from the legitimate sources. So, despite the resource information gathered, which paints a portrait of an anti-smoking territory, with only 27% of the agents inventoried selling smoking related paraphernalia, 82% of the agents inventoried forbidding smoking on their premises, 44% of agents showing no-smoking signs, and an important percentage of agents who display signs indicating that they do not sell to minors (50%), children are able to obtain cigarettes in circuitous ways.

Generally speaking, the younger children do not spend much free time with the adolescents. Several respondents did mention, however, that they find that the older children try to get the younger ones to smoke. They suggest that the older ones do this to increase their control over the younger children.

It was felt that adults in Ellenburg smoke substantially and that even in public areas where it is marked that one is not supposed to smoke, adults do regardless. The children find that adults lack respect for non-smoking areas. This information is also in contradiction from that which we cull from the resource data which indicates that cigarette smoking is only permitted in 35% of the agents inventoried. Despite this apparent vigilance it appears that both children and adults smoke openly and with little respect for what appear to be fairly strict regulations.

Similarly to children in Steinback, these children were fatalistic regarding their future as non-smokers. They believe that they will most likely be unable to resist the temptation of smoking once they move on to secondary school where smoking is accepted. Again, the choices available for children in this territory are grim if one wishes to remain a non-smoker. When taking into account the narrative materials, it appears that at all levels, both structurally and in terms of social norms, smoking is encouraged.

Aurelius

Aurelius is another remote town not 50 kilometres from Steinback. It is situated on lake Aurelius, a lake which provides for a significant amount of tourism to this village in the summertime. The children of Aurelius who responded to the 1997 questionnaire had tried smoking in relatively high numbers (37%). Aurelius is somewhat of an island, surrounded by two economically disadvantaged towns. It is a relatively prosperous territory with a median household revenue of $30,013 and a 17% unemployment rate for people aged 15-24. Much of the local economy is supported by the lumber industry although two companies have recently opened up in the town, one of which produces cement. The local population in 1996 was 865 people.

The children who participated in the focus groups reported that most children their age hide their smoking, if they do smoke, given that most of the adults in the village believe that smoking is not good for children and that being

seen doing so gives rise to a negative reaction from adults. The children report that there is an important surveillance of smoking by adults. This surveillance by adults is complimented by the agent information in which we find that 77% of all agents inventoried restrict smoking on their premises.

Around the age of 14-15, however, there is a tacit understanding that it is permitted for children to smoke. Smokers of this age were described, by the younger children however, as being "bad". The smokers were also viewed to be youth with problems; "The adolescents smoke to forget their problems like heart break or being broke". Generally speaking, the younger children and adolescents do not spend their free time together as the younger ones are scared of the older children, particularly the older adolescents who hang out in gangs (who are, incidentally, also those that smoke). It is interesting here to note that smoking is considered to be a deviant behaviour, something that marginal youth engage in.

According to the interviews, it is nearly impossible for children their age to procure cigarettes in the town's stores. The law forbidding sale to minors under the age of 18 is strictly adhered to by all cigarette vendors, report the children in the interviews. Despite the tight restrictions on smoking and minors in the town, there is a fairly large percentage of agents inventoried that sell cigarettes (53%). However, the number of agents that both sell cigarettes and show signs indicating that they sell cigarettes is fairly low 20%. There are, furthermore, many non-smoking public places in town and at school it is strictly forbidden to smoke. The general portrait of this territory, according to the children, is of an environment which is intolerant to smoking.

Dubos

Dubos is an urban territory bordered by a railroad track and a main traffic artery. Of the children from this territory who participated in the 1997 study, only 26% had began experimenting with smoking. This territory is very disadvantaged with a 16% unemployment rate for persons aged 15-24 and a median household

revenue of $23,995. It had a total population of 6750 in 1996, much of which is first generation immigrant.

Of the children interviewed they associated smoking among youth with delinquent, non-conformist activities; smokers are children who have problems at school, who tease other children, who tend to be violent and mean. Young people in this territory often feel incapable of expressing themselves and smoking helps them to do so. In terms of capability, it is intriguing to consider that the children themselves interpreted other youth's smoking as a way of expressing themselves, suggesting that the possibilities for youth expression are limited. The practice of smoking is associated with being mature, of trying to be respected. Many of the children interviewed also felt that youth smoke in the territory when their parents pay no mind. Generally speaking, adolescents are poorly perceived by people in the area; there is an antagonistic relationship between adults and adolescents.

The children voiced knowledge, however, that children's smoking is under surveillance in the territory and that it is fairly difficult for under-aged children to obtain cigarettes in stores. Indeed, 30% of the agents have active surveillance of smoking activities on their premises and 79% of the agents forbid smoking, this despite the fact that several stores in the area sell cigarettes to children who are under-aged. The school also sends mixed messages to the children. There are no-smoking signs all over the school but the teachers smoke.

DISCUSSION

Our analysis of the relationship between the characteristics and resources of the 32 neighbourhoods leads us to conclude, given the strong correlations between the proportion of socio-economically advantaged people in a territory and the proportion of smoking-discouraging resources, that there are consistencies in the collective lifestyles of these territories in terms of our operationalisation of the social structure. When we turn to the focus group materials, however, we quickly realise that people's social practices are not always the direct reflection of

the instantiations of the social structure, suggesting that people have different ways of interacting with and interpreting the social structure. People do not just react in generalisations to structure but understand and interact with it in different forms.

We thus find that the narratives provide invaluable insights into the dynamic relationships between human agency and wider social structures that underpin inequalities in health (Popay *et al.* 1998). Narratives have embedded within them explanations for what people do and why - which, in turn, shape social action. Indeed, without the narrative material our interpretation of the quantitative material would have been much less rich and potentially erroneous as we have generalised that the "objective" aspects of territories yield differential disease outcomes rates without any conception of how these "objective" aspects are related to people's social practices.

Both the theoretical model, as well as the methods used, help take a first step towards a comprehension of the mechanisms through which contextual inequalities may influence disease rates. Essentially, in the same way that education, occupation, or income may be mediating factors in the relationship between social class position and disease, so too social, economic, and cultural features of areas may be some of the mediating factors in the relationship between class and disease (Macintyre *et al*., 1993). Indeed, as a first indicator of a plausible mechanism in the generation of differential disease rates, we find from the correlational analyses of the resource and census data that the greater the proportion of educated people there are in a territory, the smaller the proportion of tobacco related sales in a territory and the smaller the proportion of public places in which one is permitted to smoke.

The knowledge that cigarette sales and other smoking-encouraging resources may be distributed differentially based on the SES of territories is important. Our findings, however, suggest that one cannot rely on this mechanism to function in a completely synonymous fashion from one territory to

another given each territory's own particularities - what we have termed collective lifestyles. While generally speaking, from the correlational analyses, there is a tendency for territories with higher SES to also have greater proportions of smoking impeding resources, this relationship is not always manifested in the social practices of people in the territories. In other words, one is not able to generalise that the effects of SES and the resources will function in the same way from one territory to another with regard to disease outcomes.

Generalities are also insufficient if one considers that the routines described by the pre-adolescents across the four territories differed vastly from one place to another. The pre-adolescents were acutely aware of the everyday activities of people in their territory, activities ranging from; illicit sales of cigarettes in Ellenburg, to the utilisation of the "wall" as a place dedicated to youth smoking in Steinback, to the strict adhesion to the law by cigarette merchants in Aurelius and the interpretation of smoking as a way of expressing oneself in Dubos. These routines inform us as to the awareness that people have of the social practices of others around them and also speaks to their notions of agency as these practices will either constrain or permit future activities.

It may be useful then to reconsider the way that questions of accessibility and agency are implicitly conceived of in the majority of context studies. What we cull from the focus group data is that accessibility in not just a question of "objective" choice, or the resources that are present in one's territory, but rather can be understood in terms of the ways in which the rules and resources manifest themselves and are employed by populations. For example, according to the resource data, Ellenburg has a significant number of resources that restrict smoking. It becomes clear however from the focus group data that pre-adolescents in this territory do not feel, despite the resource data, that there is much possibility of remaining a non-smoker given the social practices of people in the territory. Alternatively, the pre-adolescents of Aurelius speak of the normativeness surrounding smoking in their town; the fact that smoking is frowned upon by adults and that it is difficult for children to procure cigarettes.

We extract from the narratives that the structure does not just sit there constraining actors by its formal characteristics (Ortner 1984), but that it recurrently poses problems to actors; structure is practiced, lived in, enacted and challenged. The structure is both enabling and disabling with regards to smoking practices and the pre-adolescents are both aware of the dynamics and participate in it. Constraints in this sense are not equivalent to not having choice, if so people would simply be reacting to structural forces. When the children of Ellenburg voice fatalism with regard to their future as non-smokers they are not passive actors in this relationship but are themselves creating conditions under which it will be difficult to remain non-smokers.

Amartya Sen's capability theory (Sen 1992) proposes a way of articulating the relationship between resources that is not just based on accessibility. Briefly, Sen's notion of equality moves beyond a conceptualisation based on goods themselves, or on the utility extracted from goods, by focusing instead on what people are actually able to extract from goods given their particular needs, abilities and desires. This he terms capabilities. Rather than basing one's evaluation of equality on access to resources he argues that we should examine the choices structured by the situation that individuals are in. Comparisons of resources or primary goods will therefore be insufficient as a basis for assessing equality. Empirically, by focusing on capabilities rather than just accessibility to resources, people's social practices inform us as to their constraints and opportunities.

In terms of capability theory, the children of Aurelius describe numerous social practices that inform us as to the opportunities that children have with regard to abstention from smoking. While there are many agents that sell cigarettes, and few agents that display signs indicating that they abide by the law forbidding sales to minors, the children are aware of the law and know that procuring of cigarettes is close to impossible. In Steinback, on the other hand, the observation that parents have no control over the children's smoking practices and

that smoking is permitted at the junior high level gives indications of the constraints and opportunities these children face.

CONCLUSION

Theoretically this research attempts to elaborate on the link between structure and agency. In doing so, it confronts the age old philosophical debate, traced in Occidental societies back to classical Greek texts, of the role of free will versus determinism. While there has not been enormous debate centred on this question in contextual and inequalities research, some are beginning to realise its importance and place the issue on the table (Popay *et al.*, 1998; Muntaner *et al.*, 2000). The argument developed here is that disease outcomes are not simply the result of the structure having acted on individuals, but rather, that individuals "act out" the structure in their practices and these same practices feed into the larger system, thus recreating conditions that make the structure possible.

