Received: 23 July 2020 | Accepted: 16 March 2021

DOI: 10.1111/1467-9566.13275

SOCIOLOGY OF HEALTH & ILLNESS

ORIGINAL ARTICLE

Obese societies: Reconceptualising the challenge for public health

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Funding information
The authors received no additional funding for this work.

Abstract

The prevalence of obesity and related health problems has increased sharply in recent decades. Dominant medical, economic, psychological, and especially epidemiological accounts conceptualise these trends as outcomes of individuals' lifestyles – whether freely chosen or determined by an array of obesogenic factors. As such, they rest on forms of methodological individualism, causal narratives, and a logic of substitution in which people are encouraged to set currently unhealthy ways of life aside. This article takes a different approach, viewing trends in obesity as consequences of the dynamic organisation of social practices across space and time. By combining theories of practice with emerging accounts of epigenetics, we explain how changing constellations of practices leave their marks on the body. We extend the concept of *biohabitus* to show how differences in health, well-being, and body shape are passed on as *relations* between practices are reproduced and transformed over time. In the final section, we take stock of the practical implications of these ideas and conclude by making the case for extended forms of enquiry and policy intervention that put the organisation of practices front and centre.

KEYWORDS

obesity, public health, social theory

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INTRODUCTION

Many scientific papers and official public health documents report that the global prevalence of obesity, usually defined as a body mass index of more than 30, has increased sharply in recent decades. Despite successions of national and international policies to stem this trend (Gracia-Arnaiz, 2017), rates of obesity continue to rise, along with associated risks to health (Adamson et al., 2007; Allender et al., 2006; British Medical Association, 2005; Caballero, 2007; Department of Health, 2011; Department of Health & Department for Children, Schools & Families, 2008; Ells et al., 2015; Mulvihill & Quigley, 2003; Public Health England, 2020; UK Government, 2016). These apparently simple statements disguise the extent to which definitions, trends, and causes are contested within the medical and biological sciences and beyond (Bell et al., 2011; Lupton, 2012; Oliver, 2006). They also overlook the politics of the topic and the historically specific, and often highly normative terms in which obesity is represented (Gracia-Arnaiz, 2017; Hofmann, 2016; Lang & Rayner, 2007).

As one might expect, ideas about the origins of obesity, its status as a 'problem', and the range of possible responses vary across disciplines and traditions. Within the realm of *public health* specifically, obesity is defined as a risk associated with a number of non-communicable diseases, notably coronary heart disease, certain cancers, and type 2 diabetes. The non-communicable diseases are thought of as preventable because some of their causes are 'reversible', originating in the ways people live rather than being 'intrinsic' to their biology. This medical and etiological framing underpins advice and guidance founded on an interpretation of obesity as an outcome of an imbalance between how many calories people consume and how many they expend.

Today, 'reversible risks' or 'lifestyles' are the focus of different kinds of policy intervention, depending on whether the balancing of calories in and out is thought to be an outcome of individual choice, behaviour, and responsibility or a consequence of external causes, including the effects of an obesogenic environment. The strategies and policy conclusions that follow are not the same, but both interpretations explain and account for obesity in a causal fashion and both suppose that individuals' lifestyles, whether freely chosen or determined, represent a legitimate and important site for public health enquiry and policy intervention. Both also suppose that all other things being equal, people can switch between more and less healthy ways of life, and that national policies can bring about change.

Medical, economic, psychological, and especially epidemiological explanations of obesity and the traditions of causality and methodological individualism on which they are founded, are deeply influential – informing policy responses rooted in theories of personal responsibility, choice, and blame. Despite being almost wholly unsuccessful, similar strategies are adopted in efforts to prevent other types of non-communicable disease. As Kelly and Russo (2018) point out, dominant agendas and methods consistently conceptualise trends in smoking, heart disease, obesity, physical activity, and poor health in later life, or alcohol consumption and liver disease as outcomes of an array of causal factors which can be acted upon, once located. This linear (even where complex routes are acknowledged), cause and effect, intervention and outcome, reductionist view is so prevalent, and so taken-for-granted, that alternative ways of seeing the world are marginalised (Kriznik et al., 2018).[1]

In our view, the failures of mainstream research and policy reflect what we might think of as blind spots inherent in current approaches. One has to do with the representation of change over time. While etiological methods, that is those seeking to understand the causes of health and disease, have produced very detailed knowledge about the biological mechanisms involved, they have done so at the expense of understanding the historical development of social organisation and order in which those biological processes take shape and have effect (McMichael, 1999; Meloni, 2019).

For social theorists, including Bourdieu (e.g. [1972] 1977, [1980] 1990) and Schatzki (e.g. 1997, 2002, 2010b), people are the product of their own past, socially and materially reproduced not in the

abstract but through ongoing, recursive relations between practices. Although crucial for the constitution and transformation of daily life, these dynamic processes are obscured in research and policy that abstracts individual action from the social world, and that seeks to isolate and modify causal factors. This is not an accident or an oversight: in public health, and in much medical discourse as well, the logic of slicing out and influencing causal factors *depends on* overlooking the fact that the social body has a history.

