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INTEGRATING HUMAN CAPITAL WITH HUMAN DEVELOPMENT

The Path to a More Productive and Humane Economy

John F. Tomer

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Palgrave Advances in Behavioral Economics

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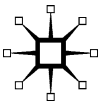

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To the Next Generation,
My Grandchildren,
Hudson, Emma, Milo

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PART I

INTRODUCTION

CHAPTER 1

WHY A BROAD CONCEPTION OF HUMAN CAPITAL IS NEEDED

I first encountered the subject of human capital (HC) in 1968 when I was a PhD student enrolled in Monroe Berkowitz's Human Resources class at Rutgers University. Berkowitz assigned Gary Becker's *Human Capital* (1964) as the most important reading assignment. After that class, I began to see many opportunities to apply the HC concept, as well as to see opportunities to modify Becker's conception of HC. In my PhD thesis (Tomer 1973), I used the HC concept to depict one kind of outcome (or product) resulting from the management consultants' work with their client firms. These consultants, I discovered, were helping their clients' firms create a type of HC (I labeled it organizational capital) that enabled them to produce more goods without the addition of more labor or tangible capital (Tomer 1981 and 1987). And I estimated that this organizational capital formation contributed a small but measurable amount to the annual rate of economic growth of the United States. This was estimated utilizing methods similar to those developed by Edward Denison and his collaborators (see Denison 1962). That was the beginning of my HC research. Since the 1960s, the HC area has become an even more important area of research.

Capital and Standard Human Capital

Before going on, let's define some important terms, starting with "capital." In the past, the term capital referred to physical capital, the material productive capacity such as plant, equipment, tools, vehicles, computers, that enable business entities to realize a flow of future income. More recently, the term capital has been increasingly used in connection with less tangible types of capacity. It seems that the term capital may now

refer to anything physical or human that provides capacity for a society. In essence, capital is that which is produced by humans, is long lasting, represents capacity, involves a cost, and might be investable on the basis of a self-conscious calculation relating to the future (Tomer 2008b, p. 13).

"Human capital" is clearly a kind of capital. According to Becker (1964, p. 1), HC refers to the "resources in people," typically the skills and knowledge that enable people possessing more of these resources to realize higher monetary and psychic income. Becker's HC definition is what is known as the standard or mainstream economics (ME) conception of HC because it fits squarely within the established framework of neoclassical analysis. Many economists who do HC research adhere closely to Becker's conception of HC.

There is no doubt that the standard HC concept is very useful and important. Let's consider why. According to standard HC theory, individuals invest in education and training in order to acquire knowledge, learn job skills, gain experience, acquire habits such as punctuality and virtues such as honesty, and otherwise gain competence. These investments can be expected to raise worker productivity and, thereby, reward workers with higher earnings. According to the theory, people, say workers, will invest in HC whenever its internal rate of return exceeds the risk adjusted rate of discount. That is, they will undertake HC investments when the present value of the investment's benefits (the lifetime returns to the investment) equal or exceed the present value of the direct and indirect costs of the investment. From the point of view of businesses, HC is a factor of production (just like physical capital, land, and labor) whose compensation is determined by the value of the increased productivity of the worker who has invested in it (at least in competitive, well-functioning markets). It follows that investments in HC can over time raise workers' earnings, reduce poverty, raise the productivity of the economy, and raise the economy's (or region's or city's) gross output. It should be noted that investment in standard HC encompasses expenditures on medical care, migration, and a number of other things that can raise the earnings of workers.

Since the 1960s, mainstream economists have done a tremendous amount of empirical HC research. Much of this research has been designed to find answers to the kinds of questions that standard HC theory brings to mind. One such question is: Do the earnings of more-educated people exceed those of less-educated people? For example, by how much do the earnings of college graduates exceed those of high school graduates? (Becker 2008, pp. 1–2) A second question, which is both interesting and controversial, is: Why do women earn less than men? And is this situation changing, and, if so, why? (p. 3) A third important question

relates to the type of HC investment: What proportion of HC investment occurs through formal education, and what proportion is related to training outside schools? (p. 3) A fourth important question is: What is the impact of expanded scientific and technical knowledge on HC investment and, thus, on the productivity of labor and the growth of the economy? (p. 4).

Standard Human Capital: A Critical View

Certainly, as indicated previously, standard HC has been an important and productive concept. But for the purposes of this book, it is important to take a more critical view. It is important to come to understand precisely where the standard HC conception falls short. The problem is that standard HC implicitly embodies a very narrow conception of human development. Insofar as standard HC is concerned with education and training, it implies that HC investment has an individual, cognitive, and machine-like nature. That is, HC investment is a process that involves putting cognitive inputs into individual humans in order to raise individual outputs. Standard HC theory for the most part ignores the possibility that HC investment might contribute to noncognitive human development or changes in human relationships. It also ignores the importance of human relationships as a factor that might contribute to capacity increasing HC formation. Standard HC theory, thus, implicitly assumes that human development is one dimensional in that inputs, typically in the form of education and training, move an individual along a single, capacity raising pathway, sometimes faster, sometimes slower. In other words, sometimes the HC intervention or investment has a high rate of return, other times a low or negative one, but inevitably the investment advances the individual along the same cognitive pathway. This narrow perspective ignores other dimensions of development and ignores the possibility that an individual's development may stall or altogether abort, possibly for reasons related to the failure of the noncognitive aspect of development. Later chapters explain more fully about the three main developmental pathways, one related to cognitive development and two related to noncognitive types of development. The latter two pathways are extremely important in contributing to humans' ability to become full functioning human beings, not just at workplaces but in schools, relationships, and other settings.

Nonstandard Types of Human Capital

One way to deal with the narrowness of the standard HC concept is to extend it to include types of HC that are less cognitive and less individual

oriented. One such HC concept is "social capital," which refers to the features of social relationships that contribute to the capacity of economic entities, and, thereby, enable them to accomplish their purposes. Social capital has been developed and used to a great degree by noneconomists, notably economic sociologists. Social capital certainly provides capacity, but more generally it is a social resource that enables actors to attain their ends (Tomer 1999, pp. 1049–1051). According to Coleman (1990, pp. 304, 312, 317; 1988, p. 98), social capital is embodied in families, institutions, civic communities, and the larger society, but it may also be embodied in individuals. Social capital may be created intentionally by persons who view it as an investment from which they hope to profit, however, it is more often created as a by-product of activities engaged in for other reasons. It should be noted that organizational capital is a type of social capital internal to an economic entity such as a business organization.

In contrast to mainstream economists, sociologists have tended to see the actor, the creator of HC (or in this case social capital), as behaving in accord with social norms, rules, and obligations and only partially responding to economic incentives. The latter association of social capital with sociologists, and with behavior at odds with the economic man, is an important reason why the concept of social capital has only found limited acceptance among economists. Another reason for this lack of acceptance is that social capital is typically embedded in relationships and patterns of behavior among humans, and is less often embedded in individuals. Moreover, in contrast to standard HC, social capital is for the most part not cognitive in nature. The upshot is that social capital is a kind of capital, but because it is distinctly different from standard HC, this type of capacity does not fit so well with orthodox economic thinking. Therefore, it is not surprising that some economists such as Kenneth Arrow (2000, p. 3) and Robert Solow (2000, p. 6) are skeptical about the value of the social capital concept. Nevertheless others such as Joseph Stiglitz (2000, p. 59) believe that "social capital is a very useful concept but an extremely complex one."

Besides social capital there are a number of other nonstandard HC concepts that similarly have only found limited acceptance among economists. One of these is "personal capital," which is embodied in individuals as is true with standard HC, but unlike standard HC it is largely noncognitive in nature. "Personal capital relates to an individual's basic personal qualities and reflects the quality of an individual's psychological, physical, and spiritual functioning (Tomer 2008b, p. 19). An individual's personal capital is "partly an outcome of one's efforts to mature and to grow in nonintellectual ways" (p. 19). An important component of an individual's

personal capital is his/her emotional intelligence (p. 20). Rather than the term personal capital, James Heckman (and Pedro Carneiro 2003, p. 141) uses the term noncognitive HC. In his view, the relevant noncognitive skills include personal qualities such as motivation, self-regulation, conscientiousness, adventurousness, perseverance, self-control, persistence, and self-esteem (p. 138). Research by Heckman and others (2006, p. 27) has demonstrated that these noncognitive capabilities provide individuals with the kinds of capacity essential for success on the job, in school, and in other settings.

Quite a few other types of HC have been used in the writings of a variety of social scientists. Some of these HC types are subcategories of types already considered; others are HC types that overlap several broader HC types. Two examples are moral capital and patience capital. Moral capital, a type of personal capital, is the capacity for being and behaving virtuously. An individual might invest in moral capital by taking the time to cultivate right or virtuous habits (Sison 2003, pp. 31–35; Ratnapala 2006, p. 99). Patience capital, another type of personal capital or noncognitive HC, is the capacity for being patient in decision making and other activities. The desirable result of an individual's investment in patience capital would be that a person's excessive discounting of future utility would be reduced (Becker and Mulligan (1997, p. 730).

Toward a Broader Economics

The scientific methods of ME are being widely challenged by the methods used by heterodox economists, especially behavioral economists. This is because, compared to behavioral economics, the methods of ME are narrow, rigid, intolerant, mechanical, separate, and individualistic (Tomer 2007). ME's narrowness is indicated by its use of positivistic methods, particularly formal mathematical modeling, to the exclusion of ideas, insights, different kinds of empirical analysis, history, policy, and institutions (McCloskey 1994, pp. 58–59; Colander 1991). Moreover, mainstream economists are not only inflexible (or rigid) about their adherence to these methods, but they are also intolerant of economists who use other scientific methods (McCloskey 1994, pp. 55, 59, 96). ME's methods are relatively mechanical in their reliance on mechanical analogies such as equilibrium and maximization rather than utilizing social and psychological processes. In line with this, ME has to a great degree kept itself separate from other social science disciplines (Hausman 1992, p. 274). Finally, mainstream economists tend to want every economic explanation to be reduced to individual decisions or behaviors, especially self-interested behaviors (pp. 97, 322).

No doubt, there are some strands of behavioral economics and some behavioral economic practitioners that utilize methods resembling those of ME, but in general the methods of behavioral economics are dramatically different from those of ME (Tomer 2007). Consider, for example, the methods of Herbert Simon and those who are attempting to follow in his footsteps. As a scholar, Simon embraced a unified and interdisciplinary behavioral science (Augier and March 2003, p. 136). Accordingly, Simon's scientific methods were not narrow, rigid, or intolerant. He was not opposed to mathematics, but made little use of it, and he found little use for formalistic modeling (Augier 2003, p. 2). Simon's methods were relatively pragmatic and flexible (not rigid), and unlike many mainstream economists, Simon was remarkably tolerant of economists' use of different methods (p. 11). Certainly, Simon's conception of decision making is much less mechanical and much more psychological and social than the ME conception. Moreover, Simon emphasized the social, organizational, and psychological influences on individuals as opposed to the ME emphasis on self-interest.

Toward a Broader Conception of Human Capital

What is needed is a concept of HC that (1) includes standard HC but goes beyond it, (2) is consistent with the broad definition of capital provided earlier, (3) is the kind of HC conception that makes sense in a broader economics, an economics that is an important part of a unified and interdisciplinary social science of the kind that Herbert Simon would have been proud, and (4) is compatible with the concept of human development. Therefore, I propose the following definition. *HC refers to the mental, social, and physical attributes that are produced, are embodied in humans, are not alienable,*[1] *and contribute to humans' capacities*. This capacity could be a productive capacity enabling higher income as in the standard view, or it could be the capacity to deal with personal relationships or a capacity utilized in community or civic affairs or in other places, that is, anywhere that a person can contribute in a significant way to society. The purpose of this book is to explain (1) what a broad concept of HC integrated with human development means and (2) why it is useful, important, and necessary.

Plan of the Book

The essence of the integration of the HC and human development concepts is accomplished in chapter 2. A key feature of this integration is represented as a three-sided pyramid with three developmental pathways:

(1) educational and cognitive development, (2) psychosocial and biological development, and (3) brain (or neuro) development. This is in contrast to standard HC theory that focuses almost entirely on the educational and cognitive development pathway. Chapter 2 provides the basis for understanding many aspects of humans' development of their potential over the entire life cycle. It also helps us understand the important reasons why humans may fail to develop satisfactorily and may get stuck at a relatively low developmental stage. When a person's development grinds to a halt, there is a need for an intervention (an investment in HC) to help the individual become unstuck and restore his/her progress along the developmental paths. This view of investments in HC has an important implication for HC strategy: focusing the lion's share of society's HC resources on traditional K-12 cognitive education can be counterproductive. Integrating HC with human development arguably will lead to improved HC strategy and, thereby, to not only more rational and efficient HC decision making, but also to more humane outcomes as well.