This proposal has both methodological and theoretical ramifications on the study of context. In distinction from classic epidemiological studies, we consider that the relationship between social structure, on the one hand, and agency, on the other, is recursive. Giddens (1984) describes structural properties of social systems as being both the medium as well as the outcome of recursively organised social practices. Structure and agency are recursive and co-dependent. Structure is not possible without action because action produces and reproduces structure and meaning. Action is not possible without structure because action begins with a given structure that was the result of prior actions. The mechanisms of recursivity are therefore, at once, both individual and collective, as the individual "acts out" the practices that feed into a larger system. It is not only the structure that acts on individuals, but individuals are constantly re-creating the conditions that make this structure possible. In this way, individuals, and their social practices, are not just passive reactions to the structure. Indeed, it is clear from the focus group data that people in the territories are not simply passive receptors of smoking messages emitted by the structure of their territories; they are busy

creating and re-creating the structure in their everyday practices; by creating the "wall" in Steinback, by selling cigarettes in the "basement stores" in Ellenburg, etc.

There are, however, important caveats to employing structuration theory in studies of context. First, we cannot claim with empirical certainty that the relationship is recursive; the methods used in this study and the analyses are insufficient to truly claim that the relationship is one of recursivity. Second, in terms of policy making, the notion of recursivity poses an important problem; where and how we do break the cycle with interventions? Structuration theory has the disadvantage of being somewhat weak in explaining change and emergence in social systems. Despite these shortcomings, however, utilisation of practice and capability theory may assist in augmenting future understanding of the ways in which local areas affect disease outcomes.

NOTES

1. While the term resources most commonly connotes a positive object, particularly in reference to health resources, we opt to define resources as being potentially bidirectional, that is, some resources may be smoking-encouraging while others may be smoking-discouraging. It will be argued that what may seem, a priori, to be a smoking-encouraging resource may in some contexts be viewed by social actors as smoking-discouraging, depending on the local meaning attached to the resource.

2. We use the term "territories" throughout the rest of this paper when referring to communities or neighbourhoods. The term "territories" is deemed more appropriate given that it refers both to urban and sub-urban neighbourhoods as well as villages in remote areas. Furthermore, they were derived empirically and therefore may not always correspond to our study subjects' perceived communities or neighbourhood.

3. To increase the empirical validity of the meaningfulness of these final boundaries, a sample of urban and suburban territories were walked through by the authors with boundaries assessed through observation. When possible, local people were also asked to validate the boundaries of what they perceive to be their territory. In the remote areas the limits of the villages were considered the "natural" borders.

4. We created 13 groupings: hotels, tobacconists, health organisations, schools, municipal services, leisure centres, sports associations, leisure associations, sports centres, corner/grocery stores, heart health committees and pharmacies.

5. It was deemed unnecessary to conduct focus groups in all 32 of the territories as the focus groups are used to illustrate the importance of examining social practices, not as a way of confirming any hypotheses regarding our study population.

6. We strove for heterogeneity in the groups to try to achieve as complete a picture as possible of each territory's social practices with the assumption being that gender and peer group affiliation may influence perceptions of smoking practices.

7. Given the relatively small number of territories we were restricted to the use of correlational analyses rather than more sophisticated statistical techniques such as multivariate regression analyses.

8. The names of the territories are all pseudonyms.

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APPENDIX A

Agents used in the denominator for each resource category

Permit	hotels, health organisations, schools, municipal services, leisure centres, sports centres, leisure associations, sports associations
Sale	hotels, tobacconists, health organisations, schools, municipal services, leisure centres, sports associations, leisure associations, sports centres, corner/grocery stores, heart health committees and pharmacies
Forbid	hotels, health organisations, schools, municipal services, leisure centres, sports centres, leisure associations, sports associations
Inform	health organisations, schools, leisure centres, sports associations, leisure associations, sports centres, pharmacies
Signs-ban	hotels, health organisations, schools, municipal services, leisure centre, sports centres, leisure associations, sports associations
Signs-minors	hotels, health organisations, schools, municipal offices, leisure centres, sports centres, sports stores, corner/grocery stores, pharmacies
Surveillance	schools, leisure centres, sports associations, leisure associations, sports centres
Signs-minors	hotels, health organisations, schools, municipal offices, leisure centres, sports centres, sports stores, grocery/corner stores, pharmacies.

ARTICLE 3:
DISENTANGLING CONTEXTUAL FROM COMPOSITIONAL EFFECTS? INSIGHTS INTO THE I/WE PROBLEM.

For submission to the Journal of Health and Social Behavior

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ABSTRACT

The origins of disease outcome variation found in different areas, whether they be neighbourhoods, municipalities or states, has gained increasing attention in the public health literature. Much of this research has focused on questioning *what* causes this differential distribution rather than *how* this comes about. We choose to focus on the latter question by examining and reformulating two common issues in both contextual and social inequalities research; compositional and contextual effects and behavioural and material factors. In so doing we ask the question: How is it that individual and aggregate attributes might jointly shape disease outcomes? Using smoking initiation among youth as the empirical problem, and guided by our theoretical framework referred to as "collective lifestyles", we apply hierarchical linear techniques on a database composed of 694 pre-adolescents nested within 32 geographical territories in Québec, Canada. Our results reveal that there are important geographical area effects of youth smoking initiation that are largely explained by territory characteristics but that individual characteristics play a role as well in bringing about smoking initiation. Guided by practice theory, and confirmed by the analyses, we conclude that individual and territory-level variables are not separate processes, but rather, that they jointly shape the phenomenon called the social production of disease.

An increasingly important body of literature had emerged in the past decade focussing on the respective contributions of contextual and compositional effects in public health research (Duncan, Jones, and Moon 1993; 1998; Diez-Roux 1998; Diez-Roux et al. 2000). A parallel debate on the theoretical construct underlying community effects as well as on measurement of these effects is unfolding (Diehr et al. 1993; Birch, Stoddart, and Béland, 1998; Diez-Roux 1998; Diez-Roux, Link, and Northridge 2000). Much of both of these debates centres around the issue of whether the relationship to health of a particular variable, such as socioeconomic status (SES) aggregated at the community level, simply reflects the relationship of SES at the individual or family level, or whether there is an effect of community SES on individual health that goes over and above the effects of individual or family-level SES (Robert and House 2000). Otherwise stated, these studies attempt to tease out whether aggregate effects are artefacts of population composition measured at an individual level. The key question in most of these studies is what is the origin of the variations in disease outcomes found between different communities; individual or aggregate attributes? We offer a conceptual framework and an analysis of data from Québec, Canada that brings the issue of individual and aggregate effects together to ask the question: "How is it that individual and aggregate attributes might jointly shape disease outcomes"?

Analyses of context, in fact, tend to frame the origins of differential disease rates in terms of one of two issues, the first of which is lower versus higher levels of explanation. The origins of these effects may be due to what are frequently called compositional attributes (Macintyre, Maciver, and Sooman 1993; Duncan et al. 1996; 1998; 1999). These attributes are understood to be at the individual level. The compositional factors most frequently examined are indicators of SES such as individuals' social class, housing tenure, employment status, educational status, marital status, etc. Alternatively, the origins may lie in what is termed the contextual level. Contextual effects are presumed to have an

impact on the individual actor over and above the effects of her own characteristics. These macro-level variables may be either summary measures of compositional attributes, such as median income of an area, or they may be other than simple summaries of such variables such as values, norms or geographic characteristics of an area (Blalock 1984; Macintyre et al. 1993; Sooman and Macintyre 1995; Ellaway and Macintyre 1996; Macintyre and Ellaway 1998). These have been called supra-individual variables (Macintyre et al. 1993), environmental indicators (Cheadle et al. 1992) and integral variables (Diez-Roux 1998).

For the most part this higher level of explanation has been underdeveloped in public health studies and is rarely examined as other than a deprivation index or the level of inequality at the census tract, region or state levels (Duncan et al. 1999; Soobader and Leclere 1999; Diez-Roux et al. 2000). Recently there has been discussion, however, of the relationship between the neighbourhood environments in which people live and disease outcomes (Sundquist, Malmström, and Johansson 1999). Attention has been focused on examining neighbourhoods in terms of access to healthy foods, physical leisure activities, cultural activities, safe recreation spaces, and smoking-free environments (Macintyre et al. 1993; Sooman and Macintyre 1995; Ellaway and Macintyre 1996; Macintyre and Ellaway 1998).

The second way in which context is examined is in terms of two categories of disease correlates: "material/structuralist factors" or "behavioural" factors (Townsend and Davidson 1988; Blaxter 1990; Glendinning et al. 1995; Stronks et al. 1996; Macintyre 1997). With the former it is believed that material conditions contribute to class gradients in health - conditions that have been operationalised as education or income. The latter on the other hand focuses on the contribution of health damaging behaviours, such as smoking or alcohol consumption, to social class gradients. What both classes of correlates have in common is that they attempt to explain how locality-based social phenomenon influence people's biology - their health status.

In this paper we develop the argument that the conceptual separation of levels of analysis, and of social correlates, in explaining disease outcomes is inappropriate for understanding how context influences the disease status of populations because they jointly influence disease outcomes. To address these two issues we outline a theoretical model and then test some of the assumptions of the model using data on smoking initiation among pre-adolescents in Québec, Canada. Our hypothesis is that what are frequently called contextual, or higher-level effects can be partitioned into both individual aggregate effects as well as supra-individual influences. In addition we adopt the premise that contextual level effects influence, and are influenced by, the lower level compositional effects, thus creating effects that are inextricably linked. We suspect, therefore, that the combination of variables at the higher level may have a general rather than a socially specific effect, that is, their effect upon smoking initiation among youth may explain variation above and beyond that explained by individual level effects. As such, smoking-encouraging areas may have an impact on youth smoking as a result of both the composition of the community (individual attributes), as well as the structurally encouraging attributes that abound in the community with reference to smoking.

THE CONCEPTUAL FRAMEWORK: COLLECTIVE LIFESTYLES

The collective lifestyles framework (Frohlich, Corin and Potvin, submitted (a)) addresses how one can bring together the two issues raised thus far; context vs. composition and behavioural vs. materialist explanations for gradients in disease outcomes. The framework is inspired by the work of both Anthony Giddens and Pierre Bourdieu, two current social theorists.

Context and Composition Reframed

According to the structuration theory of Anthony Giddens (1984) agents draw on the social structure in their day-to-day activities and are constantly re-creating and transforming this same structure through their social practices. Social

structure is defined as the factors involving individuals' relationships to each other. Giddens conceptualises the social structure through rules and resources, with rules being the sanctioning of modes of social conduct and resources being "..the modes whereby transformative relations are actually incorporated into the production and reproduction of social practices"(Giddens 1984: 18). Rules and resources include positions occupied within the social and economic structures of society, such as race, SES, gender, etc. (Link and Phelan 1995). Social practices, on the other hand, are the reflexive activities that actors engage in that make and transform the world. The social practice at issue in this paper is smoking.

