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## Social Determinants and Health Behaviors: Conceptual Frames and Empirical Advances

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### Abstract

Health behaviors shape health and well-being in individuals and populations. Drawing on recent research, we review applications of the widely applied “social determinants” approach to health behaviors. This approach shifts the lens from individual attribution and responsibility to societal organization and the myriad institutions, structures, inequalities, and ideologies undergirding health behaviors. Recent scholarship integrates a social determinants perspective with biosocial approaches to health behavior dynamics. Empirical advances model feedback among social, psychological and biological factors. Health behaviors are increasingly recognized as multidimensional and embedded in health lifestyles, varying over the life course and across place and reflecting dialectic between structure and agency that necessitates situating individuals in context. Advances in measuring and modeling health behaviors promise to enhance representations of this complexity.

### Introduction

At any given point, an individual’s health and health behaviors reflect physical endowments in combination with a cumulated set of experiences and circumstances that have unfolded over time, in distinct social and physical contexts. This perspective, a blend of medical sociology, social demography, and social epidemiology, emphasizes the social milieu of health, or what is more commonly known as the *social determinants of health*. Over the past decade, scientific and policy interest in the social determinants of health has grown markedly, reflecting increasing consensus that overall health and health disparities are shaped significantly by nonmedical factors [1, 2]. While these nonmedical factors include individual characteristics, such as education, income, and health beliefs, many others derive from an individual’s social and physical contexts – families, schools, workplaces, neighborhoods, and the larger politiceconomic organization of society – “upstream”

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factors that further enable or constrain health[3]. Other nonmedical factors include the institutional and ideational contexts that shape normative environments and contribute to ideas and identities [3–5].

This emphasis on ‘extra-individual’ social factors is reflected in the recent 2020 *Healthy People* framework, published by the U.S. Department of Health and Human Services, which states:

“health and health behaviors are determined by influences at multiple levels, including personal (i.e., biological, psychological), organizational/institutional, environmental (i.e., both social and physical), and policy levels...Historically, many health fields have focused on individual-level health determinants and interventions.”

[6]

Below we review recent research on social determinants with a focus on health behaviors. Health behaviors are conceptually and practically pivotal in research on health. Conceptually, they are recognized as key mediating mechanisms between more distal structural and ideological environments and individual health outcomes. Practically, health behaviors are estimated to account for about 40% of deaths in the U.S. annually [7]. We organize this review thematically, highlighting selected conceptual frames and empirical advances in sociology and related fields, with emphasis on research published since 2013.

## 1. Health Behaviors – Definitions and Emerging Concepts

Health behaviors, sometimes called health-related behaviors, are actions taken by individuals that affect health or mortality. These actions may be intentional or unintentional, and can promote or detract from the health of the actor or others. Actions that can be classified as health behaviors are many; examples include smoking, substance use, diet, physical activity, sleep, risky sexual activities, health care seeking behaviors, and adherence to prescribed medical treatments. Health behaviors are frequently discussed as individual-level behaviors, but they can be measured and summarized for individuals, groups, or populations. Health behaviors are dynamic, varying over the lifespan, across cohorts, across settings, and over time. With smoking in the U.S, for example, the likelihood of initiation varies with age. Recent cohorts of adults are less likely to smoke than those in the mid-1900s, smoking prevalence is higher in the south than in the west, and smoking became less common after the Surgeon General’s Report of 1964 [8– 11].

Focused interest in health behaviors, and efforts aimed at changing them, emerged in the midtwentieth century [12]. Narrowly defined biomedical approaches to health behavior research and interventions have been critiqued in recent years for an overemphasis on individual choice and personal responsibility; this individual focus is reflected in theories built around educating individuals to change health beliefs and actions [4]. A sociological approach expands the bounds of inquiry by emphasizing the need to examine individual actions in context, recognizing a role for structure as well as agency. Such an approach considers the place of constraints that limit choice, and the role of normative structures that

shape the social values attached to activities, identities, and choices. It also engages themes of inequality and power in society.