Chapter 3 is concerned with how our mind works (or does not work) with respect to economic decision making. Drawing on the research of Herbert Simon, Daniel Kahneman, and George Loewenstein, this chapter explains that humans have limited cognitive capacity to deal with the complexity of the real world, make many cognitive errors, and often make poor decisions when strong negative emotions are aroused. Also, our minds in decision making are too often oriented to seeking what we want or desire, not what is really good for us. There is, however, some good news. We can learn how to avoid error and become more skilled, good enough decision makers. Drawing on Gerd Gigerenzer's research enables us to understand how successful decision makers typically use heuristics in the face of complexity. To illustrate the findings of these scholars, this chapter provides analyses of food-related decision making related to the obesity social problem. An important conclusion of this chapter is that people can counter their decision-making deficiencies by making a variety of investments in HC that raise their decision-making capacities. Such investments, if successful, remedy people's decision-making deficiencies (counter X-inefficiencies) and thereby raise productivity.

Integrating HC with human development has important implications for economics and for the human actor in economics. A growing number of economists are not happy with the economic man actor, the stereotype of ME, nor with the psychological economic man stereotype, the irrational, error-plagued actor deriving from psychological economics. The purpose of chapter 4 is to develop a more satisfactory economic actor, the smart person, who is more human and less irrational. The smart person

actor, just like real humans, develops in stages along multiple pathways over a life time. Unlike the other two stereotypical actors, smart person's character and capabilities are neither simply assumed nor are they inferred from the outcomes of narrow psychological laboratory experiments. Smart person's character and behavior derive in good measure from the research of a variety of noneconomist scientists and careful observers of human development. Behavioral economics needs a smart person actor who, while far from perfect, develops, and all too often fails to develop, character and capabilities in a realistic way. Smart people can learn to overcome many of their tendencies to error, thereby becoming competent, limitedly rational, virtuous, even wise decision makers who make big and small decisions in their own best interests and in the best interests of their societies. A behavioral economics with smart people would be a more optimistic economics because it would not embrace the unrealistic rationality ideal of ME nor the inevitability of irrationality of psychological economics.

Chapter 5 is concerned with the HC formation that occurs during early childhood, from birth to two or three years of age, and how this is related to later life poverty and inequality. Important research has recently spotlighted the growing prevalence of adverse childhood experiences (ACEs) among young children and the role this plays in impairing their brain functioning and contributing to later age physical and mental ailments and risky behaviors. If instead of attuned, loving parenting, children's parental caregiving is inconsistent, inattentive, chaotic, ignorant, abusive, or neglectful, this can be a source of stress or trauma that can in the worst case have a severe adverse effect on the child's brain development. Thus, differences among children in the incidence of ACEs are an extremely important determinant of differences in HC formation among children. There is substantial evidence that children from high socioeconomic families, by virtue of their resources and child rearing practices, experience on the average fewer ACEs, and thus, their children accumulate more HC than is the case for low socioeconomic families. Moreover, a young child's HC accumulation is strongly related to the child's subsequent educational achievement and his/her labor force experience. In other words, the incidence of ACEs accounts for a great deal of educational and income inequality. Because of this, there is a strong case that society should make the kinds of investment in HC necessary to both prevent ACEs and remedy the consequence of ACEs. These efforts to counter ACEs can be considered an investment in the HC of particular individuals who are or would have been adversely affected. But there is another way to look at this. A society's ACEs problem can be considered to be a society's socioeconomic problem for which there is a need to make

society-wide investments in HC to counter the dysfunctional socioeconomic behavioral patterns underlying the problem.

The purpose of chapter 6 is to develop a socioeconomic model of obesity that explains the causes of obesity and why the percentage of people who are obese has grown dramatically. The purpose is also to explain how this relates to HC. The obesity model developed in this chapter is markedly different from the rational obesity model of ME. In contrast to the rational model and to conventional health science wisdom, but consistent with the writings of a number of important recent medical and science writers, a person's weight gain is not solely determined by his/her net calorie consumption. Weight gain leading to obesity is a consequence largely of individuals' unhealthy dietary and behavioral choices. The rising prevalence of obesity is related to changes in factors, both external and internal to an individual, changes that influence the individual's choice of diet and behavior. The most important external factors are (1) technological change impacting food markets and (2) the infrastructure of obesity, especially the behaviors of suppliers of processed food. The most important internal factors are an individual's endowment of three types of HC, personal capital, social capital, and health capital. Obesity tends to increase when vulnerable individuals who have low personal capital, low social capital, and low health capital encounter lower prices of unhealthy processed food, higher prices of exercise, and unhealthy influences from the large and growing infrastructure of obesity. We tend to think of obesity as an individual problem. However, what the socioeconomic model points out is that obesity is a deeply embedded socioeconomic problem that is related to the HC of people participating in food markets. That is, obesity is related to the HC of people who make unwise choices of diet and behavior. And it is related to the HC of the business leaders who make important decisions regarding marketing and supplying processed foods. It is these socioeconomic patterns created by food consumers' and suppliers' choices that have led to the very problematic rise of the prevalence of obesity.

The early part of chapter 7 is similar to chapter 6 in that it is devoted to explaining the causes of the growth of a social problem. More specifically, chapter 7 deals with chronic degenerative diseases, diseases that are distinctly different from acute, communicable diseases. Chronic diseases, sometimes referred to as the "diseases of civilization," include diabetes, cardiovascular disease, hypertension and stroke, various forms of cancer, dental cavities, periodontal disease, appendicitis, peptic ulcers, gallstones, and so on. The socioeconomic model explaining the rise in chronic health problems is very similar to the socioeconomic model of obesity in that it includes the same important external and internal factors

that influence individuals to make poor diet and behavioral choices. It is important to note that chronic diseases emerged as a significant problem in the United States during the second half of the nineteenth century when a dramatic increase occurred in the consumption of refined, easily digestible carbohydrates such as white flour and sugar. These consumption changes were part of a broad socioeconomic phenomenon known as the nutrition transition that led to a significant rise in the incidence of chronic diseases such as diabetes and various types of cancer in economically developed countries. Many people throughout the world are these days regular consumers of substantial quantities of highly processed foods. Some of these people, especially the ones with low endowments of personal capital, social capital, and health capital, are "conditioned hypereaters," that is, very strong habitual consumers of the kind of foods associated with chronic diseases. There is evidence that many of these people are stuck in dysfunctional eating and lifestyle patterns that are part of a larger dysfunctional socioeconomic pattern. In other words, at the heart of the chronic disease problem are people's accumulated HC reflecting unhealthy dietary and behavioral patterns. Such people need to unlearn their unhealthy lifestyle patterns and learn improved eating and exercise behaviors. That is, people need to invest in the kind of HC that involves a transformation of their negative patterns. As with the obesity problem, it would be misleading to view the problem of chronic diseases as a social problem solvable solely by individual actions. Clearly, it is a deeply embedded socioeconomic problem. Chapter 7 also includes a shorter analysis of an important cause of inequality and poverty and an explanation regarding the HC investments needed to reduce poverty.

Chapter 8 argues for the kind of societal and policy efforts that would be necessary to resolve the social problem of obesity. The recommended efforts are based on the analysis of the causes of obesity contained in the socioeconomic model of obesity (chapter 6). The purpose of the chapter is not to provide details of a specific antiobesity policy plan; its purpose is to outline the kinds of efforts that need to happen to fix the obesity problem. The needed efforts are not just those of governments; they include efforts of communities, grassroots groups, individuals, families, and food businesses. Because of the large scale of the problem, the needed efforts are numerous and taken as a whole constitute a socioeconomic transformation. Such a transformation involves reversing the many negative behavior patterns of food consumers and suppliers. To accomplish such a transformation would require that knowledge of the role of poor eating and behavior patterns in obesity become widespread and that people act on this knowledge. It would require that food suppliers and processors acknowledge the role that processed foods play in contributing to

obesity and take responsibility for improving the healthfulness of their food offerings. It would require that health practitioners fully understand the role of eating and behavior in obesity and provide good advice on this. For these things to happen would require an important societal change in values. People would have to value their health and healthful living patterns much more than in the past. Moreover, people would have to no longer accept negative opportunistic behavior on the part of food businesses. To accomplish all this would require a social movement spearheaded by grassroots groups who understand the magnitude of the health threat. Ultimately, remedying obesity would require very great, carefully targeted investments in the HC of food consumers and suppliers.

A number of chapters have explained how HC deficits are implicated in a number of modern societies' most vexing social problems, in particular ACEs, obesity, and chronic disease. And chapter 8 explains about all the specific kinds of things that would need to be done to stem the tide of obesity. Chapter 9 provides a more general context to understand the problems involving HC deficits and how they can be prevented and remedied. Chapter 9 also provides detailed guidance to leaders and policymakers who have responsibility for formulating plans to deal with social problems. As indicated in a couple of the preceding paragraphs, social problems like obesity typically originate as people and businesses adapt to new economic and technological developments, thereby causing new and dysfunctional socioeconomic patterns. A number of these social problems develop in similar ways, have a similar dynamic, and are similarly dysfunctional. To fully understand the socioeconomic dysfunction involved in these social problems, it is necessary to examine the core underlying human factors involved. At the heart of the matter are humans' two strong motivations, self-interest and other-interest (or ego and empathy). According to Lynne et al. (2015), the true relationship between self-interest and empathy is that self-interest, the primal motive, tends to be restrained and conditioned by empathy. Problems arise, however, when (1) people's self-interest is excessive, and therefore strongly egotistical, selfish, hedonistic, or greedy, and (2) empathy, along with societal norms and regulation, is weak. In this kind of situation, businesses in particular are likely to behave in a negative opportunistic and ignorant manner. There are many examples where this has occurred such as businesses supplying unhealthy food that contributes to obesity and financial institutions' excessive mortgage lending during and leading up to the financial crisis. Society and individuals can make efforts to improve how their underlying human factors are functioning. In other words, there is reason to believe that the significant socioeconomic dysfunctions that often underly important social problems can be remedied

by making appropriate investments in HC, thereby changing the important underlying human motivational pattern.

It is my hope that the reader of this book understands and appreciates that economics needs a broad concept of HC that is integrated with human development, and a concept of HC that is part of a unified interdisciplinary social science. Each of the following chapters provides a part of the case for broadening the HC concept.

PART II

HUMAN CAPITAL AND HUMAN DEVELOPMENT

A variety of noneconomists have broadly studied the common patterns and processes involved in human development. Economists for the most part have restricted their attention to the part of human development relating to education and training. This is understandable because incorporating the education and training parts into labor economics was relatively straightforward, and these parts could be largely analyzed using the tools of neoclassical economics. Now, however, with the emergence of behavioral economics, it is becoming apparent that economists need to do more to understand human development and incorporate a much broader range of developmental insights into economics. Accordingly, chapter 2, "Integrating Human Capital with Human Development," begins the task of linking human capital with human development in a more complete manner than has hitherto been the case. Chapter 2 is concerned with the several pathways of human development, the variety of developmental pitfalls, and the need for investment in noncognitive human development. Chapter 3, "Investments in Human Capital to Remedy Decision-Making Errors," is concerned with how humans, despite their propensity to err in decision making, can develop themselves in a way that enables them to become good enough decision makers. Chapter 4, "Smart Persons and Human Development: The Missing Ingredient in Behavioral Economics," explores an important implication of integrating human capital with human development for the human actor in economics. What economics needs is a more fully human but less irrational actor; the desired actor is not economic man or psychological economic man, but is a "smart person."

CHAPTER 2

INTEGRATING HUMAN CAPITAL WITH HUMAN DEVELOPMENT: TOWARD A BROADER AND MORE HUMAN CONCEPTION OF HUMAN CAPITAL

Introduction

Economics' concept of human capital (HC) is very important as using this term allows us to recognize the huge quantity of real resources that are in people. These resources allow people in the economy to behave better and be more productive than if they were not endowed with these capabilities. There are, however, problems with the concept of HC in mainstream economics. Notably, mainstream HC reflects the mechanistic nature of the economics discipline. And utilizing the mainstream HC concept does not help one gain an adequate understanding of how human capacities develop or fail to develop during an individual's lifespan. Because of these problems, the purpose of this chapter is to move beyond mainstream HC by integrating the HC concept with the concept of human development (HD). Doing this will allow us to better understand how important HC resources come into existence, develop further, and sometimes fail to develop. Based on a more developmental understanding of HC, one can appreciate that there are many more kinds of opportunities to invest in HC than one could conceive of from reading the mainstream HC literature. In particular, there is a great deal of HC formation that is psychological, social, and emotional in nature, that is, noncognitive in nature. How well people develop their noncognitive HC capabilities is extremely important for the behavior and productivity of the economy. It is, therefore, very important for economists to understand their nature and be able to analyze these capacities, many of

which have been heretofore only studied by a variety of noneconomists. Furthermore, integrating HC with HD will make possible the formulation of a more rational HC strategy for the economy. Finally, this integration represents an important step in making economics a more human discipline.