The relationship between the social structure and social practices is recursive and thus structural properties of social systems are seen to be both the medium as well as the outcome of recursively organised social practices. There is no uni-directionality between structure and agency, they are recursive and co-dependent. Structure is not possible without action because action reproduces structure. Action is not possible without structure because action begins with a given structure that was the result of prior actions. An agent is not a dependent subject of action but an active individual who constructs social behaviour (Cockerham, Rutten, and Abel 1997). Lastly, this recursive process is context specific or locally defined, thus emphasising the relationship between individuals in locales (agency) and the attendant social factors (structure) (Duncan et al. 1996).

Material and Behavioural Factors Revisited

The second of the issues addressed by the collective lifestyles framework is that between material and behavioural explanations of inequalities in health outcomes. In several oft cited studies of context (Duncan et al. 1993; 1996; 1998; 1999), the authors choose to regress a behavioural outcome, whether it be smoking or alcohol consumption, on socioeconomic variables. Other studies such as those of Stronks et al. (1996) and Mheen et al. (1998) reinforce the separation of these two explanations by investigating whether socioeconomic status influences health through behavioural factors, implicitly suggesting that material factors cause

behaviour. These studies not only separate empirically and theoretically what is termed behaviour from that which is termed material, but they tend to denature the problem given that behaviours (practices), and material factors are inextricably linked.

We adopt an approach for understanding the effects of social correlates on disease outcomes by turning to the term lifestyle in the original sense given to the concept by Max Weber. Weber (1922) viewed lifestyle as being both a reflection of one's social status as well as what one consumes. Weber operationalised lifestyle as the actualisation of choices as influenced by life chances. Weber's notion of life chances has been interpreted as "the probability of acquiring satisfaction...anchored in structural conditions that are largely economic" (Cockerham et al. 1997). This concept of life chances may also include rights, norms, and social relationships. Chance is therefore socially determined and the social structure is an arrangement of chances. Lifestyles are not, therefore, random behaviours unrelated to structure, but are choices influenced by life chances. Thus, one of Weber's contributions to the definition of lifestyle is to introduce a dialectic between choice and structure in lifestyle formation.

A similar conceptualisation of lifestyle for studies of context may assist public health researchers from separating out material from behavioural factors. While not completely equivalent, much of the time the "material factors" used in public health studies, such as SES, are taken to be instantiations of the social structure, with health behaviours understood as instantiations of choice. Most of the current bio-medical use of lifestyle tends to refer to lifestyle as "behaviours", measured discretely and independently (Coreil, Levin, and Jaco 1985; Dean 1988; Dean, Colomer, and Pérez-Hoyos 1995). These behaviours are often viewed to be practised and controllable through the self, with behaviour most frequently being divorced from the social context from whence it ensues (Coreil et al. 1985; Dean 1988). The individual is seen to be ultimately responsible for her behaviour as if there were no systemic influences, sociocultural context, or social meaning ascribed to it. This has led to an understanding of lifestyle that views the

individual in a sort of behavioural vacuum; outside of socio-cultural influences (Frohlich, Corin, and Potvin submitted(a)).

We espouse the view that lifestyle is more than a certain number of disease-related behaviours. We borrow from Pierre Bourdieu's notion of *habitus* (1984) to go beyond a material/behavioural separation and develop a definition of lifestyle akin to that of Weber. Bourdieu provides a theory of social action that helps to explain the recurrence of social practices over time. He does this by examining individuals' routine practices as influenced by the external structure of their social world and the contribution that these practices then make to the maintenance of the same structure. *Habitus*, according to Bourdieu, is produced by the objective conditions of existence combined with positions in the social structure; it is a system of schemes that generates social practices and schemes of perceptions and tastes that together result in a lifestyle. Lifestyles are viewed as a set system of classified and classifying social practices involving different tastes. These practices consist of particular forms of dress, food, music, art, sport, leisure activities, etc. - all of which express class, gender, and ethnic distinctions (Cockerham et al. 1997). Through *habitus* Bourdieu proposes a template defining people's social practices beyond the behavioural notion of lifestyle; a notion in which "behaviours" are deemed to be associated with disease outcomes (smoking, physical activity, etc.). The *habitus* is closer to a notion of lifestyle that takes into consideration both the social structure and social practices.

The collective lifestyles framework is inspired by a conceptualisation of lifestyle similar to that of Weber and by the explanation of how social practices come about in local areas, as developed by practice theory generally. Building on Giddens' work, we examine the connections that exist between phenomena at different levels -- institutions, organisations, and aggregate properties of individuals at the macro-level and individuals at the micro-level. First, we attempt to "contextualise" the social practice of smoking initiation by examining the relationship between both material/structural factors (chances) and behavioural factors (choices) at the individual level. We do not treat behaviour

and material conditions as separate generators of disease, but rather conceive of behaviour as being embedded in material conditions (Macintyre 1997). In this way, material and behavioural factors will not be opposed, or one controlled for the other, but viewed as jointly forming the social practice of smoking. We test whether both individual level material and behavioural characteristics influence the probability of being initiated to smoking. Second, in an effort to operationalise aspects of the social structure, and to further contextualise smoking initiation, we analyse what we call "agents", the resources that they make available, and their relationship to smoking initiation. Using this data we test whether there are aspects of the social structure at the neighbourhood level, other than classic indicators of SES, that influence smoking prevalence. Lastly, we examine whether there are collective lifestyles, or community-level effects that are constant across different types of people. Finally we test whether once we have accounted for individual level variation there is variation that is explained by second level variables. This would suggest that there might be arrangements of chances and choices shared by groups of people that are associated with particular social practices, in this case, smoking initiation. These findings will then be discussed in light of structuration theory.

METHODS

Research Design and Sample

The study results presented here are part of a research project concerned with the intermediate role that families play between community health promotion and individual behaviour and the way in which community characteristics are associated with families' and children's health behaviours (cigarette smoking, physical activity, and dietary fat consumption). A cohort of families was assembled in 1995 based on the selection of a fourth grade index child in 47 participant elementary schools in municipalities across the province of Québec, Canada (Fisher et al. 1998; Potvin, Gauvin, and Nguyen 1997). These children were followed up in 1997, 1998 and 2000. In 1997 children in the same

classrooms as the cohort children were added to the cohort sample. The results analysed here are from the entire sample of children in 1997. The children were guided by trained research assistants in class to complete a child's questionnaire. Each child's questionnaire was coded in advance with the same number as her/his parents in order to collate the data from members of the same family. All children to whom the questionnaire was administered brought home with them a package containing an explanation letter, a consent form, two questionnaires to be filled out by the parents (or other responsible adults), and a return envelope.

The families were from three distinct parts of Québec; a remote area, a suburban area and an urban area. To construct neighbourhoods in which families could be classified we began by clustering families based on the postal codes requested in the parent questionnaires. Using these geographic co-ordinates we mapped them out and traced a perimeter using a geo-coordinate mean as a function of the "life" of the community, that is a 10-15 minute displacement time from the elementary school. This method was used to ensure that only the data from those families that fell within our created perimeters was used in our analyses. By following this procedure we constructed 32 territories[1] : 13 in urban areas; five in suburban areas and 14 in remote areas (Frohlich et al. submitted(b)). Two final adjustments to the territories' boundaries were made first by extending the perimeters to natural barriers such as large green spaces, large boulevards, railway lines, and municipal limits. Second we aligned the final boundaries to fit as closely as possible with the Canadian census tract limits (for the suburban and urban areas) and for enumeration areas in the remote areas.

The total number of eligible children in 1997 across the three sites was 1935. The non-respondents include children that were absent the day the questionnaire was administered, children from the cohort that we were unable to locate, children who refused to participate and those whose parents refused to have them participate. There was large variation in participation rates across schools and sites. Among the number of eligible children the overall response rate was 68% (n = 1313) and 49% (n = 954) for at least one of their parents. Given that obtaining data from both the

child and at least one parent in 1997 is critical in order to construct the household and certain of the neighbourhood variables, our sample was further restricted. Of the 954 families for which we had data for at least one parent/guardian, 810 provided a postal code that corresponded to one of our 32 territories. After collating the data from the remaining 810 parents' and children's questionnaires, we had the necessary parental data for 694 children; 296 from the remote area, 218 from the suburban area and 181 from the urban area. The attrition is due to missing data on any of the parental variables used in this study. Our final sample at level one is therefore 694 pre-adolescents and their parent(s) nested in 32 territories.

Community characteristics, the instantiations of the social structure, have been operationalised as social "agents". Social "agents" are defined as established collective entities who by their actions permit the regulation or transformation of smoking. So for instance, a store selling cigarettes is considered to be an agent. The influence of these smoking-related social agents on people is exerted in two ways; through its form of regulation and through the type of resources that it provides. The form of regulation gives us an analytic classification of agents. The resources provided by an agent qualifies them as permitting the regulation or transformation of smoking. The information from both types of variables informs us further as to how conducive the immediate environment is towards smoking for youth.

To collect the agent data an exhaustive list of agents that could potentially be involved in the reproduction of smoking in the 32 territories was drawn up based on lists of public institutions, community organisations, and private businesses provided by municipal administrations. Brief telephone interviews were conducted with each agent during which we asked whether they offered products, services or information concerning tobacco and smoking. Having established a comprehensive list of all agents involved in the regulation of smoking, we created groupings of agents for sampling purposes based on their hypothesised relationship to the reproduction of smoking.[2] For each of the territories we randomly sampled up to three agents for each of these groupings

present in the territories. Three trained research assistants, with the aid of an observation grid, visited the agents to evaluate the type of smoking-related resources that they provide. These resources were evaluated through both interviews and observation.

Measures

Smoking initiation status. The dependent dichotomous variable, was assessed by children's response to the following question, "Have you ever smoked a cigarette, even just a puff?". All children who responded with one of the following options were deemed initiated to smoking; "Yes, 1 or 2 times"; "Yes, 3 to 10 times"; or "Yes, more than 10 times". Otherwise the children were considered uninitiated to smoking. This question has been validated and is used by many smoking surveillance systems to evaluate smoking initiation.

Individual level predictors. The lower level effects on smoking initiation were evaluated by including variables from both the children's and the parents' questionnaire. Variables from both of these questionnaires were used in the lower level analyses as we only had one child per household. We therefore considered the household attributes to be representative of each pre-adolescent's attributes. Given that most of the youth have two parents, and therefore two responses to each of the household variable questions, we chose to analyse only the level of total household income reported by the father (in the case of two-parent heterosexual families) or the household income reported by the single parent, as well as the highest level of education of one of the parents, regardless of gender. The household income variable, (income), was divided into three categories; below $20,000, between 20-60,000, and above 60,000. The education variable, (education), was divided into three categories; not terminated secondary education, terminated high school and with some further training, and university trained. With reference to family behaviour, parents' smoking status was used as a behavioural variable based on evidence that parents' smoking habits influence children's smoking practices (Bailey, Ennett, and Ringwalt 1993; Jackson et al. 1998). In the case of two-parent

families, as long as at least one parent was a smoker the household was considered a smoking household. Parents were considered current smokers if they had smoked both more than 100 cigarettes in their lifetime and within the previous seven days. The age and gender for each pre-adolescent were controlled for in the model given there known relationship with smoking, with age being dichotomous; 11 years versus 12 years and older.