Conceptual and methodological advances in defining health behaviors emphasize integrative and dynamic measurement. An important theoretical advance in the last decade is the concept of “health lifestyles” [4, 13]. Policies targeting health behaviors tend to focus on a single behavior, often finding that these behaviors are resistant to change. A health lifestyle approach instead views behaviors as occurring in sets and influencing each other, developing from deeply rooted identities arising from membership in social groups [14]. Thus, health lifestyles are enacted at the individual level but are shaped by the meso and macro levels. Understanding the interplay between health behaviors is seen as fundamental for successfully changing those behaviors [15]. Most of the limited empirical work has focused on adults [16, 17], but research and policy is now targeting the early life course as well [5, 18]. For example, Mollborn *et al.* modeled U.S. preschoolers’ predominant health lifestyles and the intergenerational processes that give rise to them, finding that they predicted school readiness in kindergarten [5].

A significant methodological advance has been the collection of more refined data on health behaviors through intensive longitudinal data collection [19]. Innovations in technology allow for simultaneous and frequent data collection on social and spatial dimensions of activities in real time, creating enhanced opportunities to learn how individuals practice health behaviors as they unfold in usual social and spatial settings [20–22]. In the Human Mobility Project, Palmer and colleagues tested the feasibility of administering dynamic, location-based surveys by asking participants to download an app and install it on their phones, thereby gathering data on the phone’s positioning as participants moved through their daily routines and completed the surveys [23]. Others highlight the promise of health behavior interventions that provide frequent consistent reminders, monitoring, and rewards, through wearable devices, including monitors, [24, 25], such as a pilot study that suggested that personally tailored text messaging about diabetes self-care to adolescents with type I diabetes was associated with greater glycemic control after three months [26].

## 2. A “Social Determinants” Approach to Health Behaviors

The interdisciplinary approach labeled “social determinants” seeks to understand how the social world shapes people’s health. One major pathway is through health behaviors. Health scholars distinguish between “downstream” (individual, in the body) and “upstream” (social structural, macro-level) causes of health behaviors [27]. Examples of the latter include institutions such as the health care system – which is changing rapidly in the U.S. due to the Affordable Care Act and is a target of ongoing research [28] – and the labor market – recession-based changes in this institution have spurred recent research on health implications [29–31]. For example, Kalousova and Burgard examined subjective and objective recessionary hardships, finding that they predicted problematic substance use in distinct ways [31]. Medical and psychological research focuses largely on downstream causes, while political, economic, and sociological research focuses more on the upstream [3]. The “meso” level between these two extremes is also fundamental for understanding health behaviors [32]. This level focuses on the proximate settings in which people live their

lives – neighborhoods, workplaces, families, and the like – as well as the interpersonal interactions that take place within these settings. For example, examinations of women’s HIV risk in sub-Saharan Africa has traditionally focused on dynamics within sexual relationships, but more recent work recognizes the need to situate these relationships within the larger context of women’s lives, including their kinship, caregiving, and family responsibilities, as it is the family and kinship system in which gender, economic vulnerability and HIV risk are embedded [33].

Cutting-edge research into social determinants is taking place at the meso level. The importance of place for people’s health is increasingly acknowledged [34]. For example, the effects of neighborhoods on health behaviors [35–38], a longstanding focus of research, are becoming better understood by modeling neighborhoods dynamically, accounting for selection, and modeling spatial features of neighborhood environments [39, 40]. Wodtke measured neighborhood poverty across childhood, finding that long-term exposure was positively associated with the likelihood of becoming a teen parent [41]. The spread of health behaviors in people’s social networks can now be modeled statistically [42], and scholars are working to disentangle causality from selection in understanding these processes of social contagion [43–45]. The benefits of social support are being further elaborated, but a nuanced view that also highlights the dark side of social relationships is emerging [42, 43]. Examining peer influences on adolescent smoking behavior, Haas and colleagues conducted a dynamic social network analysis that distinguishes between increases and decreases in smoking, and explicitly incorporates endogenous network change, to show that while peer behavior influences smoking initiation, it is less related to smoking cessation [42].

Important concepts related to social determinants of health, like discrimination and stress, transcend the macro, meso, and micro levels [46]. For instance, discrimination is encoded in institutional practices, plays out in interaction at conscious and unconscious levels through processes involving bias and stigma [47–50], and affects individuals through health-damaging self-perceptions [32] and stereotype threat [51].