A second limitation relates to the way in which social and economic conditions are inscribed in the body. For example, the fact that there are associations between socio-economic status, longevity, and health is well known and well documented. However, efforts to explain how differences in health and well-being are reproduced alongside and as part of the organisation of society are, to date, much less successful. This is not surprising: rather, it is a necessary and unavoidable consequence of the theoretical and methodological assumptions on which so much research and policy are based.[2]

Bringing these points together, we suggest that public health has been unable to make much impression on the problem of obesity because it misconstrues the nature of the beast, concentrating on individual lifestyle and choice and consequently overlooking social and historical trends in the constitution and transformation of social practices that, in combination, shape the social body literally and metaphorically.

The only way out of the present impasse is to develop fundamentally different ways of thinking about the relation between the body and society. Given that dominant epistemic positions are so well entrenched, it is ambitious to argue for a significant re-framing of the processes that underpin trends in body mass and responses to them. But that is what we do.

In taking this challenge on, we take heed of Giddens' contention that practices, as they are enacted and transformed across space and time, constitute the central topics of social analysis and enquiry (Giddens, 1984). In what follows, we identify and work with a selection of theoretical resources that contribute to the project of conceptualising trends in obesity as expressions and outcomes, not of one practice or another, but of how multiple practices connect, synchronously and over time.

We are not the first to explore the relevance of practice theory for conceptualising health and well-being (see, for example, Maller, 2015, and the special issue of *Sociology of Health and Illness* edited by Cohn, 2014). Social theories of practice, including Bourdieu's notion of habitus and Giddens' structuration theory, have been pressed into service in order to illuminate a wide range of health-related topics. These include physical education (Fitzpatrick, 2011); lifestyle (Dumas et al., 2014); physical activity and exercise (McLaren et al., 2012); running (Wiltshire et al., 2018); football (Bunn et al., 2016); cycling and fell running (Nettleton & Green, 2014) and walking (Hanson et al., 2016)]; as well as food and eating (Chan et al., 2010; de Morais Sato et al., 2018; Delormier et al., 2009; Lindsay, 2010); smoking (Blue et al., 2016); vaping (Keane et al., 2017); alcohol consumption (Hennell et al., 2019; Meier et al., 2018; Supski et al., 2016); the use of self-monitoring devices (Williams et al., 2018); weight management (Jauho et al., 2016); gambling (Gordon & Reith, 2019); and cross-cutting issues related to embodiment, class and gender (Robinovich et al., 2018; Warin et al., 2008).

As well as recognising that present arrangements are outcomes of previous practices, these studies refuse to externalise and isolate behavioural 'drivers'. In different ways, all acknowledge the recursive constitution of agency and structure. However, the tendency to 'tell the story' of one practice at a time makes it difficult to see how practices (for example of eating and exercise) interact and how transformations ripple across the plenum of practices as a whole. What is missing, and what this paper offers, is a much more fluid account of obesity as an expression of extensive complexes of practices that are continually on the move.

It is important to be clear about the nature of our contribution. Our aim is not to produce a unified theoretical framework. Rather, it is to detail the sorts of relations and the types of interactions

on which trends in obesity depend. The approach we take is distinctive in that it situates seemingly private matters and individual problems as socio-historical issues; it cuts across disciplines, and it provides a means of detailing changing complexes of social practice that reproduce bodies of increasing weight and size. To reiterate, what follows is not an exercise in applying practice theory to the problem of obesity as it is currently framed. Nor is this article designed to identify alternative courses of action that today's policymakers might adopt. As the title implies, the challenge is to reframe the terms in which obesity is understood, to redefine related lines of enquiry, and to overhaul contemporary understandings of the relation between policy and practice.

Our first step is to elaborate on the relation between social practice and body mass. This involves a necessarily abstract discussion of the body and of the merits of conceptualising bodies as the material traces and crossing points of multiple practices (section 2: the body at the intersection of many practices). Having introduced an ontology that conceives of the social world as made of emerging constellations of practices, we identify some of the dynamic processes through which extended configurations of practices develop and spread, illustrated with reference to snacking and watching TV (section 3: how complexes of practices emerge and change). We then focus on how practices, and more importantly, complexes of social practices, are inherited and how lines of dis/advantage are reproduced (section 4: passing on complexes of practices). In section 5 (extending agendas: implications for public health research and policy), we argue that public health research and policy are part of these ongoing trajectories and that contemporary interventions reproduce normative accounts of human bodies, of what they can, and should, be able to do. In conclusion, we make the case for extended versions of research and intervention that are reflexive, sociologically and historically informed, and focused on the potential for intervening within and as part of always shifting complexes of social practices.