The Existing Human Capital Concept Is Too Limiting

Economics no doubt has been greatly enriched by the development of HC theory. Unfortunately, however, this theory has been built upon a limited conception of HD. For the most part, HC theory has emphasized human cognitive development and human acquisition of knowledge and skills that enable enhanced productivity and earnings. Further, HC research has emphasized HC formation taking place in workplaces and in schools for children five-years-old and older. In light of recent research findings, particularly that concerning brain development, it is becoming apparent that economics' HC theory has a far too limited conception of HD, especially with regard to its relative neglect of noncognitive development and the brain development that takes place in early childhood. It gives too little consideration to intangible, noncognitive aspects of learning. Also, it doesn't sufficiently consider the role of parents, social workers, psychologists, and a variety of others who provide care and therapeutic help to both children and adults. Moreover, it doesn't consider recently accumulated knowledge related to the human brain's functioning and development. Lastly, economists' HC theory needs to make room for insights and theory concerning the more intangible forms of HC that derive from writings on social capital, organizational capital, cultural capital, customer capital, moral capital, ethnic capital, and so on (see chapter 2, Tomer 2008b).

The Human Capital Concepts of Important Economic Thinkers

A number of early economic thinkers articulated concepts of HC that were broader, but generally less well developed, than those of modern mainstream economists. For example, although Adam Smith did not use the term HC, he recognized that the contribution of the labor input and its profitability depended on the quality of labor, that is, "the acquired and useful abilities of all the inhabitants or members of society" as well as "the state of the skill, dexterity, and judgement with which labor is applied" (as quoted in Sweetland 1996, p. 343). Further, he recognized that labor's productive capability is often acquired at a cost through education, study,

or apprenticeship. Therefore, this human capability resembles fixed capital such as a machine or instrument, except that it is in the person (p. 343; Smith 1937, pp. 265–266). Alfred Marshall "defined capital so broadly that personal wealth could be interpreted as capital" (Sweetland 1996, p. 344). He defined "personal wealth so as to include all those energies, faculties, and habits which directly contribute to making people industrially efficient" (p. 344; Marshall 1961, p. 58). Finally, Irving Fisher recognized that "human participation in production processes constituted a form of capital" and that the human machine is as important to production as the nonhuman machine (Sweetland 1996, pp. 344–345).

Human Capital Needs to Be Integrated with Human Development

The standard concept of HC is based on the concept of a representative agent who in a machine-like fashion receives inputs, usually in the form of an intervention, such as education and training, and the outcome is an agent who is more productive. What is missing from this conception is a human being who develops in many different ways along a sequence of stages, a maturational path. As wise thinkers through the ages have recognized, humans are capable of attaining a very high level of development, involving a full flourishing of all their human capabilities in the broadest and highest sense over their entire life cycle. Clearly, the high HD envisioned by these thinkers involves much more than the acquisition of cognitive capability or workplace skill. High HD certainly involves social, psychological, emotional, and biological dimensions, among others. But the ideal or potential HD often fails to occur. Generally speaking, only when the environment is favorable do humans have a chance of developing a high degree of their potential. So a key question is: what has to happen for individuals to develop to, or go nearer to, their full potential? What kind of environment is necessary for favorable development? Among the necessary environmental conditions commonly recognized as necessary for reasonably high HD are a good education and the kind of early life nurturing usually provided by two loving parents. For many, of course, the environment may not be favorable in some important respects, and as a consequence individuals may fail to negotiate significant stages of development. Thus, an individual may get stuck or partially stuck at a certain developmental stage and may fail to develop further without special developmental interventions. Without such help, it is likely that the individual will remain stuck at a level of HD that does not allow their talents to be fully developed. In general, conventional notions of HC formation provide little or no recognition of noneducational interventions

that may make it possible for individuals to advance along important developmental pathways, thus overcoming the kinds of difficulties that would otherwise prevent or inhibit their development.

The Concept of Human Development

The concept of HD used here draws from a number of different traditions. First, it incorporates the perspective of developmental scientists whose field of study broadly encompasses HD in physical/biological, cognitive, and psychosocial domains/behaviors (see, e.g., two HD texts (Kail and Cavanaugh 2007 and Papalia, Olds, and Feldman 2009). Second, the HD concept is inspired by the humanistic psychological perspective of Abraham Maslow (1943), notably his hierarchy of needs. Third, it is informed by research on neurodevelopment (see, e.g., Perry 2002), particularly Perry's work related to the developmental difficulties occurring in early childhood. Fourth, the HD conception here has been influenced by Ken Wilber's (see, e.g., 2001) conception of how humans develop in an unfolding series of stages and levels from lower order to higher order along many dimensions or lines (pp. 5–16).[1]

The Human Development Pyramid

To gain a better appreciation of the HD concept used here, it is important to illustrate graphically its main developmental pathways and the essence of the sequence of development along each. For the purposes of this chapter, HD is represented as a three-sided pyramid. Each side represents a major developmental pathway. The three developmental pathways are: (1) educational and cognitive development, (2) psychosocial, biological development, and (3) brain development (or neurodevelopment). In each case, the triangles representing the pathways start from very fundamental, early development and proceed stepwise to the highest level of development. The sequence of steps resembles in some respects Maslow's (1943) hierarchy of needs in that with some exceptions earlier stages must precede later stages. Also, note that there is considerable interdependence among the three pathways.

For economists, and presumably many academics, the easiest triangle/pathway to appreciate is the educational and cognitive development pathway. The side of the pyramid representing this pathway is shown in figure 2.1. It starts at the bottom with "Learning the basics: reading, writing, and arithmetic." The second step is "Learning/appreciating many types of knowledge and acquiring academic discipline." The third

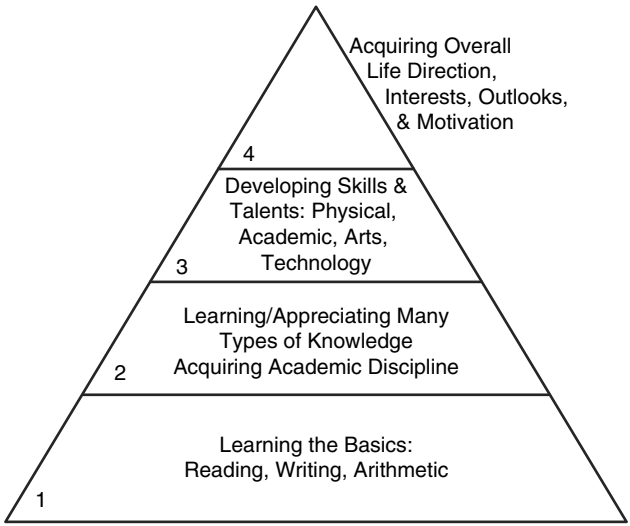

Figure 2.1 Educational and cognitive development.

step is "Developing skills and talents: Physical, academic, arts, technology." The fourth and final step is "Acquiring overall life direction, interests, outlooks, and motivation."

The second pathway, psychosocial, biological development, is shown as the triangle in figure 2.2. It starts with "Foundational neurodevelopment" and proceeds to "Early learning, relating, and doing" and then to "Becoming safe, secure, and satisfying physical needs." The fourth step is "Finding oneself: competencies, motivations, values, and emotional intelligence." The fifth step is "Finding oneself: friends, lovers, and loving family relations." The sixth and final step is "Connecting to one's highest values, spirituality, creativity, and aesthetics."

The third pathway, brain development, is shown as the triangle in figure 2.3. It starts with "Foundational neurodevelopment" and proceeds to "Neurodevelopment associated with doing, achieving, relating, and learning." The third step is "Overcoming brain development deficiencies and problems." The fourth and final step is "Developing creativity and peak performance brain functioning."

Figure 2.4 shows how the three triangles described above combine to form the HD pyramid. No doubt a much more careful and micro elaboration of the pathways by a developmentally oriented behavioral scientist would include many more steps in each pathway than the number included here.

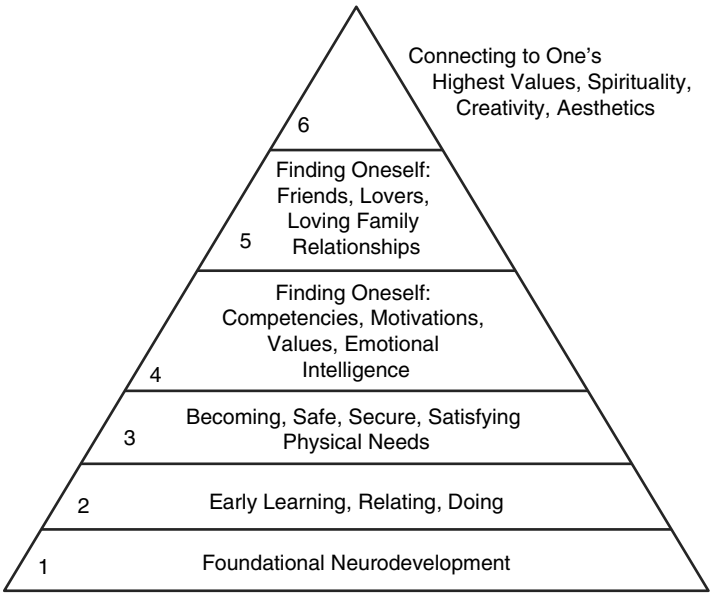

Figure 2.2 Psychosocial and biological development.

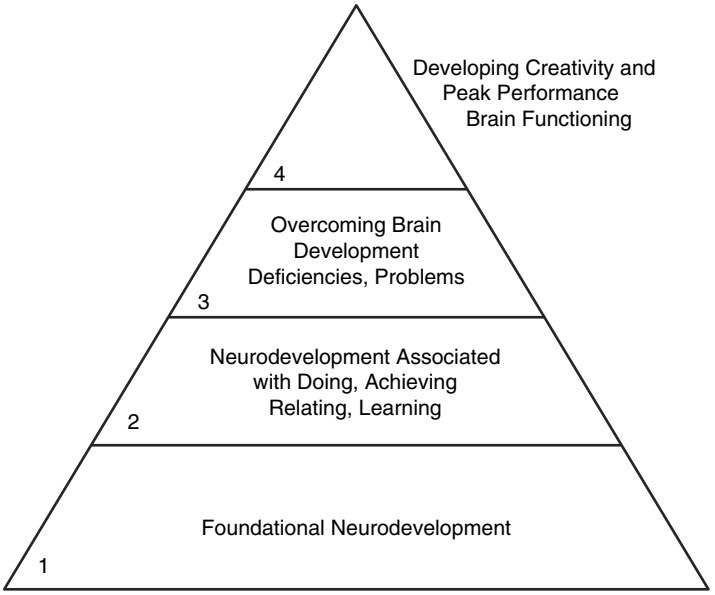

Figure 2.3 Brain development.

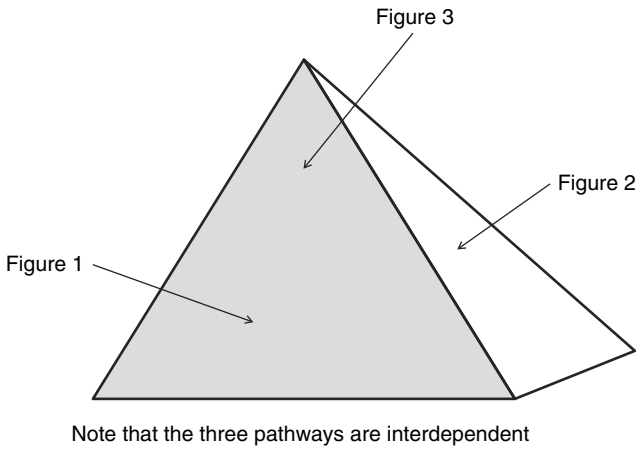

Figure 2.4 Human development pyramid.