Territory level predictors. The agent variables utilised in this study are two-fold. The first is the analytic classification of agents based on the form of regulation they perform, that is, whether they are public institutions (public), community-based institutions (community), or private institutions (private). These three categories of agents differ in terms of their political, economic, cultural, and social objectives. Public agents articulate decisions made by the state (e.g. schools, city administrations), community agents are organic to the territory in which they belong and tend to be not-for-profit (e.g. local sports organisations, churches) and private agents have a for-profit objective with market forces determining how they act (e.g. convenience stores, bars). The percentage of public, community and private agents was obtained by dividing the number of agents in each of these categories by the total number of agents sampled within the territory.[3] The private variable was found to be significant in relation to smoking initiation. It is divided into three categories; territories with less than 48% of private agents, territories with between 48-58% of private agents and territories with greater than 58% of private agents. This division was made based on the distribution of the variable across the territories.

The second form of agent information collected relates to the type of resources that the agent provides. These agent variables can either promote or impede smoking. With this in mind we initially examined 7 variables, two of which encourage smoking, and five of which discourage smoking. After preliminary analysis, however, only two of these variables yield significant results in relation to smoking initiation. These variables are the proportion of agents who: inform people about anti-smoking products or about the hazards of smoking

(inform), and have signs banning smoking on their premises (signs-ban). Inform was also divided into three categories: less than 20%, between 20-23% and greater than 23%. These cut points were chosen based on the distribution of each of the variables, that is, we attempted to have an equal distribution for each of the categories (see Table 2).

For both of these variables we created two dummy variables by collapsing categories. We collapsed categories to gain degrees of freedom given the relatively small number of territories in our analysis. In the case of the variables private and inform, the reference category is the middle category and the remaining category is a combination of the highest and lowest category given that both of these variables were curvilinear in relation to smoking initiation. In the case of the variable signs-ban the reference category was less than 15% and the two other categories, between 15-30% and greater than 30%, were collapsed into one category.

The 1996 Canadian census data was also requested from Statistics Canada for each of the 32 territories. Based on previous research demonstrating that the proportion of university educated people in a territory was most significantly related to resource profiles in the territories (Frohlich et al. submitted(b)), the same variable, education2, was used as one of the indicators of the territory's SES. We also used the median income of the territory, income2, as a further territorial level variable. Both variables were dichotomised with the former divided into territories with greater than or less than 13.4% of the population with a university education and the latter divided into territories with populations having a median household income of greater or less than $26,060. These cut points were chosen to represent the distribution of each of the variables.

Statistical Analyses

Hierarchical linear modelling (HLM) was used to explore the hypotheses motivating this research. HLMs allow for the analysis of hierarchically structured data, that is, data that are nested within at least two higher level units. In the

current case pre-adolescents are nested in territories. HLMs constitute a generalisation of the general linear model adopted in multiple linear regression. In hierarchically structured data sets the variability in the outcome measure may be attributed to both within cluster and between cluster variation. In statistical terms, this is represented by a level 1 (between individual) and a level 2 (between territory) regression model (Bryk and Raudenbush 1992):

Level-1 model: $Y_j = \beta_{0j} + \beta_1 X_{1j} + e_{ij}$

Level-2 model: $\beta_{0j} = \gamma_{00} + \gamma_{01} W_j + \mu_{0j}$

$\beta_1 = \gamma_{10} + \gamma_{11} W_j + \mu_{1j}$

The technique allows the analyst to relax the usual assumptions of constant slopes and intercepts and to test the adequacy of a variety of models that include fixed, non-randomly varying, and randomly varying slopes and intercepts.[4]

Our study involves two levels of data with individuals and their parents at level one nested within territories at level two. Logistic multilevel models based on a logit function were used given the dichotomous dependent variable, smoking initiation. Variation to this response was related to a series of explanatory variables reflecting a range of individual/household characteristics (level 1) and territory level variables (level 2). The analyses were conducted step-wise in order to examine the changes in the random variance at level 2 (the "unexplained" variance across territories) associated with the gradual inclusion of predictor variables in the model. A first model was fitted to estimate, in the absence of any predictor variables, the variation in smoking initiation prevalence associated with territories. In a second step, we modelled the individual-level main effects to assess the variation explained jointly by the material and behavioural variables at level one. These main effects were all estimated for dummy predictor variables

with the reference category being an 11 year old pre-adolescent, whose parents do not smoke, who has at least one university educated parent, and whose household income is above $60,000. This is the category of youth who is least likely to have been initiated to smoking. Finally, in a third model we examined the variance explained by the territory-level variables once the individual-level variables had been accounted for. This final step gave us an indication of the explanatory power of higher-level variables in relation to smoking initiation among youth. The territory-level predictors included the agent and Census variables, all of which are categorical. Given the relatively small number of territories at the second level of the model, we report *p* values < .10. The software package HLM 4.04 for Windows was utilised for all analyses.

RESULTS

Sample Characteristics

Table 1 shows descriptive statistics for the 694 pre-adolescents and Table 2 depicts information for the 32 territories. In Table 1 we note that there is variation in each of the variable categories with a high proportion of pre-adolescents having been initiated to smoking by grade 6 (34.3%). Table 2 gives the distribution for the variables to be employed in the second-level of the hierarchical analyses. Again there is important variance across the 32 territories for all of the second-level variables.

Intercept and Random Effects

Table 3 outlines the variance estimates for the three successive models all of which include a random intercept. Model 1 is that with neither individual nor territory level predictors, Model 2 is the model including only individual level predictors and Model 3 is the model with predictors at both levels. The chi-square value associated with the random variance component (μ_o) in the first model indicates significant random territorial variation in smoking initiation ($p <$

.001). This informs us that the analysis should be conducted with a two-level model and that 8.86% of the between pre-adolescent variance is associated with territories.[5] The intercept (γ_{00}) for the binary response indicates the average probability of a pre-adolescent being initiated to smoking by the sixth grade. This probability is 35.9%, the probability being derived by dividing the logarithm of the intercept coefficient in the model by 1 plus the logarithm of this same coefficient. Model 2 indicates that the random effect of the territories on smoking prevalence remains significant with all individual-level predictors in the equation ($p = 0.003$). There is also still 5.19% of between pre-adolescent variance in smoking initiation to be explained by territory-level variables. In this model the overall probability of being initiated to smoking for the reference category of pre-adolescent drops to 16.5%. In the last model, Model 3, there is only 2.66% of the between territory variance to be explained in terms of smoking initiation ($p = .08$) when the second level predictors are included. With all variables in the model, the reference category of pre-adolescent has a 12.68% probability of being initiated to smoking. In addition, 51% of the variance in the territory smoking initiation prevalence among pre-adolescents is explained by the territory-level predictors when controlling for the individual-level predictors.

Individual Level Effects

Table 4 shows the results for Model 3 in which the fixed effects parameters for each explanatory variable is adjusted for the effects of all other explanatory variables in the model. Except for the intercept, the coefficients at level 1 do not change from Model 2 to Model 3. The estimates, as well as their standard errors and corresponding t ratio are provided. Odds ratios were derived, (for the variables at level one), as the exponential of the estimated coefficients.

Examination of the individual-level predictors draws attention to a number of important observations with regard to the patterning of smoking uptake based on individual characteristics. Firstly, gender had no significant effect and therefore was not included in the final model. Household income at the individual

level was not significant and therefore is also absent from the final model. Interestingly, besides age, both parents' smoking status as well as parents' education had significant effects on the probability of initiation to smoking for youth by grade six. The odds of an individual being initiated to smoking by grade six was significantly higher in youth having at least one parent who had not terminated high school than for those having at least one university educated parent (OR = 2.03, p = .03). The relationship was also significant for youth having at least one parent who had finished high school (OR = 1.55, p = .10). There is a significant relationship between parents' smoking status and the likelihood of youth being initiated to smoking, with youth having at least one parent who smokes being more likely to be initiated to smoking as a pre-adolescent without a smoking parent (OR = 1.45, p = .04).

Territory-Level Effects

Three agent variables show significant effects at the territorial level. Territories with either the smallest or largest proportion of private agents are associated with a lower prevalence of smoking among pre-adolescents than territories with the mid-proportion of such agents (p = .01). This finding may be a function of the size of the territory as some territories with few resources would have very few private agents, by definition, whereas larger territories that encouraged smoking would have a greater number of such agents. A similar curvilinear association is found in relation to the proportion of agents that provide information discouraging smoking. Territories where under 20% or over 23% of the agents provide information discouraging smoking were associated with a higher prevalence of smoking initiation among their pre-adolescents (p = .10). With regard to the final territorial variable signs-ban, territories with greater than 15% of their agents displaying no-smoking signs are associated with higher prevalence of smoking initiation among their pre-adolescents (p = .09). Neither the variable for education nor income was significant. The residual random variance is also non-significant.

DISCUSSION

The purpose of this study was to examine whether individual and territory level effects jointly shape disease outcomes. We find that both individual level predictors and territory level predictors are associated with smoking initiation among pre-adolescents. Furthermore, territory level effects seem to explain variation in smoking initiation above and beyond that explained by individual level predictors. These results support other research findings showing some form of area effect on smoking (Glendinning, Shucksmith, and Hendry, 1997; Duncan et al. 1999). There is definitively variation in smoking initiation amongst youth that is associated with differences between territories. Even though some of the variance between territories is explained by individual-level variables, the random variance of the intercept estimated in Model 2 remains significantly different from 0 informing us that part of the unexplained variance is due to some aspect of the territories. This means that despite the inclusion of individual level predictors, there are still territory-level effects. Indeed, we find that the agent (or integral) variables explain a large part of the unexplained variance in smoking initiation at level two. That is, once we accounted for individual level variation due to both individual socio-economic and behavioural variables, there was further variation in smoking prevalence across territories explained by integral variables. This is an important finding as it places emphasis on the role of local environments in shaping choices, and ultimately, disease outcomes on a collective basis.

While we are unable to test whether the territorial effect has a general, rather than a social specific effect on the smoking initiation prevalence between territories, future research might pursue this issue. In this way we would be able to answer the question as to whether territory-level effects influence smoking initiation differentially in relation to individual level effects.

Our findings regarding territory-level effects should not, however, undercut the importance of the individual-level effects in the model which are also found to play an important role in the probability that an individual will have been initiated to

smoking by the sixth grade. In fact, while limited by our cross-sectional research design that does not permit a statistical testing of recursivity, our theoretical framework would suggest that the individual-level variables, the attributes of the individual pre-adolescents and their households, shape the kinds of agents and resources that one would find in a territory. In return, the agents and resources in a territory shape the smoking practices of its members. Indeed, in an earlier study we found that people's social practices were very much a function of the ways in which resources were arrayed and employed by local populations (Frohlich et al. submitted (b)).