THE BODY AT THE INTERSECTION OF MANY PRACTICES

To develop an account of rising rates of obesity that suffers neither from the limitations of methodological individualism or from the simplicity of causal narratives, we first need to establish an understanding of the *social body*, recognising it as a crossing point of longer term historical and biological processes. People have had relatively large bodies in all historical periods, but obesity, as it is currently defined and understood, is a modern phenomenon. This is partly an artefact of method. Before there were systematic records of peoples' height and weight and before the introduction of a body mass index[3] concepts of 'normal' weight were not based on statistical analysis (Armstrong, 1983). This does not mean that being fat was of no social, practical, or medical significance. As we know, interpretations of body size have developed and changed over centuries, along with ideas about human biology and the symbolic and cultural status of the body. Contemporary understandings build on these histories and represent but one formulation of performative and also intersecting notions of human biology and physical form.

Now, as in the past, features of weight and size have meaning and significance not on their own, but as part of more extensive transformations in social life. This is strikingly clear in Vigarello's excellent account of obesity from the middle ages on. In *The Metamorphoses of Fat: A History of Obesity* (2013), Vigarello notes that the value of having a 'bear like' physique diminished alongside the growing importance of horse riding and forms of warfare that favoured those who were slim and nimble. More straightforwardly, bodies are shaped by what they do (Crossley, 2004a) and what they do is an enactment of particular historical and social conjunctions. There are different ways of interpreting this rather obvious point. One is to conclude that changes in body shape are direct expressions of social and economic organisation.

Responsible factors

In searching for the causes of current trends in obesity, some authors highlight the move from agricultural labour to manufacturing and the rise of the service industries, arguing that this has led to increasingly obesogenic ways of life (see, for example, Philipson & Posner, 2008). On closer inspection, these kinds of links are never that clear and especially not over long periods of time. Western economies have certainly transformed over the last five centuries but there is not much evidence that the clerical work force, whose numbers increased as part of the latter phase of this transition, were prone to high levels of obesity, at least not until quite recently (Marmot et al., 1978, 1991).

Others focus on shorter term trends. Various writers attribute contemporary patterns of obesity to specific developments, including the rise of motorised transport. For example, Dixon and Broom (2007) focus on whether people exercise (or at least walk) less when they rely on the car. Although important in guiding policy, the project of distilling causal connections obscures as much as it reveals. After all, driving a car represents one tiny feature of the many more extensive transformations entailed in the emergence of what Urry has described as a complete system of automobility (2004).[4] Setting these complications aside, commentators press on, attempting to tease out precisely what it is about contemporary ways of life that underpins trends in body mass in order to tailor equally precise responses.

Informed by this kind of research, public health interventions target specific behaviours believed to have a critical role in causing weight gain or weight loss. Recommended actions include reducing sedentary pursuits in favour of exercise; replacing high- for low-fat diets, and so on. This remains the dominant approach despite the fact that connections between specific activities (related to dieting and exercising for example) and obesity are far from simple. Basic equations such as the relationship between calories in and calories out are complicated; the role of exercise is mediated by genetics, hormonal imbalances, and patho-psychological and physiological considerations, and there is a suggestion that the 'kind' of calories is important as well (Malhotra et al., 2015; Pechey et al., 2013). Data about the value and the effects of physical activity are also confounded by socio-economic and gender differences and by smoking (Holtermann et al., 2018; Strain et al., 2016). More importantly, we argue that the project of isolating more or less responsible 'factors' (e.g. historical shifts in labour, the number of fast food outlets within a certain area, or particular kinds of foods consumed) fails to grasp the routes through which 'life' inscribes itself on the body. In other words, claims about the relevance of the shift from agriculture to manufacturing, about automobility and urbanisation, or the mass production of food are not wrong, but they are wrongly thought of as explanatory, causal factors.

Habitus and the social body

An alternative strategy is to treat the dimensions of the entire 'social body' as an expression or trace of the totality of practices that make up a society. Bourdieu's concept of habitus ([1997] 2000)[5] provides a useful point of entry. Habitus is not a deterministic concept, it is a generative principle, which makes it possible to overcome distinctions (e.g. individual and society; embodiment and culture) that organise thinking and social scientific research in particular ways.

> In … [Bourdieu's] hands, habitus is a mediating construct that helps us revoke the common-sense duality between the individual and the social by capturing 'the internalization of externality and the externalization of internality', that is, the ways in which the sociosymbolic structures of society become deposited inside persons in the form of

> lasting dispositions, or trained capacities and patterned propensities to think, feel and act in determinate ways, which in turn guide them in their creative responses to the constraints and solicitations of their extant milieu. (Wacquant, 2016, 65)

Because bodies are both in the world and occupied by it, the body and the social world are indivisible empirically. As many have argued before (e.g. Crossley, 2004b; Ingold & Palsson, 2013; Lock & Nguyen, 2018), biological and social processes interact. The central insight is that the experiences of material life, rendered meaningful through symbols and social practices, are in a constant and recursive biological interaction with the social body. People exist in physical/material and social spaces which define and limit the possibilities of human action and which have direct biological effects on the body. The body occupies social space and time. Humans experience it as such and carry it as a freight of what are, in different times and places, variously defined as biological benefits and disbenefits throughout their lives. Importantly, the body is integral to and part of these physical and social regularities. In short, biology is intrinsic to society, society is intrinsic to biology, and both are melded in the practices of everyday life that in turn generate histories and trajectories that shape future fields of possibility.