The benefit of using the HD pyramid is that it focuses attention on three main ways that important human capabilities change, have the potential to change, or fail to realize their change potential. In Wilber's (2001, pp. 5–6) view, HD involves an unfolding, emergent process marked by progressive subordination of older, lower-order behavior and capabilities to new higher-order behavior and capabilities along different pathways or lines. Using the HD pyramid helps us understand how change along one pathway may facilitate change along another pathway and how barriers to change in a pathway may result in lack of desired change along another pathway. This has implications for how HD interventions designed to improve capabilities related to one pathway can contribute to improving capabilities along another pathway. Further, the HD pyramid has important implications for HC strategy insofar as focusing only on the educational and cognitive development pathway can lead to suboptimal results. To achieve better results, HC strategy needs to take into account all three developmental pathways on the HD pyramid. Otherwise, the overall pattern of investment in HC may be inefficient and counterproductive. See later sections of the chapter for a number of examples related to these points and how they are related to the different pathways. Further, it seems likely that subsequent research in a number of disciplines will lead to refining the elements of the HD pyramid.

Note that in contrast to the typical mainstream economic conception regarding skills, the HD pyramid conception is not simply focused on the kind of capabilities that are useful in the school or workplace or any particular aspect of life. The pyramid is, of course, concerned with

human capability development, but its essence is about HD in the very broadest sense. Accordingly, the HD pyramid is helpful in thinking about all aspects of life including overall well-being.

Neurodevelopment Is at the Heart of Human Development

The Neurodevelopment Processes

As we learn more and more about brain functioning, it has become increasingly clear that neurodevelopment or brain development, the third pathway of the HD pyramid, is extremely important to a human's overall development. Bruce Perry's (2002) work makes clear that we can only develop to our human potential if our brains develop to their potential. "Development [especially the neurodevelopment part] is a breathtaking orchestration of precision micro-construction that results in a human being" (2002, p. 82). Eight key processes are involved in creating a mature, functional human brain: neurogenesis, differentiation, apoptosis, arborization, synaptogenesis, synaptic sculpting, and myelination (pp. 82–85). It is not necessary here to consider each of these processes in detail. Suffice it to say that these processes relate to neurons: their birth, movement, specialization, death, formation into dendritic trees, the formation of connections among neurons (synapses), the structuring of the synapsis, and the creation of efficient electrochemical functioning in the neural networks. These neurodevelopment processes occur in response to experience and are most responsive to experience in positive and negative ways during infancy and childhood (p. 82). All of these processes must go well; otherwise, abnormal neurodevelopment occurs, causing profound brain dysfunction (p. 85).

The Brain's Developmental Needs

"In order to develop properly, each [brain] area requires appropriately timed, patterned, repetitive experience" (Perry and Szalavitz 2006, p. 248). The sequential development of the brain starts from the lower regions and proceeds to the higher regions, that is, starting from the brain stem and then proceeding to the midbrain, limbic system, and cortex. Certain parts of the brain have sensitive periods during which a person's experience can easily modify the neural circuits in those parts. Critical periods are times in which particular kinds of brain development must occur if it is to occur at all. For optimal neurodevelopment, it is crucially important that the lower brain systems develop first in a healthy fashion; otherwise, development of higher, more complex parts of the brain will not be able to occur satisfactorily. But in addition

to appropriate developmental timing, children need consistent physical affection and patterned repetitive stimulation to properly build the brain systems (p. 86). Children's brains need both quality and quantity of use and stimulation (Karr-Morse and Wiley 2012, p. 98). Further, a child needs committed, attuned, loving parenting that creates a secure attachment between child and parent. Conversely, what is destructive of brain development is inconsistent, inattentive, chaotic, ignorant, abusive, or neglectful caregiving (Perry 2002, p. 93). The latter can be a cause of overwhelming stress or trauma, that is, stress that is in excess of what the child can manage or bear (Karr-Morse and Wiley 2012, p. 103).

The Adverse Consequences of Impaired Brain Development

It is especially true that adverse early childhood experiences, often involving trauma, deprive children of crucial development, and as a consequence, their brains lack critical organization. Typically, these traumatized children are hyperactive as well as overly sensitive and reactive (Perry and Pollard 1998, pp. 41–42).[2] In general, these children exhibit maladaptive emotional, behavioral, and cognitive problems (Perry et al. 1995, pp. 277–279). Whereas a relatively calm child "can . . . readily focus on the words of the teacher and, using her neocortex, engage in abstract thought and learning, a child who is [traumatized] will be less efficient at processing and storing the verbal information the teacher is providing" (Perry and Szalavitz 2006, p. 249). The cognition of the traumatized child who is developmentally deficient will as a consequence be dominated by these impaired lower brain areas (p. 249). In effect, these children are "stuck" or partially stuck at a lower stage of brain development, and therefore, they are unlikely to be able to take advantage of opportunities to develop their higher brain's functioning. There are also strong relationships between adverse child experiences (ACEs) and the incidence of many physical ailments as shown by the findings from the research performed by Robert Anda and Vincent Felitti and their collaborators in the early 1990s. Findings from these studies indicate that the number of ACEs an individual experiences is related to their likelihood of experiencing in later life serious ailments such as heart disease, cancer, and lung disease as well as their likelihood of experiencing poor general health (e.g., Felitti et al. 1998).

The Prospects for Improvement and Need for Investment in Human Capital

But there is some good news. Even in very severe cases involving trauma and a high degree of neurodevelopment impairment, therapeutic

approaches along with enriched preschool may be able to help children repair much of the brain damage and become "unstuck" (Perry and Szalavitz 2006; Tomer 2014, pp. 20–29).[3] Of course, the more severe the impairment, the more therapeutic skill and expense will be required for success. Although some important therapeutic investment in HC is certainly taking place, judging by the testimony of many social workers and psychotherapists, there is reason to believe that compared to investment in standard educational HC, there is much too little of it taking place. Further, based on the insightful writings of Bruce Perry (with Szalavitz 2006), a highly regarded psychiatrist, there is good reason to believe that the relatively low investment in overcoming neurodevelopmental disadvantage and improving brain development has substantially lowered the return on investment in standard educational HC (this is also implied in Heckman 1998, p. 114). This is but one example of the interdependence of the HD pathways; in this case, it is the interdependence between the brain development pathway and the educational and cognitive development pathway.

Another Perspective on Brain Development

The Biochemical Basics

Another perspective on neurodevelopment comes from the biochemical research of Candace Pert (1997) and many others who have done similar research. This pioneering research has demonstrated how the chemicals in our brain and body are a key to understanding our behavior, emotions, beliefs, expectations, and consciousness. Her research has focused on receptors, molecules in body and brain that are accessible to the outside environment, and ligands, chemicals (molecules) that may bind to the cellular receptors and thereby convey an informational message to the cell (pp. 350–352). A ligand is the "chemical key that binds to the receptor, entering it like a key in a keyhole, creating a disturbance to tickle the molecule into rearranging itself, changing its shape until—click!—information enters the cell" (p. 23). Note that a specific ligand will only bind with the specific receptor that is made to fit with it. There are three chemical types of ligands: neurotransmitters, steroids, and peptides. Among the most widely known brain neurotransmitters are dopamine, histamine, and serotonin. The role of these neurotransmitters is "to carry information across the gap, or synapse, between one neuron and the next" (p. 25). In general, the "receptors and their ligands have come to be seen as 'information molecules'—the basic units of a language used by cells throughout the organism to communicate across systems such as

the endocrine, neurological, gastrointestinal, and even the immune system . . . [This activity] creates an integration of structure and function that allows the organism to run smoothly, intelligently" (p. 27).[4]

Molecules of Emotion: When Development Gets Stuck

Pert refers to the receptors and ligands as the "molecules of emotion" for good reason. Based on her research, she finds that "when emotions are expressed—which is to say that the biochemicals that are the substrate of emotion are flowing freely—all systems are united and made whole . . . [However], when emotions are repressed, denied, not allowed to be whatever they may be, our network pathways get blocked, stopping the flow of the vital feel-good unifying chemicals that run our biology and our behavior" (Pert 1997, p. 273). When one's emotions are blocked and held in the body, the breakdown in energy flow leads inevitably to a decline in health (p. 276). Pert associates the flow of emotional energy with the flow of information carried by the biochemicals of emotion (the ligands and receptors) (p. 276). When such emotional blockage occurs "due to denial, repression, or trauma, then blood flow can become chronically constricted, depriving the frontal cortex, as well as other organs, of vital nourishment" (p. 289). The result is you "become *stuck* [italics mine]—unable to respond freshly to the world around you, repeating old patterns of behavior and feeling" (p. 289). When this "stuckness" occurs, HD processes of various kinds cease to occur. A person who is thus stuck has unhealed emotions and usually experiences sadness, fear, frustration, and anger (p. 300). A person who has been in this stuck state for any length of time is likely to be in need of help in order to become unstuck and return to making developmental progress. There is also reason to believe that such developmental difficulties are associated with the likelihood of experiencing serious physical health difficulties (pp. 279–300).

Investment in Human Capital to Become Unstuck

When human developmental processes grind to a halt as emotions become blocked and the biochemical molecules of emotion are not flowing, many find that mainstream medicine is largely ineffective and is not the answer (Pert 1997, pp. 272–274). Thus, a large number of people have turned to alternative therapies. Somatic-emotional release approaches, also called body psychotherapy, is one of the alternative therapies that involve therapy for both body and mind. It has the "power to simultaneously access emotions through various kinds of body work while enlisting the power of the mind through talk therapy" (p. 274). New and

useful approaches used by chiropractors include treatments that release traumatic stored memories from body and mind (p. 275). Some alternative healing methods that release trapped emotions derive from the types of medicine practiced for ages in a number of Asian countries particularly by Hindus and Buddhists (p. 276). Acupuncture originating from China is an example of a type of therapy that has found widespread use even in western countries. Thus, many people around the world are today turning to a variety of alternative therapies and medical practices to achieve the kinds of wellness and unstuckness which they have not been able to obtain from mainstream medicine. To the extent that these alternative medicine practices enable people to achieve wellness, become unstuck, and resume important parts of their developmental journey, the resources used to do this can be considered an investment in HC. Clearly, these investments have the ability to raise people's productivity in their work lives as well as helping people live more fulfilled, flourishing lives overall. To this extent, they should be considered investments in HC comparable to educational investments.

Psychosocial Development

Developing Greater Emotional Intelligence

Developing emotional intelligence (EI) is an important step midway along the second developmental pathway, the psychosocial and biological development of an individual. This section of the chapter utilizes Daniel Goleman's (2011) model of EI which has four generic domains: self-awareness, self-management, social awareness, and relationship management (p. 11). EI is distinctly different from intelligence quotient (IQ) and from personality traits. Among the important competencies under the rubric of EI are emotional and physical self-awareness; awareness of emotions of other people (empathy); the ability to handle one's emotions, particularly strong, distressing emotions; ability to manage one's impulses; ability to express one's feelings effectively; ability to relate well with others; and ability to solve personal and interpersonal problems (pp. 13–17). For a fair number of the EI competencies, increasing competence comes when a person is able to gain a better coordination between their thinking brain (neocortex) and the lower, subcortical brain areas. For example, decision making can become more emotionally intelligent by achieving a better balance between one's thinking and emotion, which involves, among other things, a better balance between using one's neocortex and amygdala (pp. 29–30). Arguably, these emotional competencies are particularly important for enabling the kinds

of leadership, communication, and teamwork necessary in 21st century organizations.

Human Capital Investment to Improve Emotional Intelligence

School Programs to Improve EI. People ordinarily are able to improve their EI in their home, school, and workplaces as a regular part of their life experiences. Nevertheless, there has been increasing awareness that many of us suffer from EI deficits, and thus, there is a need for programmatic efforts to improve EI. That is where social/emotional learning (SEL) comes in. School based SEL programs "teach the whole spectrum of EI abilities. The best programs run from kindergarten through high school, and teach these abilities at every age in a developmentally appropriate way" (Goleman 2011, p. 71). The goal of these SEL school programs is "to instill a deep psychological intelligence that will help children regulate their emotions" (Kahn 2013). One widely adopted SEL school program is called Second Step; another called Ruler has been less widely adopted but includes more features and is more expensive (Kahn).

Although relatively few studies of SEL have been done, a study by Roger Weissberg looked at over 200 schools with SEL programs. "He found that, on average, SEL programs reduce antisocial behavior like misbehaving in class, fights or substance abuse by about ten percent. And they increase pro-social behavior—liking school, attendance, paying attention in class and so on—by about ten percent" (Goleman 2011, p. 73). In addition, academic achievement scores were increased by eleven percent (p. 73). The biggest gains occurred in schools that needed it the most.