Similarly, key demographic factors, like social class, race/ethnicity, gender, and sexual orientation, influence health through all of these levels [52–54]. For example, gender is conceptualized not only as an individual level characteristic, but also as embedded in and constitutive of social structure, with implications for health behaviors, and even the expression of biological variation ([53, 55, 56]). Viewing social class as a fundamental cause of health disparities [57], many researchers illustrate how higher social class enables greater access to knowledge and resources, often yielding health advantages at the institutional, interactional, and individual levels and leading to altered behaviors [13, 58–60]. The concept of intersectionality [61–63] further complicates this perspective by acknowledging that people experience multiple social statuses simultaneously, and their effects on health behaviors are not simply additive. These nuanced multilevel approaches to understanding health behaviors are increasingly common and may yield multipronged policy strategies [52, 64].

### 3. Biosocial Processes: Situating Individuals in Social and Physical Contexts

As conceptual and empirical attention to social and ecological factors grows, so, too, do efforts to expand understanding of biological factors. These advances intersect in biosocial approaches that include concepts such as embodiment, biological embedding, social genomics, and systems approaches [65–67]. Embodiment is the process of the biological incorporation of societal and ecological context from the physical and social worlds in which we live [68]. Embedding emphasizes the developmental aspects of embodiment by focusing on timing of environmental exposures, with an emphasis on exposures that occur early in the life course, perhaps coincidental with critical periods of brain or biological development, and with potential to shape life-long outcomes through a variety social and biological mechanisms, some of which span generations [65]. For example, Bygren reviews possible mechanisms that could contribute to the intergenerational transmission of alcoholism, including changes to sperm that result from paternal alcohol exposure [69]. Social genomics focuses on identifying the ways social experiences regulate genetic activity [67, 70]. Finally, systems approaches emphasize dynamic interplay, or feedback, between and within “environments” and often “biological” processes. Ip and colleagues, for example, inform interventions related to childhood obesity by developing dynamic models that incorporate feedback between health behaviors (food intake, activity levels) and physiology (mood, genetic factors), and include inputs such as poverty and local food environment, by blending agent-based modeling approaches and frequentist statistical approaches [71]. Focusing on policy, Zhang and colleagues develop agent-based simulations to model processes of dietary decision-making to find polices that emphasize healthy eating norms may be more effective than those regulating food prices or local food outlets [72].

Conceptually, interaction approaches emphasize that while social environments shape health behaviors, not all individuals respond in the same way to the same environments [73]. Mitchell and colleagues illustrate this with an analysis of post-partum depression, making the case that some women are genetically more reactive to stress environments. Among women with the polymorphisms associated with reactivity, those in poor environments experience worse outcomes, and those in rich environments experience better outcomes. In contrast, embodiment or social genomics emphasizes how health behaviors, such as smoking or diet, shape genomic activity or other measured biology. Such approaches might, for example, illustrate how smoking or physical activity is associated with telomere length or allostatic load [74, 75]. In practice these approaches overlap. Complexity is evident in real world examples. Cultural norms, including gender norms, regarding diet or play can be embodied in bone development or body size, and these physical characteristics can in turn shape health behaviors [53, 76]. Institutional and cultural racism, associated conscious or unconscious bias, and discrimination, can be associated with psychosocial stress, health behaviors, and health outcomes [77] but these relationships will vary across individuals.

Detailing biosocial processes linking social environment and health behaviors is challenging. Example investigations include discrimination and social resistance [78, 79], emotions and stress [80, 81], and cognitive processes such as decision-making and framing

[82]. Attempts to incorporate feedback processes conceptually and methodologically are growing [83, 84], as are efforts to address the challenges of causality [85]. For example, in an analysis of exercise and alcohol consumption, Wagner and colleagues use the random assignment of roommates in the first year of college to disentangle the selection of peer environments from peer and genetic effects on health behaviors [85].

#### 4. Elaborating Life Course and Intergenerational Processes

Health behaviors change over an individual's life course. Some behaviors – like riding in a car seat – are only important early in life, while others – like drinking alcohol – emerge later. Yet people with similar social locations exhibit similar health behaviors throughout life, even though those behaviors change with age [86]. The key principles of the interdisciplinary *life course theoretical perspective* [87, 88] help explain individuals' health behaviors over time.