Bourdieu and Wacquant are social scientists but theories about the complex interplay between body and society are not confined to these disciplines. Within human biology, recent developments in metabolomics[6] and epigenetics now provide striking empirical support for the suggestion that the social world is, in important respects, inscribed in the body, and that there is an historical aspect to this as well. The argument is that the human interactome[7] (epigenetic markers, genes, RNA transcripts, proteins, and metabolites) carries traces of previous life experiences including experiences in the social world (Meloni, 2019). As a result, social experiences during the life course have profound biological effects (Kelly et al., 2014). Similarly, there is emerging evidence that certain biological consequences of social experiences are transmitted inter-generationally (Radford, 2018).

Bringing these threads together, we follow Warin et al. in their development of the hybrid concept of *biohabitus*:

> .. habitus is embodied and is a constant interplay between individuals and entire collective histories (Bourdieu, 1990b: 91). For Bourdieu, it is learned from early childhood, but spans the past and present. Biohabitus suggests that social practice is embodied much earlier, in utero and in the memory traces of molecular and cellular lives. (Warin et al., 2016, 65-6)

The notion of *biohabitus* opens the 'black box' of the biological body and extends it both socially (affecting and affected by social practices) and historically (inter-generationally).

Other accounts extend the body in much the same way. For example, 'new materialist' writers describe bodies and their shapes as part of an extensive assemblage that ranges across: 'social relations of family mealtimes and the appetites and desires that fuel human food consumption to the broader economic relations that drive both food processing and distribution and the consumption of food.' (Fox et al., 2018, 116). Post-humanists have similarly argued for turning away 'from a focus on identifying what 'is' a body or the agentic meaning of experience, and towards a focus on *what bodies 'do''*. (Fullagar, 2017, 250, *italics added*.) As Warin et al. note, the concept of *biohabitus* 'allows us to understand the situated and contingent nature of bodies across time…' because it positions '… bodies [as] embedded in temporo-spatial landscapes of materiality and history'. (2018, 57).

These are important observations but they overlook the double status of the individual and collective body as the material trace and crossing point of multiple practices (Reckwitz, 2002), *and* as the carrier (and transformer) of intergenerational effects that are in turn implicated in how practices are

passed on. In other words, understanding (and possibly intervening in) trends in these areas depends on understanding how sets of practices combine and converge, and on understanding the body as a carrier not only of complexes of practices and their traces but of their intergenerational effects as well.

In next two sections, we work through the practical and theoretical implications of these ideas. We do so by building on recent research in social theory (Hui et al., 2016) and epigenetics, first detailing some of the routes through which complexes of practices emerge and change and then turning to the ways in which such complexes and their embodied consequences are passed from one generation to another.

HOW COMPLEXES OF PRACTICES EMERGE AND CHANGE

Practices are what give us both 'the feel for' and define the social game (e.g. rules), and as Giddens argues, they are distributed across space and time and they are densely interwoven. As already mentioned, studies of individual practices, like showering (Hand et al., 2005) and eating (Warde, 2016), tend to play down aspects of interconnection, overlap, and interpenetration but as Schatzki observes, in carrying out the practices that befall them,[8] people link activities together and contribute to the persistence and evolution of practice organisations. In the process, they lay down the material arrangements (Schatzki, 2002, 2010a, 2019) (e.g. resources, devices, and infrastructures (see Shove, 2016)); timespaces (Schatzki, 2010b); temporal rhythms (Southerton, 2013); and 'general understandings' (Schatzki, 2002; Welch & Warde, 2017) through which practices 'hang together'.

There are different ways of thinking about how practices combine to form 'textures' (Gherardi, 2019) or 'architectures' (Kemmis, 2019; Mahon et al., 2017). Contributors to the collection *Nexus of Practices: Connections, Constellations, Practitioners* (Hui et al., 2016) consequently write about the 'suffusing' or spreading of material relations, discourses, and general understandings that are 'threaded through' the plenum of practices. These discussions draw on earlier work, including *The Site of the Social* in which Schatzki lists types of intersection that characterise different forms of practice organisation. These include: '… contagion, continuity over change, hybridisation, bifurcation, fragmentation and appropriation, coherence, conflict, insemination, common events, media of communication, and politics…' (Schatzki, 2002, 252). As these terms suggest, and as others have described (Blue, 2019), relationships between practices and complexes, and therefore practices themselves, are always in flux. Practice connections may be synergistic or antagonistic but continuity, change, and emergence are intrinsic.