Other Programs for Young People. There are other youth oriented programs that resemble SEL programs in some ways but whose orientation is not strictly on improving EI. One such school program, An Achievable Dream, is particularly noteworthy. It uses tennis to help its students acquire motivation, discipline, perseverance, confidence, etiquette, sportsmanship, and teamwork (Friedman 2013). Its orientation is to help students excel in academic achievement, respect themselves and adult leaders, and learn core human values. There are other organizations in the United States that are similar to An Achievable Dream in their emphasis on athletics and character development (pp. 24–25).

Improving Adults' EI. It is important to note that adults, not just children, can gain greatly from improving their EI. This is particularly true at work. Adults in all kinds of occupations can improve their job performance by making targeted changes in their EI competencies (see Goleman 1998). Moreover, it is generally understood that in contrast to

IQ, improvements in EI can and do occur even late in life. Adults wanting to raise their EI or close EI deficits are increasingly turning to life coaches. Coaches are used by some people to gain mastery of a skill like playing golf or playing the violin. This is because to keep on improving one's skill or expertise, it is not sufficient merely to put in long hours of practice. What the "student" needs and what the coach can provide is feedback, not only on what to practice, but also on what to practice next.[5] Without this feedback, substantial improvement of the skill or improvement of one's targeted emotional competencies will not reliably occur, and thus, the individual will not strengthen their old brain circuits and build the desired new ones. Coaching can help the student pay attention to what is essential so that eventually the newly acquired skills or emotional competencies become reflected in their brain's circuitry, and then, these skills and competencies can be drawn on relatively effortlessly.

Developing Improved Personality Traits

The Importance of Personality Traits. Another important aspect of development which is part of the second developmental pathway, psychosocial and biological development, involves developing and improving one's personality traits. "Personality traits are the relatively enduring patterns of thoughts, feelings, and behaviors that reflect [one's] tendency to respond in certain ways under certain circumstances" (Roberts 2009, p. 140 as quoted in Almlund et al. 2011, p. 12). There is considerable evidence that one's cognitive and noncognitive personality traits contribute a lot to one's educational success, labor market success, health, other personal outcomes, and even criminal activity (Almlund et al. 2011, p. 219). An analysis of the Perry Preschool Program showed that noncognitive traits were especially important in determining life outcomes (pp. 6–7). In general, one's productivity in a task/situation is understood to be determined by one's traits, broadly defined, and the effort one expends (given one's IQ and the task incentives) (Ferguson, Heckman, and Corr 2011, p. 202; Heckman 2011, p. 14; Heckman and Kautz 2013, p. 13). In light of this, parents and schools have sought through socialization processes to "arm [their] children with skills, abilities, and character structures [traits] that they can take with them into different environments and use to their benefit" (Roberts 2009, p. 138).[6]

Investments in Improving Personality Traits. Personality traits develop via social and biologic/genetic processes. The latter developmental processes occur naturally; they are ontogenic processes. However, a great deal of trait change occurs via investment processes which require efforts using up time, mental energy, and attention as well as resources (Ferguson,

Heckman, and Corr 2011, p. 204). Some of this investment that produces trait change in a person is external as it occurs due to the efforts of peers, parents, and educational and other institutions acting on the individual. On the other hand, another part of this investment is self-initiated or internal investment. The ability of institutional efforts to produce lasting change in the traits of young children is indicated by an analysis of the much studied Perry Preschool Program.

> This experimental intervention enriched the early social and emotional environments of disadvantaged children ages 3 and 4 with subnormal IQs. It primarily focused on fostering the ability of participants to plan tasks, to execute their plans, and to review their work in social groups. (Almlund et al. 2011, p. 6)

It is clear that "the intervention changed something other than IQ" (p. 7). In other words, the intervention produced lasting, beneficial changes in the traits of the young participants. Analyses of a number of other experimental interventions have shown similar outcomes. This is why there is currently optimism about making large-scale investments in personality traits, that is, making investments in the kind of HC that can be produced by preschool programs (Perez-Pena and Rich 2014). Hopefully, much of the contemplated investment will be made and much beneficial trait change will occur as a consequence.

Economists and Human Development

A small, but rising, number of economists have departed from the strict tenants of mainstream HC theory in that their writings generally have a developmental orientation and utilize a broad concept of HC. Three economists, Greg J. Duncan, Art Rolnick, and James J. Heckman, are particularly notable in this respect. These economists and others like them are attentive to differing degrees to what child development specialists[7] are learning and to the new findings from brain development research.[8]

Greg J. Duncan

Greg J. Duncan is recognized for his writings on early childhood development and how that development is influenced by adverse conditions such as poverty. Duncan and Magnuson (2004, p. 100) recognize that humans develop holistically and that their "cognitive, affective, biological, and behavioral domains are systematically interdependent and

mutually influencing [and that] each stage of development requires the reorganization of existing capacities as well as acquisition of new capacities." Further,

> Developmental theory posits a more sophisticated view of the production function than economists, because it suggests that there is more than one pathway to a developmental outcome. Rather than being the direct result of cognitive ability, developmental theory argues that human capital results from an individual's ability and motivation to organize cognitive, social, and behavioral capacities. (p. 103)

And Greg Duncan clearly recognizes that there are multiple pathways and processes that lead to developmental problems such as school dropout (p. 103). Note also that Duncan and Magnuson provide a very useful and comprehensive survey of intervention strategies being used to invest in young people's HC (pp. 105–125).

Art Rolnick

Art Rolnick is an economist and researcher who while working at the Federal Reserve Bank of Minneapolis became a leader of Minnesota area efforts to invest more resources in early childhood development. Related to this, his research showed that the rate of return to early childhood development was much greater than the return to the usual public regional development projects being proposed such as building a new stadium for the Vikings, the area's National Football League team (Rolnick and Grunewald 2003). He and his coauthor, Rob Grunewald, recognized that if the period of life from birth to about five-years-old "includes support for growth in cognition, language, motor skills, adaptive skills and social-emotional functioning, the child is more likely to succeed in school and later contribute to society" (p. 7). In their second round of research, Grunewald and Rolnick (2006) developed a plan for organizing early childhood education on a large enough scale to make a real difference.

James J. Heckman

James Heckman's research, done in collaboration with quite a few coauthors, is concerned with the economics of HD, not simply HC formation. Much of that research over the last 15 years or more has focused on early childhood development (see, e.g., Cunha and Heckman 2009; Heckman 2007, 20013; Knudsen, Heckman, Cameron, and Shonkoff 2006). In this

regard, Heckman recognizes the great importance of the quality of the child's home or family environment, which reflects the behavior of the parents, as well as the importance of preschool. The latter's importance is reflected in Heckman's et al. (2010) rigorous estimate of the rate of return to the Perry Preschool Program, an enriched preschool for three- and four-year-old disadvantaged African American youth. In addition to finding a relatively high societal rate of return to this early childhood investment, the researchers found the rate of return to be considerably higher than the rate of return on the HC investment in later childhood and adult individuals. More recently, Heckman's research on HC and HD has focused on investment interventions designed to improve people's noncognitive capabilities (or character skills) such as personality traits, goals, motivations, self-regulation, self-control, patience, and farsightedness (see, e.g., Ferguson, Heckman, and Corr 2011 and Heckman and Kautz 2013). Heckman is also very much concerned with the policy implications of his research on early childhood development (see, e.g., Heckman 1998 and Heckman and Masterov 2007). It should be noted that Heckman is currently leader of a large group of researchers who are members of the Human Capital and Economic Opportunity Global Working Group. The mission of this group is to carry out comprehensive and interdisciplinary research into HC development.

Essence of How a Developmental Approach Differs from a Mainstream Economic Approach to Human Capital Investment

In the mainstream economic approach, investment in HC involves a process or intervention during which an input, say knowledge, is being added or incorporated into the individual. The addition of this input, which was not previously in the individual, accounts for the improved performance of the individual at work, school, home, or other locale. In the mainstream approach, this process is not strictly considered to be developmental in nature. Nevertheless, the individual may be thought of as advancing along the educational and cognitive development pathway, but not along any other developmental pathway. Typically, these types of investment interventions take place in educational institutions such as schools and colleges or in the workplace.

In contrast to the mainstream approach, in the developmental approach, investment interventions improve an individual's performance to the extent that it helps an individual progress through one stage of development and move on to the next stage. Such progress is not generally a result of the addition of an input like knowledge. This developmental progress

can occur along any or all of the three developmental pathways. However, because the educational pathway is well known, more attention is given here to the two noneducational pathways. Healthy progress occurs along these pathways when an intervention (1) enables or facilitates a person's development or (2) prevents events that might have stopped or retarded the individual's development. If the outcome of a person's development along one pathway is favorable, it may enable a favorable developmental result along one or two other developmental pathways.

A number of important kinds of situations in which humans fail to develop satisfactorily were discussed earlier in the chapter. These include:

1) Full, healthy brain development fails to occur because of adverse early childhood experiences often involving toxic stress or trauma. Because of these neurodevelopment deficits, both childen and adults will be stuck or partially stuck at a lower stage of brain development
2) The molecules of emotion (different types of receptors and ligands in the brain and body) fail to flow freely such as when emotions are repressed or denied. As a consequence, body and brain network pathways get blocked, and people get stuck in unhealthy patterns of behavior and experience negative emotional states.
3) People fail to develop important emotional competencies (e.g., inablility to handle one's distressing emotions) deriving from a lack of coordination between a person's thinking brain (neocortex) and their lower brain areas.
4) People fail to develop the personality traits that are needed for their educational success, labor market success, health, and positive personal outcomes.

As discussed earlier, there are a great variety of interventions, that is, many types of investment in HC, that can enable individuals with the above kinds of developmental difficulties to overcome their problems. When people make these investments, this not only increases the productivity of the economy, but it also improves many personal and societal outcomes. It is, however, important to note that qualitatively these investment interventions to overcome developmental difficulties encountered along the two noneducational pathways are distinctly different from typical educational investments. Despite this, they are very much HC investments in that when they are successful they raise important human capabilities. And these capabilities, likely noncognitive ones,

are no less important for the economy and for the society than capabilities developed through education.

The Developmental Pattern Over Time

In early childhood just after birth, a child is not ready to develop cognitively. The development that is taking place is noncognitive development, mainly occurring in the lower brain areas (Perry 2002, pp. 86–88; Perry and Szalavitz 2006, pp. 247–248). During very early child development, children are acquiring basic brain organization, a stable emotional basis, a secure attachment to their primary caregiver(s), and the basis for good social relationships. Obviously, during this developmental period, educators who specialize in imparting knowledge or cognitive skill are not needed. But during this early development, parents may need the help of individuals who appreciate the developmental needs of their very young children as they pass through different stages. What children in these early stages need is essentially nurturing, loving attention, protection, and appropriately stimulating experiences.

Inevitably, of course, as the child grows older and noncognitive development progresses, the relative amount of time devoted to noncognitive development will decline. In other words, as the child matures and becomes more secure, independent, and confident, the child's need for the nurture and care of a parent will become less and less. And as the child's higher brain develops, a greater proportion of the child's development will be cognitive. More and more of the child's development will involve learning and acquiring skills. Figure 2.5 is a stylized representation of how the relative time spent in noncognitive versus cognitive development changes over time from birth to the age of 18. The relative amounts of time shown in the figure are not based on careful empirical research. The proportions are merely based on neuroscientists' generalized understanding of the developmental pattern. Note that figure 2.5 is useful for helping one think about the relative importance of noncognitive and cognitive HC formation over the duration of childhood.

It should be noted that in addition to early childhood, there are certain other important times during an individual's lifespan when people typically make transitions from one stage of development to the next. One important example is the transition from middle childhood to adolescence (see, e.g., Papalia, Olds, and Feldman 2009, Chapter 11). It is not unusual for people to experience these transitions as difficult and stressful. So the smooth curve (figure 2.5) representing the gradual decrease in the time spent on noncognitive development may be somewhat misleading.

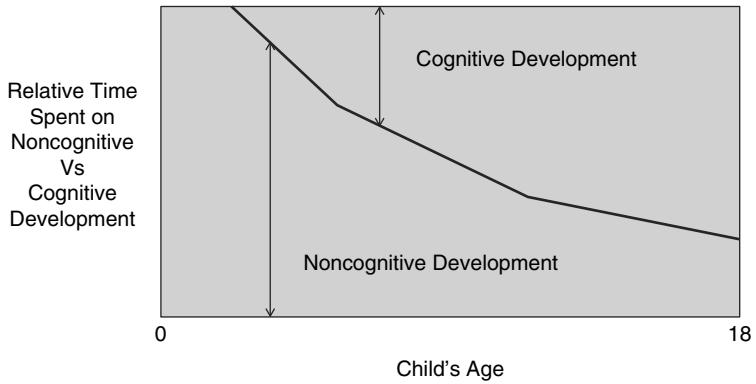

Figure 2.5 Children's developmental pattern over time.