The fact that both parental smoking and household education contributed to explaining variation in the probability of pre-adolescent's smoking initiation suggests that both of these variables are shaping the probability of this social practice. Other researchers have asked similar questions with reference to adolescent smoking (De Vries, 1995; Glendinning, Hendry, and Shucksmith, 1995; Glendinning, Shucksmith, and Hendry, 1997). For instance, Glendinning and his colleagues (1995; 1997), in both of their studies using longitudinal data from The Young People's Leisure & Lifestyles Project, a study of Scottish youth, find that adolescents' smoking is positively associated with parents' smoking but that the parents' class background plays no significant role. They conclude by suggesting that associations between perceived family and adolescent smoking may function independently of the family's SES. A similar study found that adolescents of low SES between the ages of 12-16 in the Netherlands tended to both smoke more often than those of higher SES and have social environments in which parents were more likely to be smokers than those from higher SES families (de Vries 1995). The author cannot, however, confirm statistically that these social correlates are jointly shaping the outcome he observes given his use of χ^2 analysis to test the various variables. Furthermore, while the author makes reference to the embedded nature of smoking in social culture, little theoretical direction is given.

In this study we observed an influence of both parental education and parental smoking habits on pre-adolescents' likelihood of smoking uptake. This

finding is consistent with the conceptualisation of lifestyle put forward in the earlier part of the paper, that is, social practices are very much a function of both material situation as well as exposure to other social practices. By including both of these variables in the model we attempt to situate the social practice of smoking in context. Rather than presume that smoking initiation is differentially distributed due to the effects of either parental education or parental smoking habits, we suggest that both of these characteristics shape the probability that youth will take up smoking or not.

We then sought to further contextualise smoking initiation by examining new combinations of territory-level information; both territory level SES and agent, or integral, variables. The latter variables are quite novel as few studies have examined neighbourhood agent-based correlates of smoking initiation beyond discussions regarding the local availability of cigarettes (McGraw et al. 1991; Wolfson et al. 1997). The explanatory power of the integral variables used in the second-level of this model deserve further exploration. While curious that both the percentage of private agents and the percentage of agents providing information discouraging smoking have an extreme, and possibly curvilinear effect on smoking initiation among pre-adolescents, this may be indicative of a Goldilocks problem; too much or too little. As stated earlier, environments that have few resources may have difficulty in keeping smoking initiation rates low, but those with many of these resources may be indicative of environments in which there are just simply many smoking conducive resources to contend with. For instance, if there are few agents that sell cigarettes, there is less of a need for agents to inform people of the hazards of smoking. The same phenomenon may be true with respect to the variable regarding signs banning smoking. It is also noteworthy that the agent regulation variable that was most informative was that in reference to private agents. Private businesses are difficult to control locally, as they are mainly regulated by market forces. It may, for this reason, be useful in future interventions to have attention focus on the modification of the practices of local merchants such as the selling of individual cigarettes and the selling of cigarettes to under-aged youth.

Still at the second level of the model, however, we do not find that territory-level SES indicators explain any of the variation in the outcome variable when parents' education is included in the model. The results differ from those of Duncan, Jones and Moon (1999) whose study of the neighbourhood effects on smoking prevalence among 9003 individuals nested in 396 wards and 198 constituencies find that inclusion of their level-2 fixed effect variable, a deprivation index comprised of four variables, substantially reduced the likelihood of people within the neighbourhoods being smokers when individual social class variables were included in the model. While this may be because our indicators of SES are insufficient to explain the relationship with pre-adolescents versus adult smoking, it remains to be clarified. Furthermore, we cannot dismiss the possibility that the effects of SES were masked by our relatively small sample size at the territorial level.

While statistically powerful and empirically enticing, if the addition of compositional and contextual variables to regression analyses is to be meaningful we require theory development to explain first how it is that the variables used at each level might be related to the disease outcome of interest, and second, how the individual and group-level variables jointly shape disease (Diez-Roux, 1998). In this paper we offer some preliminary suggestions as to how the territory-level variables might be related to smoking initiation prevalence across territories and discuss the mechanisms through which individual and territory level variables might lead to differential disease rates across areas. Many of the conceptual frameworks being used in public health studies of context are driven by the assumption that the higher levels represented in multi-level statistical models influence the lower levels; i.e. that some of the variation at the lower level is due to variables at the higher level. In contrast we suggest that to understand how areas yield differential disease states we might consider that the various "levels" in these models are in a recursive relationship. We turn back to the current literature concerned with context and posit that what are currently called compositional and contextual effects are in a recursive relationship; higher level effects are produced by people's characteristics at the lower levels, which in turn are reinforced by these same higher-level effects. Collective lifestyles are therefore reflected in the territory-level variables

which are themselves created and reinforced by the individual characteristics of people within the territory.

This same effect has been described by Duncan et al. (1999) as "social miasma", or the effect that collective group properties exert over and above individual properties. While we do not disagree, in principle, with the notion of "social miasma", it seems to disregard the recursive nature of social structure and agency that we attempt to reinforce in the conceptual framework. As such, while it may seem, statistically, that our territories are related to smoking initiation prevalence, independent of the type of people living therein, structuration theory suggests that it is persons within these locales that reinforce the structure; these levels could not, therefore, be totally independent. Indeed, Frohlich et al. (Submitted (b)) found results confirming that structural properties of the 32 territories are reinforced by individuals in their day-to-day activities. For instance, in focus group discussions held with youth from eight Québec territories, the youth related how people within their territories re-create the structural conditions that either impede or encourage smoking, through their social practices.

CONCLUSION

Turning back to the conceptual model proposed at the beginning of this paper - collective lifestyles - in which we took inspiration from Weber's initial formulation of lifestyle, we can state from the results of this hierarchical model that chance, operationalised by both individual SES as well as by the supra-individual variables at level-two, are related to the choice that pre-adolescents are making to start smoking. We would elaborate further on this by adding that the social structure is an arrangement of chances, both compositional and contextual, and that further research could dig further into those aspects of the social structure that may influence pre-adolescents' inclination to take up smoking. In addition, we maintain the view that what is happening in the structure is the result of the actions of individuals exposed to the structure. In turn, the practices of individuals are influenced by the structural constraints and opportunities of their proximal

environments. Turning back to our model, then, this would mean that parental smoking prevalence and parents' education levels are influencing the proportion of private agents there will be in their territory. In turn, the proportion of private agents in a territory will influence the likelihood that parents will be smoking in the territory as well as the likelihood of finding parents of a particular educational background.

But where does this place us in the debate on contextual versus compositional effects? We choose to interpret these results as being an indication that these effects both participate in the same phenomenon called the social production of disease. Structural effects influence us through our individual SES but also through structural factors in our living environments such as neighbourhoods. In turn, we as individuals and collectivities influence these same effects. Future studies with larger sample sizes and longitudinal data may, some time in the future, be able to confirm some of these conjectures.

NOTES

1. We use the term "territories" throughout the rest of this paper when referring to communities or neighbourhoods. The term "territories" is deemed more appropriate given that it refers both to urban and sub-urban neighbourhoods as well as villages in remote areas. Furthermore, they were derived empirically and therefore may not always correspond to our study subjects' perceived communities or neighbourhood.

2. We created 13 groupings: hotels, tobacconists, health organisations, schools, municipal services, leisure centres, sports associations, leisure associations, sports centres, corner/grocery stores, heart health committees and pharmacies.

3. Given the exploratory nature of this data, and thus the lack of a precedent upon which to base our choice of agent variables, we ran some preliminary analyses which are not reported in this paper. For the sake of brevity, only the significant variables are discussed here.

4. In the level 1 model, the outcome measure is related to a set of individual level predictors X_{ij} by the coefficients β_{0j} and $\beta_{1.}$ The random effect for the level one model is given by $e_{i.}$ It is assumed to be normally distributed with mean 0 and variance σ^2. The level 1 regression coefficients may be fixed or may vary randomly across territories. Any between subject variation in the regression coefficients is modelled via the level two model as a function of territory level predictors W_j and random effects μ_{0j} and $\mu_{1j.}$ These random effects are assumed to be normally distributed with means 0 and variances τ_{00} and τ_{01}. For a model with only randomly varying intercepts, the percentage of the residual variance attributed to between territory variation (i.e., intraclass correlation, ρ is given by $\tau_{00/}(\tau_{00} + \sigma^2)$. This is also referred to as the variance component ratio where σ^2 is the between subject variance component and τ_{00} is the between territory variance

component. The fixed effects γ are the average intercepts and slopes across territories.

5. The proportion of variance in smoking initiation attributable to differences between the territories is derived using the formula $\tau_{00} / (\pi^2/3 + \tau_{00})$ suggested by Snijders and Bosker (1999). This is however an approximation.

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DISCUSSION

COLLECTIVE LIFESTYLES

In this chapter I return one final time to the collective lifestyles framework to explore its numerous facets. My interest in the study of lifestyle began with the desire to develop a notion of how social phenomena influences health outcomes. Much of this desire was inspired by the persistent finding since the 1980s that social phenomena, such as SES, had a differential effect on disease. As explored earlier in the dissertation, the Black Report attempted to answer this question, in part, by offering several explanations, among them the materialist/structuralist and behaviouralist explanations of these health inequalities. I used this Black Report distinction as a symptom of the way in which social epidemiology has often parcelled out explanations into variable categories.

In parallel to the debate over the determinants of health inequalities, researchers largely from within the realm of health promotion were debating (and continue to debate) how to conceptualise the role of health behaviours in respect to disease outcomes. The term lifestyle had become the umbrella term for examining the health behaviours primarily believed to be responsible for chronic diseases (smoking, physical activity, alcohol consumption and dietary practices) (Dean, Colomer, & Pérez-Hoyos, 1995). Sceptics from within and outside of health promotion began to question the sole focus on health behaviours that lifestyle had taken on and suggested instead that lifestyle should be conceptualised as a socio-cultural phenomenon arising from patterns of behaviour and life situations. New approaches to lifestyle could then integrate epidemiological and social science knowledge to study patterns of behaviour in the contexts in which they occur (ibid).

By returning to a notion of lifestyle, such as that of Max Weber and of Bourdieu's *habitus*, I sought to integrate some of the unresolved issues from both the health inequalities and the lifestyle debates. Lifestyle, as understood by health promoters, would therefore not just include health behaviours, but would recognise that behaviour occurs in social settings that differ among individuals.