The contention that practices and complexes of them are continually emergent does not undermine the project of seeking to understand the interactions involved. Rather than documenting the history of eating or exercise – as separate phenomena – what is needed is an account of intersections and historical processes and of how living conjunctions of practices are enacted, reproduced, and transformed. We briefly discuss the relation between snacking and watching TV as a means of showing how practices coevolve and how these dynamics might be specified and studied.

Reconfiguring the social body: snacking and watching TV

Schatzki identifies various routes through which practices change together, including processes of colonisation[9] and insemination, (2002, 248). In writing about snacking and watching television, and doing so in these terms, we mobilise Schatzki's vocabulary, using it to capture and represent forms of emergence and shifting relations between practices, the traces of which are directly and indirectly embodied, individually and collectively.

Some words of warning are in order. In writing about snacking and watching television, we take heed of the relation between calories in and out and their effect on body mass. However, our aim is not to privilege the number or type of calories, or to calculate the energy related to particular forms of exertion or intake. We do not pick on these intersections because we think they are especially or uniquely important in accounting for obesity: indeed to make such a claim would be to fall foul of our emergent rather than 'causal' approach. Nor is the aim to bring a practice theoretical approach to bear on 'factors' that are thought be responsible for obesity. Instead, we discuss snacking and TV watching in order to illustrate how practices and relations between them develop over time, and how the 'ends' or teleoaffectivities of practices (what might be thought of as motivations, goals, purposes, etc.) evolve as new associations and configurations are made. In taking this approach, we tread a fine line between identifying connections between *specific practices* (snacking, watching TV) and representing these as processes through which much *more extensive complexes* are constituted. Both the terms we use – 'colonisation' and 'insemination' – imply dyadic relations, for example between the coloniser and the colonised. However, our point is that practices are so multiply interwoven, that these are never simply two-way interactions.

Colonisation

There is some evidence that snacking is eroding previously established meals and mealtimes. In writing about these movements, Twine (2015) suggests that.

> … we could look to the erosion of the meal by snacking in terms of a process of 'practice colonisation' in some contexts. In some daily routines breakfast and lunch could increasingly be described as 'snack like' calling into question a simplistic and relational difference of snacking vis-à-vis the meal. (2015, 1275)

One interpretation is that snacking is challenging the status of breakfast and dinner. Whether this is described as a process of colonisation, contagion or something else, the starting point is that *provisionally stable* relations between practices have been disturbed. However, it is important not to be fooled by what look like forms of stability: complexes of practices are *always* on the move. Processes like those of colonisation and insemination entail forms of intersection that extend well beyond the practices that are immediately involved. In describing the spread of snacking, Twine recognises the significance of wider trends, noting that the social weakening of formal mealtimes is part of a much broader process of destructuration. In his words:

> Destructuration refers to a loss of temporal fixity of eating events, a spatial diversification of eating sites and a social destructuration with an increase in solitary eating events. (1275)

Regardless of the empirical validity of the temporal fragmentation thesis (it appears that while solitary eating is on the rise, mealtimes in the UK have been relatively fixed for over fifty years (Yates & Warde, 2017)), these observations suggest that processes of colonisation do not only happen in one direction. As represented here, snacking is part of a much more extensive, always ongoing reconfiguration of practice complexes, linked to temporal, material, and spatial arrangements within but also beyond the home. Understood in these terms, colonisation describes the intersection of a myriad of practices in which the ends of a newly named configuration of eating– that is snacking, are worked out.[10]

Similar points can be made about the concept of ‘insemination’, this being another route through which complexes of practices develop and change. In this case, and in the example we discuss, the dynamic is one in which co-existing practices are reconfigured (but not overtaken or marginalised) by the ‘arrival’ of some new way of doing or spending time. The relation between television watching and snacking illustrates this process.

Insemination

In the UK, the introduction of television (through the 1950's), and related patterns of broadcasting and viewing, transformed the ways in which people spent their time, especially in the evenings.[11] The consequences for other practices were initially unclear: would gardeners give up their hobby and spend more hours indoors? Would dinnertime shift? And what about getting children to bed? Over the years, television watching has become entangled in a multitude of shifting relations that have collectively reconfigured the use of the home. No longer confined to the living room, television watching also happens in the kitchen or in bed, in the pub, and in many other public and private spaces. Temporal rhythms of watching have changed as well: from collective to solo viewing, and more recently from scheduled time to any time and from co-present to distanced but synchronised viewing. The dynamic association between eating and watching TV is situated within and as part of these other trends.