Perhaps it would be more realistic if the curve showed periodic upward bumps reflecting transitional periods (Duncan and Magnuson 2004, pp. 101–102). These are periods often involving crisis and personal upheaval as one attempts to make needed changes, typically reorganizing some of the psychological, social, emotional aspects of one's life. In many cases, people, often with a great amount of effort, successfully make the transition, moving on to the next stage of their life. But in other cases, people may get stuck or partially stuck in their present stage, and as a consequence of the developmental failure, certain life opportunities may be precluded. Persons in transitional periods are typically making substantial investments in noncognitive HC, investments that sometimes require professional help such as from social workers or psychologists.[9]

Implications for Human Capital Strategy

The predominate HC strategy for addressing the failings of the US educational system has been to attempt to improve kindergarten to twelfth grade education by investing more resources and making quality improvements. This strategy is essentially focused on improving students' cognitive performance. Implicit in this strategy is the view that a society's educational failings are not related to its investments, or lack thereof, in noncognitive HC. The exclusion of the latter from HC strategy has presumably been done on the grounds that noncognitive development is perceived to be the responsibility of parents (with the assistance of a few noneducational entities). It follows that noncognitive HC investment need not be the concern of economists and policymakers. Unfortunately, such a cognitively focused HC strategy takes for granted the capabilities

of the children who enter the school system at about the age of five. That makes sense, of course, if the educational and cognitive development pathway is the only developmental pathway. However, if there are other important pathways, two as suggested in this chapter, and if noncognitive development is a very important part of a child's development in both early and later years, then focusing all of society's HC resources on traditional K-12 cognitive education does not make sense. It is to the credit of developmentally oriented economists such as Duncan, Rolnick, and Heckman that they have recognized the importance of noncognitive investments during early childhood and have advocated a reordering of priorities in this respect. Now it is time to take a further step. We should recognize that a strategy consistent with a true developmental perspective should not only include investments in early childhood development, but also should include investment in all the HC needed at all stages of the human lifecycle.[10]

The case, however, for a developmentally oriented HC strategy should not be made solely on the basis of the desirability of improving society's performance along the three developmental pathways. Another important consideration is dealing with the existence of a major social problem, that is, worsening educational and economic inequality. It is widely recognized that during the last 30 years or so an increasing number of young American children are growing up in disadvantaged environments. Too many children are experiencing family break up and dysfunction, inadequate parenting, traumatic experiences, victimization by crime, and economic deprivation (Heckman and Masterov 2007). Further, many lower income families experience weak cultural support for child development and have little time and money to spend on enriching, stimulating activity. As a consequence, more and more of these disadvantaged children are entering school with relatively low endowments of HC. Not surprisingly, the result has been a very substantial increase in educational and income inequality (Tomer 2014). In the absence of the willingness to commit resources to deal with this social problem, it is likely that this social problem will only worsen. It should be noted that other important social problems such as substance abuse, criminal activity, and health problems such as obesity are also associated strongly with a society's HD deficiencies.

Conclusions

This chapter has demonstrated how the concept of HC can be integrated with the concept of HD. An important element in this integration is that there are a number of major parallel and interdependent pathways along

which people develop. The three sided HD pyramid provides a representation of the three major developmental pathways. These three are: (1) educational and cognitive development, (2) psychosocial, biological development, and (3) brain development. This idea of multiple developmental pathways is in contrast with mainstream economics which in effect recognizes only the educational and cognitive development pathway. This chapter provides explanations regarding the nature of the two noneducational kinds of development, how development along these paths may fail, and what kinds of intervention (investment in HC) might provide a remedy. One example is when a child's brain development fails in early childhood as a result of adverse childhood experiences. In this situation, the type of recommended intervention would depend on the individual circumstances, particularly on the severity of the child's experience. Further, in this situation as well as many others, a child's or an adult's development can get "stuck." Such developmental failures cry out for a remedy, typically some kind of intervention, likely involving an investment in HC enabling the person to develop successfully and move on to the next developmental stage.

It is important to note that the noncognitive HC formed through these interventions is as real and important as the cognitive HC formed through education in the sense that both generally add to the productivity of the economy and to improved behaviors and relationships in the noneconomic aspects of life. It follows that investments in noncognitive HC should be considered along with investments in standard HC when formulating the HC strategy for the economy. Because the United States and probably most other developed countries' HC strategies have often performed poorly in this respect, there is good reason to believe that advanced economies like the United States have underinvested in noncognitive HC. As a result, it seems likely that there are many noneducational investments that will yield a relatively high rate of return compared to more conventional investments. Arguably, integrating HC with HD should lead to more rational and efficient decision making with respect to HC strategy as well as to decisions that are more caring for the less fortunate. Finally, the integration of HC and HD would seem to be an important step in making economics a more human and humanistic discipline, a discipline in which full HD and flourishing is the ultimate goal.

CHAPTER 3

INVESTMENTS IN HUMAN CAPITAL TO REMEDY DECISION-MAKING ERRORS

Introduction

With the rise of behavioral economics, we are becoming much more aware that we humans do not "naturally" make decisions like the rational beings depicted in neoclassical economics. We now know that humans regularly err in their decision making; humans are in Dan Ariely's (2009) words "predictably irrational." The purpose of this chapter is first to explore some of the main things we have learned or are learning about how the human mind often errs in economic judgment and decision making. The second purpose is to indicate what humans can do to remedy these errors. Such remedial actions are in effect investments in human capital (HC) as they raise human decision-making capability. The chapter focuses on both the most typical and important flaws in human decision making and a number of important ways that humans can avoid or reduce these errors. The approach taken here is to explore this subject utilizing only the contributions of a few key well-known authors.

What are people's main decision-making flaws? First, behavioral economic research indicates that our minds make many cognitive errors.[1] Second, our minds have limited cognitive capacity to deal with the complexity of the real world. And third, our minds often fail in decision making when strong negative emotions have been aroused. Additionally, our minds in decision making are too often oriented to seeking what we want or desire, not what is really good for us. That is the essence of the behavioral economic bad news. The good news is the increasing understanding of some important ways that decision-making and judgment errors can be reduced or avoided. To understand these errors and their remedies, this chapter surveys the different major behavioral economic findings concerning how the mind works in economic decision making.

Based on this, we can better understand both the flaws in our economic decision making that contribute to irrational outcomes and what kinds of HC investments can prevent them.

To illustrate the importance of the decision-making flaws and remedies, examples relating to eating and other behaviors thought to lead to obesity have been used.[2] It is, however, beyond the scope of the chapter to cite the voluminous empirical research relating to food and obesity. Further, it should be noted that this chapter has relatively little to do with brain physiology per se, that is, it is not about the functioning of the different parts of the brain.[3] It is about the behavioral economics of how well our mind works in making decisions and how that decision making can be improved.

Recall that in chapter 2, in contrast with this chapter, the cause of the problematic behavior was a person's developmental failure, most likely caused by severe environmental circumstances. Such failures typically are noncognitive in nature. In the present chapter, the emphasis is on problematic behaviors such as flawed decision making that are an outcome of people making decisions in their natural cognitive operating modes. The need for investment in HC here is, thus, *not* because of a need to remedy a person's developmental failure; it is *not* to correct a pathological situation; it is merely to counteract a person's usual nonpathological cognitive functioning.

Quite a few sections of this chapter are devoted to explaining about the different reasons why human decision making and judgment are often error-plagued and biased. Following these parts are sections explaining how appropriate investment in HC can often provide remedies that make decision making more rational and judgment less biased. Toward the chapter's end, a number of important implications are discussed.

Economic Man's Brain

To fully understand departures from rationality and how they can be improved, it is useful to start by considering economic man (econ man), the human stereotype of mainstream economics. If econ man were a human being, what could we infer about the nature and functioning of his/her mind? The answer is that econ man's mind would behave in accordance with rational choice theory and operate like a perfect machine brain. Thus, econ man has complete knowledge of the environment and knows all the alternative courses of action, the payoffs, and their probabilities (Simon 1955, 99–110). The mind of econ man has unlimited computational skill with which to do calculations related to the courses of action. In the version of mainstream theory known as subjective

expected utility (SEU) theory, econ man can assign a number, a measure of his liking, to all the alternative outcomes and then choose the alternative that maximizes the expected utility value (Simon 1983, pp. 12–15). No doubt the perfect machine brain of econ man is an elegant conception, which has some theoretical usefulness. However, its conception is not based on any brain or mind research or thinking about how humans actually make decisions.

Error in Decision Making: Failures of Instrumental Rationality

Herbert Simon on Human Decision Making and the Limitations of Man's Mind

The conception of econ man's mind is clearly not realistic. Obviously, humans are not capable of perfectly rational decision making. According to Simon (1983, pp. 16–17),

> in typical real-world situations, decision makers, no matter how badly they want to do so, simply cannot apply the SEU model . . . Human beings have neither the facts nor the consistent structure of values nor the reasoning power at their disposal that would be required, even in . . . relatively simple [lab] situations, to apply SEU principles.

Because of real world complexity and humans' cognitive limitations, human decision makers typically employ simplifications. First, they deliberately simplify the "model of the situation in order to bring the model within the range of their computing capacity" (Simon 1955, p. 100). Second, instead of evaluating all the alternatives, a selected set of alternatives is typically evaluated sequentially and the first satisfactory alternative is selected (pp. 110–112). These decision makers typically have an aspiration level associated with their goals that defines what satisfactory means (p. 111). Simon called this decision-making procedure satisficing. This procedure is boundedly rational in the sense that it is intendedly rational, but the rationality is limited by the human brain's cognitive capacity and the complexity of the environment (p. 114). Only in the most simple and transparent situations can we expect utility maximization or perfect rationality on the part of human decision makers (Simon 1959, p. 258).

Consider the example of an adult choosing a diet. In theory, this could be very complicated. One can choose among thousands of foods that vary along dimensions such as nutrition/healthfulness, taste, stimulation, preparation time, expense, degree of processing, commercial availability,

and so on. Foods can be combined and prepared in many different ways. According to economic theory, people will want maximum satisfaction from their food consumption or minimum cost. Finding the optimal diet is clearly too complex for our brains. However, it is possible to alter the decision-making process in order to drastically simplify things. For instance we can start by choosing from a set of foods or dishes that is familiar to us due to our cultural/ethnic/familial upbringing. Typically, we add to this a few items we see our friends consuming and a few items recommended by media sources (TV, radio, movies, newspapers, magazines, books, internet). We typically try a small number of foods/dishes and continue to choose these or others that at least meet our minimum or aspiration level of satisfaction given our budget. These are foods that taste good enough, provide enough nutrition, are affordable, available, and do not take too much preparation time. Occasionally we add a new food or dish to our diet. It certainly cannot be said that we are maximizing or optimizing our satisfaction, much less minimizing cost. This procedure seems quite consistent with Herbert Simon's perspective on decision making, that is, we are boundedly rational in our decision making with respect to diet.

But increasingly (in the last 30 years or so) many people making dietary decisions seem to be less rational than this, especially in the United States where it is estimated that two-thirds of the population is overweight or obese. According to Thaler and Sunstein (2009, p. 7), "we do reject the claim that all or almost all Americans are choosing their diet optimally." The same goes for smoking and drinking. The bad news here is that many of us fail even to be boundedly rational food consumers, and it clearly is harming us. Not only is it harming our health, but also the high cost is hurting the performance of national economies, and threatening many governments' financial viability. By 2030, the projected direct health care costs attributable to obesity and overweight could range from $860 to $956 billion, accounting for 1 in every 6 dollars spent on health care (Wang et al. 2008, p. 356). The good news is that many others are employing boundedly rational decision procedures that often enough do reasonably well.

Human Capital Investment to Improve Boundedly Rational Decision Making

If the outcomes of a boundedly rational decision-making procedure such as satisficing are unsatisfactory, such as might be the case in the diet choosing example noted previously, decision makers could choose to invest more of their time and resources in a way that leads to improved

decision outcomes. First, individual decision makers might choose to spend more time engaged in decision-making activities in order both to gain more experience using satisficing decision-making procedures and to eliminate possible flaws in these procedures. There is reason to believe that increased decision-making experience will result in greater decision-making skill, and consequently, improved decision-making outcomes. If so, this kind of investment in HC would be worthwhile. Second, decision makers in an organization might increase the size of the selected set of food alternatives and/or revise the criteria for determining what is a satisfactory choice. This type of investment involving changes in decision-making procedures can be considered a kind of investment in organizational capital (a type of HC).