The focus would turn, therefore, to the complex forms of interaction between patterns of individual behaviour, collective behaviour and sets of resources (Rütten, 1995). An examination of lifestyles in this way would suggest that the inequalities in health we study are the result of *both* our socio-economic conditions, as well as our "behaviours".

But again, this was unsatisfactory. Even if one tried to replace the purely behavioural notion of lifestyle with one that was more "context" based, there were two problems that remained. First, I found myself confined by the methodological and conceptual tools offered by classic epidemiology; socio-economic conditions quickly became either education, income or class, and behaviours were conceptualised as smoking, physical activity or poor eating habits. Contextualisation could not simply involve the addition of variables to a regression equation. This is where practice theory became critical. With practice theory "behaviours", as viewed by the epidemiological paradigm, are just one of many practices that might by influencing inequalities in health outcomes. The social structure, on the other hand, can be represented by variables such as income, class or education, but other instantiations were possible and necessary.

Second, if practices and structure were defined in terms of the way people relate to each other in their activities this implied to me that there had to be some possibility that lifestyles were not just individual attributes, but something that collectivities were involved in. Indeed, the term lifestyle I sought to develop would focus on social groupings whose members share specific patterns of life conduct. This too is not a common practice in public health as the epidemiological legacy has led us to often consider collective attributes as the simple addition of individual attributes. The notion of collective lifestyles arose as an attempt to develop a shared notion of lifestyle that considers both what we do and how we relate to each other.

I then explored a final aspect of the social inequalities debate by integrating the capability theory of Amartya Sen (1992) into the collective

lifestyles framework. In so doing I introduce a modification to the notion of choice and chance as discussed by Weber in his definition of lifestyle. According to Cockerham, Rutten & Abel (1997), life chances were interpreted by Weber as "the probability of acquiring satisfaction....anchored in structural conditions that are largely economic". Lifestyles are not random behaviours unrelated to structure, but are choices influenced by life chances. Rather than consider chance in terms of the probability of acquiring satisfaction, Sen's capability theory posits that choice is a function of both an individual's functionings as well as her capabilities; with functionings being those elements that are constitutive of a person's being, these being anything from: "being adequately nourished, being in good health, avoiding escapable morbidity and premature mortality...to more complex achievements such as being happy, taking part in the life of a community..." (Sen, 1992, p. 39). Capability then is a set of functionings reflecting an individual's ability to lead one type of life or another.

The results of the empirical Articles 2 and 3 highlight a number of interesting issues with regard to the collective lifestyles framework. First, Article 2 demonstrates that lifestyles are much more than the classic health behaviour of smoking. Indeed collective lifestyles integrate population's socio-economic status, the resources in communities in relation to smoking, and people's social practices in relation to smoking. Collective lifestyles therefore help us comprehend how it is that smoking initiation differs based on local particularities. But this article only examined collective properties of neighbourhoods; individuals were largely absent. The third article thus added a further element to the framework by examining the relationship between individual and collective characteristics. In terms of the collective lifestyles framework development, this article highlights the role of both individual and collective attributes in understanding disease outcomes; collective lifestyles are formed by both individual and shared properties.

Some Limitations

In order to improve both the theoretical and empirical strengths of the collective lifestyles framework, I underline here a number of this dissertation's limitations.

First, given the cross-sectional study design used in both Articles 2 and 3, I am never actually able to test the versacity of recursivity. Indeed, throughout the empirical parts of the thesis I operate in a virtual world of recursivity, one that might be so. In order to test for recursivity one would require similar data over time; cohort data for instance. It is not at all inconceivable that the necessary data exists to test the assumptions, particularly given the enormous interest within public health over the last decade in life course epidemiology (Kuh & Ben-Shlomo, 1997).

Second, I never actually test the entire collective lifestyles framework (as shown in Figure 1 of the Methods section). I did not develop the notion of household resources and the instantiations of household behaviour were somewhat lacking. Indeed, part of the reason that the entire framework was not tested was that I became associated to an empirical project that was already underway. While the theoretical framework attempted to take this limitation into consideration, by developing some of the ideas as a function of the database, there were some issues, such as recursivity, that I felt were too important theoretically to be excluded, despite the methodological limitations that the database imposed. Future research could then aspire to improve the conceptualisation of both household behaviours and resources.

Last, while the utmost was done to delimit territories that were representative of neighbourhoods, communities and towns, it would be unrealistic to deny that, particularly in suburban areas, where one lives does not necessarily represent where one spends one's time. People have multiple ecological experiences; some live in one area during the week and another on the weekend (for example those who have cottages). People increasingly choose to; shop,

exercise, educate their children, engage in a myriad of activities outside of their immediate neighbourhoods. This puts into question the input of such people in the reproduction of the practices and structure of their area of residence. It is for this reason, however, that I chose to focus on children, as they tend to be less mobile.

Further, for those that actually do mostly live and experience life in one geographical place, our delimitations of territories do not necessarily correspond to neighbourhoods or communities. While we did make an attempt to expand the idea of territory by not simply taking census tracts as the area of delimitation, we did not ensure that the areas made sense as such to residents. This may have important repercussions on future research of this type as meaning is an essential component of the collective lifestyles framework.

RETURNING TO THE PROBLEM

Throughout the development of the notion of collective lifestyles I was confronted with several of the ontological assumptions inherent to public health research. I will re-discuss these assumptions in light of the results of this dissertation.

Capability Theory - How Do We Define Equality?

One of the issues raised by the collective lifestyles framework is how we define equality. Recent debate in the health inequalities literature has raised the issue as to whether the explanation for the links between income inequality and health reflects the structural causes of inequalities or the perceptions of this inequality (Contandriopoulos, 1999; Lynch, Davey Smith, Kaplan, & House, 2000). In other words, are people in situations of inequality less healthy given that they have access to fewer resources or are they less healthy given their perception of their place in the social hierarchy based on relative income position (Wilkinson, 1996)? In the former case, unequal income distribution is one result of historical, cultural and political-economic processes. The unequal distribution of resources influences

access that individuals have to resources such as schools, health care, social welfare and working conditions. Improvements to these situations of inequality would require a more equitable distribution of those public and private resources most likely to have an impact on health. In the latter case, however, attention is turned to the psychological effects that unequal distribution of income can have on individuals. The hypothesis here is that individuals under circumstances of inequality are under psychological duress due to their "inferior" position in the social hierarchy, duress which negatively effects their health. The attention is therefore focused on personal psychological infrastructure such as trust, respect and support.

Capability theory offers a way of understanding the effects of inequality somewhat differently from either of the above proposals. The former proposal would strive to overcome income inequalities by distributing public and private resources more equitably. But what would a more equitable distribution entail exactly? And how does one determine equality? As raised in the first article, questions of equality are far from simple both philosophically and politically- indeed this is a subject of a vast literature in political science, economics and philosophy. Furthermore, and more importantly, it is difficult to know if an equal apportioning of resources, in terms of quantity, will necessarily be equivalent to an equal utilisation of these same resources. The proposal of Wilkinson, on the other hand, focuses primarily on individuals' felt experience. While this explanation is not inconceivable as an explanation for the differential distribution of health outcomes, it can create the impression that the impact of psychosocial factors on health can be understood without reference to the material conditions that structure daily living.

What capability theory suggests, and what the data from the second article highlight, is that we might want to focus attention on local "meanings" in order to create what some have entitled community choice sets (or capabilities) (Shiell & Hawe, 1996). For example, according to the resource data in the second article of the dissertation, Ellenburg has a significant number of resources that restrict smoking. It becomes clear however from the focus group data that pre-adolescents in this territory do not feel, despite the resource data, that there is

much possibility of remaining a non-smoker given the social practices of people in the territory. Alternatively, the pre-adolescents of Aurelius speak of the normativeness surrounding smoking in their town; the fact that smoking is frowned upon by adults and that it is difficult for children to procure cigarettes. Sen suggests in his capability theory a way of articulating the relationship between resources that is not just based on accessibility. In other words, differently constructed and situated peoples require different amounts, and perhaps types, of goods to create conditions of equality.

Rather than base one's evaluation of equality purely on access to resources, we must examine the choices structured by the situation that individuals are in and we must not assume that the same results arise from the two evaluations. Social practices inform us of the constraints and opportunities people have in relationship to their context. Accessibility viewed in terms of Sen's capability theory is not just a question of "objective" choice, or the resources that are present in one's territory, but rather can be understood in terms of the ways in which rules and resources manifest themselves and are employed by people. These aspects are not reducible to the enumeration of material goods, but include people's social practices as they are a critical empirical aspect of the social structure. More, or certain kinds of resources, are not necessarily equatable with more opportunities. Fewer resources do not necessarily result in constraints.

By employing this notion of capability within the collective lifestyles framework, however, we are confronted with a difficult methodological problem. Capability theory entails a consideration of variation in people's capabilities, thus limiting the plausibility of generalising findings from studies that seek to find the most fair distribution of resources based on universal proportions.

What Practice Theory Can Do for Social Epidemiology: Re-reading Determinism versus Free-Will

A second issue raised by the framework is that of determinism versus free-will. Many social epidemiologists currently advocate for an epidemiology that focuses on distal causes of disease, causes that may be further away in the causal chain of explanation from the outcome, but that may be influencing a whole range of more proximal causes (Link & Phelan, 1995). Examples of distal "causes" are factors such as SES or social support. Proximal causes, on the other hand, are risk factors such as diet, cholesterol, hypertension, etc. This differentiation of distal and proximal causes has also been named by some as an upstream versus a downstream approach; the upstream approach being concerned with the distal correlates of disease, and the downstream focusing more on the proximal correlates (McKinley & Marceau, 1999). Taking one example of a potential causal pathway: poverty, to malnutrition, to infection, to death, some would argue that the focus on the more proximal correlates is most efficient for if we do not treat the infection, people will die (Rothman, Adami, & Trichopoulos, 1998). There are at least two important shortcomings to this line of reasoning in relation to the argument developed in this dissertation. First, the conditions in which the infection was "allowed" to occur have not been addressed so the infection is likely to return. Second, the same conditions that led to the infection responsible for one disease are likely to be responsible for the incidence of other diseases (Syme, 1996). While from a purely clinical point of view it is clearly important to treat an individual who is infected, from a sustainable, preventive and populational point of view, it would seem more effective to focus on the conditions that might be bringing about high rates of infection (McKinley, 1993).

The discussion of proximal and distal "causes" of disease is important for epidemiologists and practitioners of public health generally to have as it places some fundamental questions on the table. This line of thinking can however have the unintended consequence of leading us down a path in search of *the* social

condition that causes differential disease states. The assumption that then looms behind a search for the social condition is that humans are somehow acted upon.