Inspired by food trays provided on airlines (another infrastructure and another set of practices) and enabled by the frozen food system (also linked to other infrastructures and practices) (Smith, 2009), the concept of the TV dinner signifies the emergence of a new hybrid practice: eating-while-watching TV. With related systems of food preparation and provision in place, new variants have emerged including eating-on-the-move; eating-at-the-desk, eating-between-meals and so on. These have collectively reinforced and transformed the purposes, meanings, and definitions of eating and of snacking. This is an important insight. As our observations about TV dinners and their successors (ready meals; snacks, food-to-go) suggest, specific interfaces – for instance between eating and watching TV – cannot be understood in isolation.

This is not simply a matter of noticing that systems and infrastructures of food provisioning have changed. They have, but this is only part of the story. As described above, snacking is no longer a ‘treat’ consumed in addition to a real meal: it has become a form of eating that can happen in the morning, on the move, at what used to be lunchtime, and sometimes in the evening in front of a screen – whether television, laptop or smartphone. These developments are not the result of discrete or bounded interactions: instead, they are taking place alongside and in relation to the always-changing composition of domestic life, work, and leisure.

We have used the example of snacking to illustrate the convergence of multiple social practices and to characterise these relations in practice theoretically compatible terms. This takes us so far, but we have yet to explain how changing complexes of practice are inscribed in the body. It is to this topic that we now turn.

PASSING ON COMPLEXES OF PRACTICES

It is all very well to claim that obesity is a trace of changing complexes of practices, but exactly how does the body figure in these dynamics? We have already provided part of the answer in claiming that the human body is the material trace and crossing point of multiple practices. In simple terms,

snacking and watching TV, working, commuting, socialising, relaxing, and so on are reproduced and transformed by the groups of people who enact them. These enactments are in turn important for the bodies of those involved and for the shapes they become.

To understand trends in obesity, and their global extent, we need to say more about how complexes of practice are 'passed on' from one generation to the next. For Bourdieu, fields, including those related to body shape and aesthetics (e.g. fashion, bodybuilding, body modification and tattooing), as well as those that encompass practices that are less directly connected to the body (e.g. mealtimes, leisure, home and work life, military warfare), are linked in various ways including 'through an unequal distribution of the forms of capital pertinent to them' (Crossley, 2003, 44). This is important because Bourdieu contends that class-based cultural advantages and disadvantages, in the form of access to capitals required for success in a given field, are transmitted from parents to children through the habitus. He argues that ensuing patterns of dis/advantage are formalised through school systems and qualifications, conventions of body shape, and in many other ways, all of which perpetuate social inequalities.

As Warin et al. (2016) remind us, dispositions (and related fields connected in complexes of practices) are not 'just' cultural.[12] They are also materially, physically, and literally embodied and reproduced through the fine grain of human biology. For both Warin et al. and Martinez et al. (2020), the body is thus one amongst other media through which practices are reproduced, and through which social differences and distinctions are passed on.[13]

This takes different forms. For example, omic technologies indicate that the body (individual, collective, and social) is actively part of the constitution and the history of society. By reading off various omic profiles, it may be possible to see a timeline of life biologically, from the meal one ate half an hour ago to the health of one's grandmother. Much of that inscription is either directly social or a consequence of interactions between social and biological and material processes and phenomena. The human interactome could therefore be read as a timeline not only of a given life, but also those of the lives of the parents, grandparents, and, depending on how far you take it, the whole of the society of which that life is a product. In other words, there is an intergenerational and socially classed dimension to the way that DNA is expressed (Barker et al., 2013; Kelly & Kelly, 2018; Radford, 2018).

Drawing the strands of our argument together, we make the further point that inheritance and passing on is not something that happens one practice at a time. Instead, what is at stake is the way in which *relations* between practices, past and present, are reproduced and 'carried'. As illustrated above, interactions between practices (including processes of colonisation, insemination, etc.) organise access to and thus the accumulation of different types of (connected) capital and are consequently crucial for the passing on of multiple practices and textures of dis/advantage. It follows that differences of health, well-being, and body shape (as reproduced within and between generations) are features and outcomes of the routes through which constellations of practices are embodied and reproduced.

This is an important contribution in that it suggests that contemporary complexes of practices are such that ours *is* an obese society. In other words, the trends we observe are no more but also no less than the traces of multiple interactions, including patterns of fracture, hybridisation, and merger across the total plenum of practices. Increasing body mass is thus a collective and an essentially societal issue – rather than being the result of one factor or another, it is an emergent consequence of changing relations within the nexus of practice.

In the next and final section, we consider the implications of this conclusion for public health policy and for efforts to reverse global trends in body mass.

EXTENDING AGENDAS: IMPLICATIONS FOR PUBLIC HEALTH RESEARCH AND POLICY

We began by outlining problems arising from the ways in which obesity is usually conceptualised and addressed in public health research and policy. As we explained, the search for causal narratives, the logic of substitution, and the focus on individual action fail to confront or engage with obesity as a societal phenomenon and as an outcome of the dynamic organisation of social practices across space and time. In response, we have identified sources and resources that help frame what amounts to a fundamentally different interpretation of the relation between body mass and society. As described above, theories of practice (Bourdieu [1997] 2000; Schatzki, 2002), combined with emerging insights from epigenetics (Maller, 2016; Warin et al., 2016), provide a means of understanding trends in obesity as outcomes of the always-changing contours of practices, of fields (in Bourdieu's terms), and of their intergenerational effects. In coming to a close, we reflect on the practical implications of these ideas and the challenges they present first for research and then for policy.