Daniel Kahneman and Psychological Economics

Daniel Kahneman is the acknowledged leader of another important strand of behavioral economics that challenges economists' model of rational choice. He, along with his close collaborator and frequent coauthor the late Amos Tversky and many others, do research in the psychological economics (PE) tradition. Kahneman (2011) has summarized and integrated his important contributions to PE with the research of others in his book *Thinking Fast and Slow,* thus providing an important new perspective on human judgment and decision making. PE focuses particularly on the cognitive functioning of the human mind and why people are prone to make predictable errors in their judgments and decision making. Compared to Simon's research, PE tends to focus on smaller decisions and on less complex situations in order to isolate specific types of human cognitive bias. Their empirical research often takes place in laboratory settings that allow controlled experimentation.

One way to begin to understand the cognitive errors that Kahneman's research has revealed is to utilize the distinction between Econs and Humans that Thaler and Sunstein (2009, pp. 6–8) use. Econs behave like econ man. Econs have more memory than the largest supercomputer, always make unbiased forecasts, and do not make systematic predictable errors in their decision making. Humans, on the other hand, not only have limited memory and cognitive capacity, but they also err predictably in forecasting and decision making. Humans, for example, have a "systematic tendency toward unrealistic optimism about the time it takes to complete projects" (the planning fallacy) (p. 7). Humans also typically "have a strong tendency to go along with the status quo or default option" (status quo bias) (pp. 7–8). These and other systematic errors or biases identified by PE researchers are a result of how the mind works

("the design of the machinery of cognition") (Kahneman 2012, pp. 3–8). They occur predictably in particular circumstances.

To fully understand the cognitive aspect of how our mind works, it is necessary to consider two systems in the mind, System 1 and System 2 (see Stanovich and West 2000). System 1, associated with intuition, is the aspect of our mind that "operates automatically and quickly, with little or no effort and no sense of voluntary control" (Kahneman 2011, p. 20). Many of the predictable human errors which PE focuses on occur when our minds are in System 1 mode. For example, we might be dealing with a difficult question and automatically substitute an easier question and answer that one. If, in the face of a difficult question or issue, no easy System 1 solution comes to mind, that is when we typically switch to System 2. System 2 refers to effortful mental activities requiring concentration and self-control (p. 22). System 2 is slower; it may involve computation, deliberation, and constructing thoughts in an orderly series of steps. Also, System 2, since it requires attention, is disrupted if attention is drawn away. In contrast to System 2, System 1 operates continuously; it involves impressions, intuitions, intentions, and feelings; and it is short on logic and statistical understanding. When System 1 has been trained or has had a lot of valuable experience to draw on, it can be very accurate, especially in the short-term. However, it is generally necessary to use System 2 for long-term or complex situations. It is important to note that System 2 is not always a "paragon of rationality. Its abilities are limited and so is the knowledge to which it has access. We do not always think straight when we reason" (p. 415).

Stanovich (2011, pp. 29–45) has explained that System 2 processing has two main components, the algorithmic mind and the reflective mind. Algorithmic mind's processing relates to the efficiency of the mind's pure cognitive functioning. Reflective mind's processing relates to the individual's thinking dispositions that regulate the mind's performance. These thinking dispositions include: "1) the tendency to collect information before making up one's mind, 2) the tendency to seek various points of view before coming to a conclusion, 3) the disposition to think extensively about a problem before responding," and so on (p. 36). A person's rational thinking reflects both their algorithmic functioning (intelligence) and their reflective functioning (thinking dispositions) (p. 38).

Much evidence indicates that many of our intuitive, System 1 responses to difficult situations involve the use of heuristics. A heuristic, often described as a rule of thumb, " is a simple procedure that helps find adequate, though imperfect, answers to difficult questions" (Kahneman 2011, p. 98). These heuristics are often quite useful, "but sometimes lead

to severe and systematic errors" (p. 10). The research of Kahneman and Tversky and their coauthors has identified many commonly used heuristics and the predictable errors that derive from them (Tversky and Kahneman 1974). For example, people using the "availability heuristic" (pp. 1127–1128) "tend to assess the relative importance of issues by the ease with which they are retrieved from memory—and this is largely determined by the extent of coverage in the media" (Kahneman 2011, p. 8). When the extent of media coverage is not correlated with importance, biased judgments typically result. Another example is the "affect heuristic" proposed by Paul Slovic (see Finucane et al. 2000). This means that "people let their likes and dislikes determine their beliefs about the world." In other words, "your emotional attitude to such things as irradiated food, red meat, nuclear power . . . drives your beliefs about their benefits and risks" (Kahneman 2011, p. 103).

PE researchers have identified many other reasons why our minds systematically err in making judgments and in decision making. These errors derive from, among other things, the anchoring effect, judgment by representativeness, overconfidence, theory-induced blindness, loss aversion, salience, use of mental accounts, framing, inconsistent preferences, defective affective forecasting, difficulties dealing with probabilities and time, the narrative fallacy, hindsight bias, confirmation bias, and overestimating rare events (see, e.g., Tversky and Kahneman 1981 and Kahneman and Tversky 1984). For these reasons, the findings of PE strongly support the view that humans do not behave as rationally as econ man (Kahneman 2011, p. 411). Humans are certainly not Econs. Humans are too biased and make too many errors for that to be true. That is the bad news. But the good news is that humans are reasonable in many respects and situations. Many of the heuristics that people use work reasonably well much of the time and often save on decision-making time. Further, in a lot of situations, humans are not especially impulsive, emotional, or resistant to logical arguments in their decision making and judgments.

A number of the common biases and errors that PE researchers have discovered no doubt play a role in the growth of obesity. To illustrate, the hypothesized links between seven of them and obesity are explained. First is the affect heuristic. It seems likely that people's positive emotional attitudes to tasty processed foods lead them to underestimate the health risks of these foods and overestimate their nutritional value. Second is overconfidence. Humans make errors of overconfidence when they are excessively confident in what they believe they know and have an inability to acknowledge the full extent of their ignorance and uncertainty (Kahneman 2011, pp. 13–14, 218). Such people are overconfident in their

ability to predict the future. Thus, for example, many people may overconfidently believe that they can eat whatever they want regardless of the sugar, fat, or calorie content and degree of processing and that their bodies will automatically regulate their weight and health satisfactorily. Third, once humans adopt an unhealthy, fat fostering diet, they are likely to stay with this diet even if they become uncertain whether it is good for them (status quo bias).

Fourth, defective forecasting may also play a role in people's poor diets. Even if humans know that long-term consumption of relatively unhealthy food is strongly associated with being overweight and obese, they may not believe that this information applies to them. They are in effect making a defective personal health forecast due to ignoring important data. This kind of error presumably applies as well to other unhealthy behaviors such as lack of exercise. Fifth is the bias associated with salience. Vivid commercial messages from large corporations such as MacDonalds concerning the healthfulness and tastiness of their processed food may be highly salient, thereby leading people to overestimate the validity of these messages. The sixth bias, theory-induced blindness, relates to health science researchers and health practitioners. Once these health professionals have "accepted a theory and used it as a tool in their thinking, it is extraordinarily difficult [for them] to notice its flaws" (Kahneman 2011, p. 272). For example, consider the theory that weight gain is determined simply and only by calories in minus calories out. Gary Taubes (2007) in his extensive critique has shown how this theory is highly misleading. Yet many in the health professions continue to profess this theory. The seventh bias relates to a type of mental accounting. According to Thaler (1999, p. 193), "families living near the poverty level use strict, explicit budgets . . . defined over shorter periods (a week or month)." As a result, the poor arguably have higher rates of obesity from a greater tendency to choose cheap, available foods that are often unhealthy processed foods. If food decision making is biased in these and other ways, humans will no doubt suffer from higher rates of overweight, obesity, and health problems (along with higher costs) than if the decision making was unbiased.

Human Capital Investment to Reduce Judgment and Decision-Making Errors

Both Kahneman (2011) and Ariely (2009), at the very end of their books, recognize some of the things that can be done to reduce judgment and decision-making errors. They do not, however, seem to recognize that doing these things amounts to making investments in HC. According

to Kahneman (2011, p. 28), the essence is that humans can learn to make fewer errors by learning "to recognize situations in which mistakes are likely and trying harder to avoid significant mistakes when the stakes are high." If a person recognizes the signs of a mistake inducing situation (cognitive minefield), Kahneman advocates slowing down and asking for reinforcement from System 2 (p. 417). In Ariely's (2009, pp. 243–244) view, there are many different forces (potential error causing situations) that humans tend to underestimate or ignore. "Once we understand when and where we may make erroneous decisions, we can try to be more vigilant, force ourselves to think differently about these decisions, or use technology to overcome our inherent shortcomings" (p. 244). The existence and prevalence of decision mistakes imply that there are important opportunities to improve our decisions. Making such improvements is not generally without cost; it requires an intervention, that is, an investment of considerable effort and resources (Kahneman, p. 417). The needed investment involves developing new skills, strategies, institutions, policies, tools, and methods to help individuals be less susceptible to irrelevant environmental influences and, thereby, to make better decisions (Ariely, p. 241; Kahneman, p. 415). In Kahneman's view, the necessary "acquisition of skills requires a regular environment, an adequate opportunity to practice, and rapid and unequivocal feedback about the correctness of thoughts and actions" (p. 416). Some of the needed decision-improving investment can be brought about by nudges from policy makers and institutions or perhaps by self-nudging if the individual can recognize the nature of their decision-making problems (Thaler and Sunstein 2009).

It is important to emphasize that unlike the analysis in chapter 2, the cause of the problematic decision-making errors and judgment biases is not a human developmental failure. The errors and biases have nonpathological, nondevelopmental origins. Nevertheless, remedying these errors and biases may in many cases involve learning, thinking, acquisition of skill, and perhaps developing new behavioral or mental orientations. Thus, the HC investment remedy may very well involve significant elements of human development.

Organizations make significant investments in organizational capital to counter decision-making error (Tomer 1987). "Organizations are better than individuals when it comes to avoiding errors, because they naturally think more slowly and have the power to impose orderly procedures" (Kahneman 2011, pp. 417–418). Through their organizational investments, "organizations can institute and enforce the application of useful checklists" and other procedures (p. 418). "Organizations can also encourage a culture in which people watch out for one another as they

approach minefields" (p. 418). In Kahneman's view, organizations are like a factory that manufactures judgments and decisions. Therefore, these organizations need to be concerned about the quality of their products (judgments and decisions) at every stage of production, making many investments in organizational capital to reduce errors and biases.

George Loewenstein and Emotional Sources of Bias and Error

Besides cognitive errors, humans make errors and are biased for emotional reasons. According to George Loewenstein (2000, p. 426), people under the influence of strong negative emotions (visceral factors) are likely to make very different decisions than they would if they were calmly (unemotionally) weighing the benefits and costs of an action. Visceral factors such as anger, fear, hunger, thirst, sexual desire, and pain "grab people's attention and motivate them to engage in specific behaviors" (p. 426). Visceral factors "often drive people to behave . . . contrary to their own self-interest," sometimes self-destructively (p. 428). Further, visceral factors influence people's evaluation of the relative desirability of goods and, even with full knowledge, lead them to make different, often inferior consumption decisions than they would in the absence of these emotions (Loewenstein 1996, pp. 272–273). Visceral factors are, thus, appropriately modeled as state-dependent preferences which enter the utility function for goods (Loewenstein 2000, p. 427). For example, in the presence of strong hunger, our desire for food is much stronger than otherwise. It should be noted that visceral factors, even though they influence what gets consumed, are not the same as tastes or preferences for a good. Visceral factors, in contrast to preferences, are predictably correlated with external circumstances (e.g., lack of food, sexually arousing images).