One of the fundamental reasons why practice theory was employed in this dissertation is to question the deterministic assumption made by many public health researchers. Practice theory is the theory of how human beings make and transform the world in which they live. In its most general form, practice theory asks the question: Why does a given society have a particular form at a particular moment? (Ortner, 1989). It seeks out configurations of social relations that move people to act in ways that produce the effects we observe. I adopted this type of questioning to examine the case of smoking initiation in pre-adolescents and ask: How is it that neighbourhoods come to have differential smoking initiation prevalences among pre-adolescents? The "how" is answered by examining structural properties of neighbourhoods in tandem with the social practices of the people therein observed. Rather than adopt a classic epidemiological approach to the answering of this question, a pursuit that would entail a predictive model that identifies proximal or distal determinants of smoking prevalence among the territories, I chose to examine the "collective lifestyles" of these territories; an exercise that involved delving into the social norms and local cultures of areas. In essence, I sought to explain why people are exposed to specific risk factors, or conditions, how they respond to these same factors (Pearce, 1999), and then how these responses reproduce and transform the conditions.

A return to the elements of practice theory in relation to our empirical example may be helpful in rounding out the discussion. The first element of practice theory, practices, presupposes an intrinsic relationship between practice and structure. This first point is critical as it provides a forum for epidemiologists, and public health practitioners in general, to reflect on the fact that one cannot be taken into consideration without the other; structure and practices are mutually reinforcing. Generally in public health, however, those interested in the social correlates of disease tend to separate out the social structure from practices thus studying discrete behaviours or socio-economic

variables as risk factors, but rarely the relationship between the two, and even more infrequently the context in which these co-arise.

I focused in this thesis on the examples of social inequalities in socio-economic status (SES) and the practice of smoking to elaborate on how both of these concepts, most oft employed as independent or dependent variables in regression analyses, can be used as jumping off points for an exploration of the relationship between social practices and the social structure. The collective lifestyles framework helped bring together each of the concepts so that they were understood in terms of their relations to other elements in the system. These other elements involved the social norms and the characteristics of the territories in the second article of the dissertation and the individual and integral variables of the third article. Unlike most social epidemiological studies, smoking initiation was not strictly used as a dependent variable, for which I sought its distribution and determinants, but rather as one social practice among many that helped understand how disease rates may come to be differentially distributed in local areas.

With practice theory we are concerned with the ways in which a given social order mediates the impact of external events by shaping the ways in which actors experience and respond to these events. Much of the response can be understood as structural constraints and opportunities, these constraints and opportunities being reflected within social practices. So not only did an exploration of people's social practices, such as the selling of cigarettes to children under-aged, or the creation of the wall in Steinback, or the adults' turning a blind eye to adolescents' smoking once they had passed a certain age, inform us as to what people were doing at the moment during which the interviews took place, but they also informed us as to what the general constraints and opportunities are in the different neighbourhoods. In essence, we learn how the social structure is lived in through people's practices. These practices and social conditions inform us of the general health risks of populations as they are reflective of collective lifestyles in a synonymous manner to Bourdieu's *habitus*.

Practice theory thus proved particularly useful for re-framing two of the ontological assumptions of social epidemiology; that material and behavioural determinants separatately influence disease states, and that people's actions are largely determined by the structural conditions under which they find themselves. Throughout the dissertation I build the argument that when trying to explain the differential distribution of disease outcomes it may not be fruitful to view instantiations of the structure, such as SES, and empirical examples of practices, such as smoking initiation, as phenomena that are separate, but rather as phenomena that together bring about disease among populations. Furthermore, the structure is not simply determining how people will act. Neither the SES, nor the resources of any particular territory in my study entirely determine the prevalence of smoking initiation among its youth. But neither are the youth entirely "free" and unconstrained by the social structure in terms of their smoking practices. The youth's smoking practices are shaped by the structural forces, but they are also shaping the structural forces through their own agency and practices. The determinism/free-will debate is highlighted by this example and framed in a less structuralist manner: smoking initiation in youth across the 32 territories is both a function of the structure and structuring the structure. Disease outcomes will therefore not simply be the result of the structure having acted on individuals, but rather, individuals "act out" the structure in their practices and these same practices feed into the larger system, thus recreating conditions that make the structure possible. This view throws out the notion that actors are passive spectators of events.

The I/We Paradigm Revisited

The issue of viewing social conditions as being more than just variables in an equation ties into the other thread that runs throughout the dissertation - the I/we problem. This paradigm is raised given that social conditions necessitate by definition that individuals be in contact with one another; for without social interaction between individuals there are no social conditions. In this way social conditions are not "outside" of individuals but are at once the creation of, and

influences on, individuals. Once we take an interest in social conditions, therefore, we are also concerned with the relations between sets of people.

Given this, I cannot possibly bypass the enormous influence that the work of Geoffrey Rose has had on this corpus. Rose affords us with a slightly different view to the discussion of proximal and distal causes. In his highly influential book entitled The Strategy of Preventive Medicine (1992), Rose eloquently explained the shared nature of disease outcomes by examining the notions of "at-risk" populations and populations as a whole. Rose argues that;

> The clinical or high-risk approach to prevention has tended to concentrate attention on the conspicuous segment of disease and risk, seeking to understand and control it as though it were the whole of the problem and failing to recognise its integral links with the state of the population in general (Rose, 1992, p. 14).

Indeed, his goal throughout the book is to convince the reader of at least two things. First, in the case of a significant number of health problems a large number of people exposed to a small risk may generate many more cases than a small number exposed to a high risk. Second, extremes in a distribution (people at very high risk for a particular health problem), are largely defined in relationship to the whole distribution, or: "Deviants are simply the tail of the population's own distribution; they belong to each other and society is one, whether it likes it or not" (ibid, 1992, p. 64). Rose uses the example of hypertension to illustrate the point. He shows, with data from the Intersalt Cooperative Research Group, (a study with standardised data on blood pressure and some related variables from over 10,000 men and women in 52 population samples from 32 countries) that a reduction of one-quarter in the size of the clinical problem of hypertension might be achieved by a fall of only 3% in average blood pressure across the whole population. Indeed, Rose affords us with an epidemiological interpretation of the I/we paradigm by suggesting that undue focus on sub-populations "at risk" for a particular health problem puts into peril

public health interventions that could have a more generalised effect by understanding and intervening on entire populations. This is so given that each individual plays a role in bringing about population health phenomena.

Rose's population argument proposes an interesting way of dealing with the discussion of distal and proximal causes. He suggests that if we only focus on those people who are at risk, i.e. those in contact with the infected people from the previous example, we risk being less effective than if we introduce preventive measures for the whole population to reduce malnourishment and poverty. This is due to the fact that change comes about by influencing entire populations, and the conditions that these populations are exposed to, given the effect that groups have on every individual partaking of the group, regardless of where each individual lies along the risk distribution. He suggests, in a very similar fashion to Len Syme, that to ask individuals at risk to change their behaviour is very difficult given that this necessitates change not necessarily compatible with their society: "The efforts by individuals (to change the behaviours and health of individuals) are only likely to be effective when they are working with societal trends" (ibid,1992, p. 62). This implies the need to define what the norms are before intervening.

So, for example, if one were to target change in smokers at high risk for cardio-vascular disease in a territory such as the Steinback of this dissertation, one would be unlikely to have an impact as the local conditions are such that smoking is encouraged and generally supported by people in the village. This is not to suggest that change is impossible, just that one will have to take into account other factors in the social environment, largely based on the local meaning attributed to smoking, if one is to have an impact. In order to change a norm, one must know what the original norm is.

Rose is faced, as many of us are in public health, with the constant tension between individual risk and population incidence. Without some focus on the individual we cannot understand the mechanisms that give rise to disease, as

ultimately disease is an individual experience. If we focus only on individuals, however, we lose the perspective on social influences (Marmot, 2000). And then, of course, we are confronted with the issue of how the two are related. Several authors suggest that utilitarians would tell us that the notion of community (or populations) is nothing more than "lots and lots of people" (Etzioni, 1990; Shiell and Hawe, 1996). In epidemiologic terms this translates into population incidence as being nothing more than the sum of individual risk. This brings us back to the issue raised in the introduction regarding the neo-classical position which does not recognise collectivities at all, or sees them as aggregates of individuals, without causal properties of their own and as external to the individual. The aggregating of individual data in public health research is in danger of tending towards this form of explanation.

This same theme was picked up in the third article of the dissertation by focusing attention on what are known as contextual effects. I develop the argument that contextual effects, in order to be consonant with practice theory, should not be viewed simply as aggregations of individual level data, for example, the median income of a territory, but also as the conditions under which people live. The integral variables, (or the agents and resources of Articles 2 and 3), and the social norms of Article 2 are collective properties of the neighbourhoods in which people live. These conditions, or collective properties, are not at all equivalent to the summation of each individual's characteristics though. They are properties that emerge from people's interactions.

Furthermore, the theoretical model that I develop suggests that the individual-level variables, that is the attributes and practices of the individual pre-adolescents and their households, shape the kind of agents and resources found in a territory. This was explored through the dissertation under the notion of recursivity. Recursivity is a theoretical and methodological notion that offers an interesting way of explaining the I/we relationship. Geoffrey Rose posits that individual activities are influenced by collective characteristics and norms. While he is not explicit about the influence that each individual then, in turn, has on

these same characteristics and norms, the individual is never far from his mind in terms of the importance she exerts on the population distribution. This dissertation makes explicit this recursive relationship between individual practices and attributes, and the collective characteristics and norms of neighbourhoods. It suggests that what any individual is and does influences what others are and do. We saw evidence of this most vividly in the second article where individuals were found to be active participants in the restructuring of the conditions that were both restraining and enabling their abilities with respect to smoking. This does not necessarily mean, however, that all individuals that live in neighbourhoods that are underprivileged socio-economically, and where there are many smoking-encouraging resources, will smoke. Rather, there may be practices related to smoking, and significance given to these practices, that are the product of local structural forces and that keep these same structural forces active.

Generalising our Understanding of Disease Generation

Both Sen's capability theory, and the application of practice theory in public health, give pause and suggest that there might be need for reflection regarding the applicability of general laws with respect to the specific mechanisms through which social phenomenon influences disease states. An entire literature stemming, amongst others, from critical realist philosophers, have focused on the ways in which social objects have been conceptualised, particularly in relation to the ways in which they are differently conceptualised in the natural sciences (Duncan, Jones, & Moon, 1996). In the social realm, the subject-object relationship presupposes the existence of social relations, or "subject-subject" relations. In other words, in order to understand the world we must understand each other (much of which is conveyed using a common language through which we live and interpret the world) (Sayer, 1992). So, for instance, an individual's relationship to cigarettes is a function of the relations that she has with other human beings. The cigarettes themselves have no intrinsic meaning or utility. Cigarettes are given meaning and utility by the situated

creation of meaning. So for instance, smoking in Steinback is perceived to be normal whereas smoking in Aurelius is generally viewed to be "bad" with parents trying to control it and those who smoke being perceived as having problems. The search for order and regularity that drives much of the natural sciences, and that is enshrined in most positivistic thinking, cannot therefore be uncritically adopted in social epidemiological research such as social inequalities research.