Given that practices have a bearing on body mass, it is important to think about how they connect, change, and vary over time. In simple terms, what people eat, when, where, and with whom, is a result of the coming together of very many commercial, technical, and industrial actions going back decades and more. From this, various consequences follow. One is that it is misleading to attribute diet to decisions made this morning or when looking at a menu. Another is that describing contemporary patterns of obesity and mapping demographic variations tells us nothing about the historical or other social conditions which have led to the current state of affairs.

If researchers and policymakers are to take these observations to heart, they need to change gear. If they are to understand trends in body mass at any one moment and within one or another social group or geographical area, they need to understand how relevant complexes of practice have formed and how they are evolving through processes like those of colonisation or insemination. This calls for forms of data and research that reveal the emerging *biohabitus* of the field. The examples we have used give a taste of what such enquiries might entail. However, we have barely scratched the surface of what remains largely uncharted territory. Further investigations along these lines will require strategies capable of moving between specific sites and cases and of identifying the connections and practices which these instances sustain and of which they are a part. Whatever form it takes, the work of describing how complexes of practices come to be as they are, and how they are reproduced and ‘passed on’, is an essential part of explaining how contemporary constellations shape peoples’ bodies now and in the years ahead. This is not just an academic exercise: analyses of this kind are needed to craft interventions that are in keeping with the arguments introduced above and with an understanding of how policy and practice intersect.

In thinking about what this might mean for public health, it is tempting, but also misleading, to think of policy as something that exists outside the run of everyday life and that has a bearing on it. Instead, and from our more Foucauldian perspective, policy and governance constitute practices in their own right, never separate from and always entangled with the topics they address. This begs further questions about how current policy is framed, and about how methods of conceptualising trends in obesity define attempts to hold them in check. Whether policymakers are aware of it or not, methods of tackling obesity (for example, programmes to promote walking to school, taxes on sugar, or proposals to ban snacking on transport systems) are embedded within and thus reproductive of specific discursive and conceptual frameworks. This is evident in the tendency to focus on one practice at a time (enacting a causal model), to propose alternatives (reproducing a logic of substitution), and to focus on individuals and their ‘choices’ (exemplifying a form of neoliberal governance). In all of these

respects, current strategies have the unintended effect of reproducing concepts of agency and choice that are, in our analysis, part of the problem.

This is awkward. Dominant forms of policy and intervention are currently configured in ways that make concepts and approaches like those we have developed difficult, if not impossible to incorporate. Given our message – that obesity is a result of *changing* relations between practices, and given our insistence on the historical specificity of these relations – we have little to offer by way of useful, actionable advice about exactly which practices public health (as is) could 'target' and how. Since relevant configurations of practices are changing all the time, we are unable to put our finger on exactly what public health policy (in general) should do to limit trends in obesity.

Rather than being inspired by our attempt to reconceptualise obesity, some readers are likely to be disappointed by this result, and for good reason: the ideas we develop are clearly not compatible with the concepts and models on which current strategies depend. In so far as this is so, social theories of practice are unlikely to gain ground in the world of policy and intervention until, and unless there is, a further reconceptualisation of the place and role of policy itself.

Rather than supposing that policies exist aside from the social practices they seek to influence, it makes more sense to treat them as part of the flow of daily life. The suggestion that policies and strategies and actions associated with them are inserted into an ongoing 'stream' of everyday practice is plausible and convincing. At risk of taking the watery metaphor too far, these streams are made of multiple tributaries, each with their own histories and geographies. Whether interventions have impact or not, and how they are transformed 'on the ground' depends on how they figure in the ongoing trajectories of relevant and related practices, and in the making and breaking of connections between them. These conclusions do not undermine the relevance of intervention but they do argue for styles of policymaking that are a) reflexively aware of the discourses and concepts they reproduce; b) attuned to the opportunities that arise for modulating practices and relations between them; and c) alert to the ways in which these vary and change.

This is a liberating and not a limiting prospect. It is so in that it would almost certainly favour strategies that break through conventional divisions and 'silos' in policy and governance. If the challenge is to try to steer complexes of practices, and to do so in ways that might result in a less rather than a more obese society, there are many places from which policymakers might start. The examples cited in this paper provide an indication of interventions that have made a difference to the fragmentation of time (ready meals, convenience foods); TV viewing; automation; leisure; office work, and more. From this point of view, employment policies, childcare policies, and cultural policies are health policies in all but name.