First, human lives are shaped by historical times [88, 89]. For example, social acceptance of smoking in the U.S. has varied tremendously from decade to decade, influencing both people's likelihood of smoking and the degree to which genetic susceptibility to smoking is associated with smoking behavior [90]. Second, the nature and timing of life events is consequential in a person's later life course [91]. Pregnancy is seen as a risky sexual behavior for teens, but not for married adults [92]. Teen pregnancy is tied to other risky health behaviors in adolescence such as drug use [93] [94] and later-life outcomes such as educational attainment [95]. Third, people's lives are linked within and across generations. Across generations, parents' health behaviors shape their children's health and vice versa [96, 97]. Within generations, young people's behaviors are influenced by those of their friends [44]. Fourth, people are agentic, making active choices among the options that their structural locations provide [4, 13]. Thus, integrating social structural processes with psychological constructs such as planful competence and risk aversion is fundamental for more accurately predicting people's health behaviors. Overall, the life course perspective emphasizes the dynamic nature of social circumstances and health, which is reflected in emerging research [88, 98–101]. For example, research on migration emphasizes dynamic processes of “acculturation” after arriving in a new place [102].

Methodological challenges in this area are abundant. Reverse causality between health behaviors and structural location is a concern, as is selection bias [95]. Recent work on health behaviors from a life course perspective emphasizes dynamic processes such as developmental timing, cooccurrence, fluctuation, and nonlinear relationships [41, 103–107]. For instance, Boynton-Jarrett and colleagues found that frequent life disruptions in adolescence across several domains predicted cumulative violence exposure and risky health behaviors [103]. Modeling theoretical ideas that follow from life course frames is methodologically challenging. Statistical techniques such as multilevel growth curve and trajectory modeling, age-period-cohort models, and latent class analyses are helping empirical tests catch up to theoretical innovations [5, 64, 95, 108–110]. For example, Wang and colleagues modeled six distinct trajectories of engagement in risk behaviors such as delinquency, substance use, and sex, following Bahamian youth from grades 6–9, demonstrating the importance of early social risk factors for high risk trajectories [110].

## Conclusions

Health behaviors are associated with a multitude of health and well-being outcomes at the individual and population levels. Drawing on recent research in sociology and related fields, we draw attention in this review to the application of a “social determinants” approach – now widely applied to health – to the specific topic of health behaviors. Such an approach shifts the lens from individual attribution and responsibility for health behaviors – to societal organization and the myriad institutions, structures, inequalities, and ideologies that undergird observed variation in health behaviors. We emphasize that a social determinants approach is not at odds with the incorporation of biological and psychological processes; rather, it recognizes the interplay between them in complex, dynamic systems, embracing a population approach that situates individuals in context. Life course frames that emphasize interdisciplinarity, history, time, context, and linked lives guide much recent investigation. And notably, through the conceptual refocus around social determinants and societal organization, a growing emphasis on links among health behaviors is emerging, upending the more usual single-disease, or single-health behavior, orientation to research and research specialization.

Future directions in “social determinants” research on health behaviors will be guided by this foundational thinking. The abundance of new data – including but not limited to administrative, geographic, social network, social media, medical, and genomic data – will provide ample opportunity for creative exploration. Our knowledge about health behavior dynamics is context-dependent. Changing societal factors, such as the legalization of marijuana use in some settings, or the implementation of the Affordable Care Act in the U.S., render understanding about individual health behaviors incomplete, as these understandings are contingent on context. The very populations that use marijuana or seek health care will change, as will the dynamics, determinants, and consequences of their health behaviors. Innovative science on the social determinants of health behaviors will continue to elaborate this complexity and expand the frames that guide health behavior research.

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### Highlights

1. Health behaviors reflect interplay between people and contextual factors.
2. “Social determinants” include societal institutions, ideologies, and inequalities.
3. Health behaviors contribute to and reflect embodiment and other biosocial processes.
4. Recent work engages health lifestyles, agency, and multilevel life course dynamics.
5. Empirical advances model feedback among social, psychological and biological factors.