A fundamental aspect of one of the most prominent critical realist theorists of science, Roy Bhaskar, is that the notion of closure in systems of explanation is implausible in the human sciences. For Bhaskar, closed systems depend on the thesis of what he calls regularity determinism: "For every event y there is an event x, or set of events $x_i.....x_n$ such that x or $x_i.....x_n$ are regularly conjoined under some set of descriptions" (Bhaskar, p. 69, 1975). This requires that for any one event x, y must follow. He argues that systems that might function as such are unrealistic when examining the human sciences in particular given that: a) events are not happenings that just "happen" to passive things, i.e. people have agency and can avoid, change, and embrace events; b) two or more mechanisms, perhaps of radically different, and a priori unspecified kinds can combine to produce effects so that we do not know precisely which mechanisms will be at work, and thus, cannot deductively predict anything. What Bhaskar is suggesting here is that human agents will alter the course of mechanisms and that the social world is full of unexpected contingencies. Bhaskar therefore calls for a science that examines what he calls "open systems".

Critical realism therefore emphasises the likelihood of contextual variation and underscores the inadequacy of epistemological positions and methodologies that assume universal applicability (Duncan, Jones & Moon, 1996). The objects of scientific knowledge are models, ideals of the natural order. These objects are not independent of human beings or human activity in general as they are the construction of the human mind and activity. If they are the construction of both the human mind and activity, one must abandon trans-historical and trans-cultural

explanations of social phenomenon, as human agents act differently in different contexts due to their transformative nature.

This is where practice theory is particularly helpful in bringing us out of a purely voluntarist or purely structuralist interpretation of smoking initiation. The results of Article 2 demonstrate that our knowledge of the differential distribution of cigarette sales and other smoking-encouraging resources, based on the SES of territories, is important and often associated with the smoking prevalence of pre-adolescents in the area. When we turn to the focus group materials, however, we quickly realise that people's social practices are not always the direct reflection of the instantiations of the social structure, suggesting that people have different ways of interacting with and interpreting the social structure. People do not just react in generalisations to structure but understand and interact with it in different ways. The conclusions of Article 2 therefore suggest, similarly to critical realist thinking, that one cannot rely on the mechanism that brings about smoking initiation to function in a completely synonymous fashion from one territory to another given each territory's own particularities - what I have termed collective lifestyles. While generally speaking, from the correlational analyses, there is a tendency for territories with higher SES to also have greater proportions of smoking impeding resources, this relationship is not always manifested in the social practices of people in the territories.

In fact, the generalisability question focuses our attention once again on the relationship between individual and collective properties. Generalisations are often extrapolations; rough estimates of what situations might be like based on other situations (Sayer, 1992). These extrapolations are based on descriptive summaries, and thus, cannot take into account individual variation. Bhaskar also discusses this issue when raising the notion of tendencies. In open systems, according to Bhaskar, tendencies are: "roughly powers which may be exercised unfulfilled" (1975, p. 98). In closed systems, a tendency, once set in motion, would lead to a pre-determined result. In open systems, on the other hand, this

pre-determined result will not necessarily occur due to the presence of "offsetting" factors or "countervailing" causes.

The results of this dissertation point to evidence of what Bhaskar refers to as open systems. Returning back to the empirical example of smoking initiation, much of the public health literature on this subject, cited throughout the dissertation, suggests that the effects of income level in a neighbourhood, for instance, will influence the likelihood of individuals being initiated to smoking. While there may be tendencies in this direction, this gives no room for individuals to differ in terms of how income level is expressed in their neighbourhood and how this relates to smoking. Indeed, with the data amassed from some of the territories explored in Article 2, if I had followed an epidemiological paradigm, I would have been unable to explain why smoking initiation was low in a poor neighbourhood and why so many smoking-encouraging resources abound in a relatively well-off neighbourhood.

CONCLUSION

PARTING THOUGHTS AND CHALLENGES

Of late there has been somewhat of a backlash against the apparent individualism of chronic disease epidemiology and a call for a return to a more traditional focus both on the health of populations and on cultural, social structural, group-level, and environmental influences on health (Macintyre & Ellaway, 2000). This dissertation responds, in some small way, to this backlash and suggests that a possible response to this call is to truly integrate social theory into our understanding of health phenomena.

Many researchers now concur with the idea that modern epidemiology lacks coherent substantive theory and that it is based on methods that are inadequate for studying "the distribution and determinants of health-related states or events in specified populations" (Pearce, 1999). I could not be more in accordance with McKinlay and Marceau (1999) when they state that the inductive reasoning of epidemiology has us tail-chasing. Furthermore, they add that after the discovery of a new risk factor, plausible ex post facto biophysiological explanations are preferred; seldom is one provided with an a priori theoretical model to guide the statistical quest.

Much of the dissertation is a response to these criticisms of modern epidemiology. I attempted to do things somewhat differently from a conventional epidemiological study by integrating social theory into my explanation of the differential distribution of smoking initiation. This was done by creating a model and applying it, deductively, to the case of smoking initiation. The model was largely based on practice theory. Practice theory, however, is just one of many social theories that could be drawn on to expand social epidemiology in the future and I firmly believe that there are many more potential applications of such approaches in the field.

The second important outcome of the dissertation is the substantiation of the fact that in public health research there is fecund ground for the consideration

of collective characteristics that are different from the sum of individual attributes. The examination of both social practices and the instantiations of the social structure, here developed as agents and resources, as examples of these collective characteristics gives some focus for future research.

Transformation and Intervention

There are, of course, some challenges with respect to the collective lifestyles framework and its application within public health practice. First, within Giddens' structuration theory action is not viewed as being solely restrained by the structure (as traditional structuralists are wont to believe), but is also considered to be potentially transformative of the structure. Transformative powers are often analysed in terms of agency, a term I defined as the ability for people to deploy a range of causal powers. The way in which agency is conceptualised, primarily in Article 2, permits us to examine how people come to reproduce the rules and resources of their neighbourhood. The framework is thus powerful as a descriptive tool to examine how it is that smoking initiation prevalence differs from one place to another. In terms of its ability to explain how change might come about, however, it is certainly less strong.

Rütten (1995) has also picked up on this theme, more specifically in reference to health promotion. He writes that the notion of structure suggests persistence, repetition and self maintenance, thus habituation. Giddens also writes of the importance of routines for individual's sense of what he calls ontological security: "Ordinary day-to-day life - in greater or less degree according to context and the vagaries of individual personality - involves an ontological security expressing an autonomy of bodily control within predictable routines" (Giddens, 1984, p. 50). According to the collective lifestyles framework, and the empirical example of smoking initiation used in this dissertation, there is a constellation of resources, individual and collective characteristics, and social practices that bring about the prevalence of smoking initiation among pre-adolescents in any one territory. It is likely that a change in a specific element of this constellation will

influence the constellation as a whole, but given the non-deterministic nature of the framework, one cannot be sure in what way this change will manifest itself. Many in the field of health promotion specifically speak of creating conditions that might stimulate the generation of new forms of practices (Vieira da Silva & Dussault, 1999). Again, given the previous discussion regarding the limited applicability of generalisations pursuant to the collective lifestyles model, creating "universal" change through general programming will be unlikely. The notion of collective lifestyles does point to the necessity of understanding local conditions and meaning, and of intervening with respect to populations, rather than individuals, in order to intervene appropriately. The collective lifestyles framework does not, however, afford us an explanation as to how new practices and structures emerge. This, I leave to future research efforts.

Some Political Ramifications

The second challenge is of a political order. It was useful to test some of the assumptions of the collective lifestyles framework using neighbourhoods as the ecological unit given that I could operationalise and define locally-based indicators of the social structure. This was convenient and, as we find in both Article 2 and Article 3, quite successful. There is, however, a potentially important shortcoming with this particular application of the collective lifestyles framework, and because it has important potential political ramifications it is worthy of reflection here.

There is an increasing tendency for academics and politicians alike to explain phenomenon at a "community" level. A case in point is the current excitement over the notion of social capital defined as:

> "...the web of cooperative relationships between citizens that facilitates resolution of collective action problems and those features of social structure, such as levels of interpersonal trust, norms of reciprocity and mutual aid, that act as resources for such collective action" (Coleman, 1988; Putnam, Leonardi, & Nanetti, 1993).

There are, however, some dangers of playing into the hands of neo-liberalist tendencies by uncritically using such concepts. Neo-liberalism privileges the market for distributing resources and power, seeks to limit the role of the state and emphasises individual (and family) freedom. Because of the rejection of state intervention, the locale considered most appropriate for achieving collective goals is civil society (the voluntary sector, community groups, etc). Regressive political agendas can, and have, picked up on some such findings and appropriated them to argue that the problems of poor and minority communities are really deficits of social capital and that local communities must solve their own problems (Lynch, Davey Smith, Kaplan, & House, 2000). By turning attention to local conditions, or local relationships, through notions such as social cohesion or social capital, we could have the unexpected effects of reordering public priorities away from the search for societal social justice and the larger structural forces at work (Jenson, 1998). Furthermore, there is some danger that the focus on what materially and politically disenfranchised communities can do for themselves may be akin to community-level victim blaming, thus reinforcing low expectations for structural change. This, of course, is not the intention of the collective lifestyles framework. I did make mention, in Article two, that the application of the framework in this dissertation should take into account the fact that neighbourhoods are influenced by larger societal forces and that what I call collective lifestyles are only local derivatives of larger collective lifestyles. Again, however, future research of this kind must make explicit that local manifestations of collective lifestyles are embedded in large structural processes.

As with any new theoretical framework there are always shortcomings and limitations. What is particularly fascinating in the field of public health, however, is the potential for theoretical developments to be put into practice and for

practice, in turn, to then inform theory. I could only hope for this dialogue to be taken up in reference to the framework of collective lifestyles.

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APPENDICES

APPENDIX 1 - CHILDREN'S QUESTIONNAIRE

APPENDIX 2 - PARENT QUESTIONNAIRE

APPENDIX 3 - EXPLANATION LETTER

APPENDIX 4 - CONSENT FORM

APPENDIX 5 - RECALL LETTER

APPENDIX 6 - FROHLICH, K. L., & POTVIN, L. (1999). HEALTH PROMOTION THROUGH THE LENS OF POPULATION HEALTH: TOWARD A SALUTOGENIC SETTING. CRITICAL PUBLIC HEALTH, 9, 211-222.

APPENDIX 7 - FROHLICH, K. L., & POTVIN, L. (1999). COLLECTIVE LIFESTYLES AS THE TARGET FOR HEALTH PROMOTION. CANADIAN JOURNAL OF PUBLIC HEALTH, 90, SUPPLEMENT 1, S7-S10.