A second observation is that efforts to modify relations between practices may have effect in unanticipated ways, and over the longer as well as the short term – whether for good or ill. As we have pointed out, policies and interventions of all sorts are caught up in and are themselves, part of the historical unfolding of practices and relations between them. In being and becoming enmeshed in what people do, past and present strategies prefigure future practices, potentially shaping the bodies of those who enact and 'carry' them: having become part of the 'stream', they never fully disappear.

Last, but definitely not least, our analysis of the intersecting trajectories of practices and bodies has further consequences not only for the conceptualisation of obesity but for the meaning of health and well-being in general. To go back to first principles, there is no 'natural' or universal body which is uncomplicated or unaffected by practices, past or present. On average, people weighed less twenty and fifty years ago, but there are no generic or reversible trends in patterns of embodiment, health, and well-being. As Lock and Nguyen put it, embodiment is better thought of as a dynamic process involving the 'lived entanglement of local biologies, social relations, politics and culture…' (Lock & Nguyen, 2018, 16). There is, therefore no way, and certainly no one way, back to a previous era of

'thinner' or 'healthier' ways of life. To imagine that this might be possible is to imagine recreating complexes of practices and relations between them that defined and characterised the past.

These comments raise still more fundamental questions about the relation between social practice, health, and well-being. For those interested not only in obesity but in public health, in general, thinking about what future practice arrangements might engender health and well-being depends on thinking about the kinds of bodies that current complexes of practices produce and about what 'better' or even 'optimal' body-practice relations might entail.

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ENDNOTES

[1] One of the few policy documents which attempted to breakout of the simple framework was the UK Foresight Report (Butland, et al 2007). When the Coalition Government assumed office in 2010, its approach and recommendations were side-lined.

[2] As Scambler notes, in this journal: 'Research conducted within the categories of "behavioural," "material" and "psychosocial" have much to offer, as do the assorted models offered as syntheses. They are all grist to the sociological mill. Arguably, however, they do not add up to a sociology of health inequalities'. (2012, 143).

[3] The Quetelet Index was first described by Adolphe Quetelet, 1832. It was coined as the Body Mass Index in 1972 by Ancel Keys. It first comes into widespread use '… after actuaries reported the increased mortality of their overweight policyholders culminated after World War II, when the relationship between weight and cardiovascular disease became the subject of epidemiological studies'. (Eknoyan 2007, 47)

[4] For a similar argument, see Crossley, 2004b. Fat Is a Sociological Issue. *Social Theory and Health*, 2, 237.

[5] Habitus is an old philosophical idea but its use in Sociology usually follows Bourdieu (see Wacquant 2016). In medicine, the term body habitus is sometimes used specifically to mean physique or body build.

[6] Metabolomics is the study of the chemical interactions between metabolites as part of cellular processes – the profile of which can be read as a description of the physiology of that cell.

[7] The interactome is the idea of a web or network of interactions between various molecules within a given cell.

[8] Here, we follow Schatzki's use of the term 'befall' in *The Timespace of Human Activity* (which Schatzki develops from Heidegger as an important characteristic of *the event*) as a way of 'closing the loop' between moments of performance of practice and practice entities as they are extended in time and space. As Schatzki writes: 'The claim that performances befall people is not self-contradictory… A person performs an action. The action is what is done, whereas the performance is the doing of it. As noted, moreover, the performance itself is not performed. The performance instead, happens; it befalls the person who performs the action'. (170) He also writes that 'Lingering behind the intuition that a performance cannot befall a person is, I think, the idea that a performance is chosen or the result of free will'. (170) For more on the relationship between free will and practice performance, see Schatzki on *Social Practices* (1996) as well as Chapter 4 of *The Timespace of Human Activity* (2010), including p 170.

[9] Schatzki refers to a process of contagion in the *Site of the Social* (2002). We work with Twine's (2015) idea of practice colonisation below, to represent a similar dynamic process.

[10] In other words, the so-called 'ends' of a practice are not ends in these sense of being final or ultimate packages of meaning and practical understanding: as indicated here, they are always in flux.

[11] In the early 1950's, what was called the 'Toddler's Truce' between channels, saw British television programming terminated for an hour each weekday between 6.00 pm and 7.00 pm so that children could be put to bed: https://en.wikipedia.org/wiki/Toddlers%27_Truce See also, 'Children and the BBC: from Muffin to Tinky Winky'. https://www.bbc.com/historyofthebbc/research/children-and-the-bbc

[12] While discursive and symbolic representations of body shape are significant in their own right and performative in various ways, those who write about the stigma of being fat overlook the many other ways in which dis/advantages are reproduced in bodily form.

[13] In a recent article in this journal, Martinez, Anduro, and Bojorquez (2020) also work with the idea of biohabitus to explain the way that social and biological processes result in differential patterns of health and disease.

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How to cite this article: Blue S, Shove E, Kelly MP. Obese societies: Reconceptualising the challenge for public health. *Sociol Health Illn*. 2021;00:1–17. https://doi.org/10.1111/1467-9566.13275