Strong, "immediately experienced visceral factors have a disproportionate effect on behavior and tend to 'crowd out' virtually all goals other than that of mitigating the visceral factor" (Loewenstein 1996, p. 272). For example, in the throes of severe thirst or pain, one will single-mindedly seek water or pain relief and will not be apt to pursue sex or look for food. The presence of strong visceral factors also tends to "collapse one's time-perspective toward the present," and the viscerally affected (e.g., hungry) person will tend to make short-sighted decisions in order to get what he/she craves (p. 275). Typically the deprived (or hungry) human's focus will narrow toward the self, undermining any tendency to empathy or altruism. After all, it is hard to think about or feel empathy toward others when one is starving hungry. Moreover, under the influence of such visceral factors, we are not likely to be interested

in or capable of deliberative decision making. It is noteworthy that when people are not in an emotional state (i.e., in a "cold" state), it is hard for them to imagine how it would be to be in a "hot" state (e.g., craving, angry, jealous) (Loewenstein 2000, p. 428). In other words, there are "hot-cold empathy gaps." An example is a study that focused on the sexual attitudes of male college students. When these "students were sexually aroused from viewing photographs of nude women, [they] reported a substantially higher likelihood that they would behave aggressively on a date than nonaroused control subjects" (p. 428). This and other evidence cited below are consistent with the view that strong visceral factors narrow one's attention, lower empathy, and shorten one's time-perspective.

Consider the effect of visceral factors in bargaining situations.

> People's bargaining behavior is powerfully colored by emotions such as anger, fear, and embarrassment. The feeling of injustice that people experience when they believe they have been treated unfairly, or preexisting anger toward the people they are negotiating with often causes them to act contrary to their own economic interests. In the classic pattern of all visceral factors, angry negotiators become obsessed with causing pain to the other side, impatient to impose that pain (and relatively indifferent to the long-term consequences of doing so), and selfish (that is, unconcerned about collateral damage to other parties). (Loewenstein 2000, pp. 429–430)

Further,

> In the grip of 'road rage,' suburban mothers in Alabama shoot each other over a trivial misunderstanding; politicians and business leaders become entangled in sex scandals that destroy their careers. (p. 430)

Clearly there is no shortage of examples demonstrating how strong negative emotions often push people to actions that are far from being in their own best interests. It is important to note, however, that in some cases negative emotions such as the experience of regret can help individuals make better choices (see, e.g., Zeelenberg 1999).

According to Kessler (2009) in *The End of Overeating*, humans have a natural homeostatic ability to balance energy consumption and expenditure that is capable of maintaining a person's desired weight. Unfortunately, this biologic balancing can go awry (p. 16). Under some circumstances, people, instead of being self-controlled and regulated, can lose control and overeat. Instead of their prefrontal cortex exercising executive control and keeping their brains in balance, negative emotions along with the stimulus of hyperpalatable foods can lead them to crave

these foods and, therefore, to compulsive hypereating. This is most likely to happen in the presence of negative emotional states such as anger, sadness, or anxiety which amplify the rewards of hyperpalatable foods (p. 151). In this situation, people may eat as a form of self-medication due to its emotional calming effect. When people respond to the food cue to get the reward and calming effect, this eating pattern becomes a hard to break habit. Once this happens, the person is out of control in the presence of such hyperstimulating food cues. Thus, it is the combination of negative emotion, lack of brain balance, and hyperpalatable, unhealthy food that leads to a compulsive overeating habit pattern contributing to obesity. Clearly this pattern of food decision making is not in the individual's best interests, that is, it is not rational. In other cases, things might not be as complicated. Young people may simply consume more sugary soft drinks and fast food than they prefer for fear of not fitting in with their group. If many people who are experiencing visceral influences form these poor eating habits, the health consequences will be severe and the costs will be high.

Human Capital Investment to Remedy Emotionally Caused Errors

In the case of emotionally caused judgment and decision-making errors, the basic approach is very similar to investment for remedying the non-emotional cognitive errors. What people need to do to become good-enough decision makers is, first, to gain knowledge of how emotions affect their decision making, second, to become aware of and anticipate how these emotions affect them, and third, develop strategies and behaviors to deal with these emotionally related situations (Loewenstein 2000, p. 431). When problematic decision making results from individuals' failure to handle their emotions, particularly when strong, distressing emotions are swamping their ability to think clearly, individuals need to develop a strategy for keeping the distressing emotions in check. This may involve avoiding temptations and otherwise keeping their thinking mind in charge. Individuals' efforts to do so, however, are often thwarted by their tendency to underestimate the influence of future strong emotions (p. 431). In any case, such efforts by people to change their behavior are a kind of investment in HC that can be expected to payoff in higher emotional intelligence. These investments work when they enable people to gain better coordination between their thinking brain (neocortex) and their lower, limbic brain regions (Goleman 2011, pp. 29–30; see also Tomer 2008b on personal capital).

Kessler's (2009) obesity related research provides some good examples of this type of investment. He finds that people's negative emotions

are a key factor leading them to crave certain foods, lose self-control, and engage in habitual, compulsive overeating. Once established, this pattern of irrational decision making with respect to food is extremely hard to break. Kessler explains specifically and carefully what conditioned hypereaters would need to do to overcome their compulsive, bad habits. "The cornerstone of treatment for conditioned hypereaters is developing the capacity to refuse the [food] cue's invitation to the brain in the first place. That refusal must come early, and it must be definitive" (p. 182).

According to Kessler (2009, pp. 184–189), the ability to change entrenched habits involves five major components: (1) developing awareness of the food choice situations and the associated risks (pp. 185–186), (2) learning and developing alternative responses to these situations (pp. 186–187), (3) "formulating thoughts that compete with and serve to quiet the old [dysfunctional] ones" (p. 187), (4) developing relationships with people who can provide crucial support, thereby helping the habit plagued individual recognize and avoid [tempting food] cues and acknowledging his or her success in doing this (pp. 188–189), and (5) developing new emotional responses to food such as "changing one's emotional appraisal of salient food" (p. 197). Further, it is necessary for the afflicted individuals to develop a set of rules which provide needed structure in order to keep them from becoming aroused by unhealthy food (p. 190). The latter "requires attention, practice, and advance planning, motivated by the expectation that . . . [the individual] will ultimately derive emotional satisfaction in new ways" (p. 195). Essentially, these intangible investments necessary to overcome habitual hypereating of unhealthy foods involve making a "perceptual shift and learning new behavior that eventually becomes as rewarding as the old" (p. 201).[4]

Religious traditions that I am aware of recognize the destructive effect that negative emotions such as anger and hatred can have, and Buddhism is no exception. Thich Nhat Hanh, a well-known Vietnamese Buddhist monk, author of many books, poet, and peace activist, counsels using meditation and other methods to "penetrate and transform [these emotions] when they are still seeds in your consciousness," that is, when the anger or hatred has not yet manifested (Hanh 1997, pp. 30–31). He advocates shining a light of awareness on one's unpleasant feelings and identifying their roots. The preventative medicine he prescribes also includes a strong dose of love, compassion, and understanding (p. 32). Although his advice has a spiritual orientation, he is in a sense counseling people to make an investment in HC to eliminate the source of their negative emotions so that they can be more rational human beings.

Failure of Self-Control

As the earlier sections indicate, there are many reasons for errors of judgment and decision making. It is, however, important to point out that even if decision making per se were perfectly rational, an irrational result would occur in the absence of self-control. That is, if people do not have the willpower "to get their behaviour…to follow the optimal plan," the result will not be in accord with perfect rationality (Thaler 1996, pp. 232–233).

Gerd Gigerenzer's Research and Human Capital Investment to Remedy Decision-Making Errors Due to Limited Knowledge

If a decision maker who is dealing with a large, complex question had unlimited time (and resources), unlimited computational ability, and unlimited knowledge, and if finding an answer to the question were very important, the decision maker could obviously sample every possible outcome in the environment, do the required calculations, and therefore determine which choice will give the optimum result. This result would involve no bias and no error. However, as Herbert Simon has pointed out, this is not a realistic situation. Typically, time, knowledge, and computational capacity are very limited. So inevitably the result of the choice will not be unbiased and error free. But humans have evolved decision processes to cope with these limitations. When decision makers develop and institute decision processes to cope with their lack of knowledge and are able to improve their knowledge about how best to use these processes, they are making valuable investments in HC. This is the kind of activity that the research of Gigerenzer helps us understand. Gigerenzer, has pioneered in the study of alternative decision processes that economize on scarce decision resources.

The decision processes that Gigerenzer and Goldstein (1996) have analyzed are boundedly rational methods similar to satisficing. To test a number of these decision-making processes or algorithms, Gigerenzer and Goldstein have tested how they would work in helping people answer the following question: Which German city has a larger population? (A) Hamburg or (B) Cologne? (or any other pair of cities) (pp. 651–652). The simulation data used were based on the responses to this question of typical American adults with only a moderate knowledge of Germany. In the test, these adults consider all 83 German cities with a population greater than 100,000, two at a time.[5] Based on knowledge they could retrieve from memory, they recognized the names of some of the cities and had

some knowledge about certain cities such as whether these cities had professional soccer teams in the major league or had intercity train lines or had a well-known university. The issue is: Given the knowledge these people have, what decision process will perform best in terms of accuracy and speed of response in answering this question?

Perhaps the most significant finding of Gigerenzer and Goldstein's (1996) research relates to the performance of the *Take the Best* (TTB) algorithm. The essence of TTB is to "take the best, ignore the rest" (pp. 653–654). When the people responding consider a pair of cities in the first step of TTB's decision process, if they recognize only one city, the recognized city is judged larger and the process stops. If both are recognized, the second step is to proceed to use a series of cues containing city information, the cues being arranged in descending order of the validity of the cues. The decision maker starts with the cue having the highest validity and proceeds down the list of cues. The city judged to have the higher population is the first one with a positive cue value where for that cue the other city does not. For example, suppose the decision maker arrives at the second cue and sees that one city has a professional soccer team and the other does not. That means that the city with the professional soccer team is judged to have a larger population than the one that does not. The process stops at this point. The information for all the remaining cues is ignored. Despite the fact that this procedure ignores a significant amount of information, Gigerenzer and Goldstein find that the TTB procedure is not only fast, but it performs as well as some procedures using much more information, and TTB actually performs better than a number of those other procedures (pp. 658–660). This research indicates clearly that "simple psychological mechanisms can yield about as many (or more) correct inferences in less time than standard statistical linear models that embody classical properties of rational inference" (p. 666). The use of such valuable decision making heuristics or algorithms can no doubt enable some decision makers to achieve superior results. These decision makers are not only those with access to the best algorithms, but also presumably are those who have acquired over the years a great amount of experience and skill in dealing with a certain class of decisions. These decision makers are benefiting from their success in making two types of investment in HC, investments in knowledge related to decision-making processes and investments in the skill to use these decision-making processes. Correspondingly, it seems likely that more typical, less-skilled decision makers who use less good decision-making algorithms, and who may have more

cognitive and emotional biases, will achieve more ordinary results containing more bias and errors.

Let us consider a situation that is similar to the earlier example of an adult choosing a diet on the basis of many criteria. Instead, in this example, the adult is only trying to choose the healthiest possible diet. Even with all the currently available information about food and nutrition and related topics, it is still very complicated to use this information to make valid choices regarding all the possible foods and their qualities. No doubt we have gained some understanding about nutritional science, food, and health from a variety of sources. We probably have gained much information in the form of food recommendations from health scientists, food experts, dietitians, food journalists, chefs, medical doctors, and so on. Further we are likely to be influenced by what our various acquaintances say about food and health, not to mention the news media. For the purposes of this example, suppose we are considering 1000 different choices of food and food dishes. Similar to the TTB procedure, let us consider making choices between two foods (typically substitutes or competing items) at a time. Next, for a particular pair, we proceed down the list of food information cues until we find one of these two foods to be clearly superior on that health related dimension. At that point, we choose this food for our diet and ignore the remaining information on these two foods. Done repeatedly for many pairs of foods, this will give us a highly satisfactory list of healthy foods for our diet. Of course, I do not maintain that anyone of us actually uses this procedure in the formal, explicit way outlined previously. However, many of our food decisions regarding food healthiness would seem to be a product of a process similar to this if our goal really is to eat as healthy as possible. Certainly we cannot examine all possible foods using all relevant information. But we probably have a reasonably good idea of the kinds of food informational cues that have greater validity than others and have a decent idea about how to apply these. No doubt a few of us who are more experienced and knowledgeable in the food health area can make superior decisions using such informal algorithms. On the other hand, most of us with less knowledge and less systematic decision-making skill, not to mention our typical cognitive biases and related emotional and cultural baggage, do far less well in attempting to choose healthy foods for our diet. In other words, in situations where our knowledge is limited, decision makers who have made HC investments in knowledge about decision-making processes as well as investments in learning how to use these decision-making processes are likely to experience considerably better decision-making outcomes than those who have not.

Error in Decision Making: A Failure of Rationality of Ends

Thus far, this chapter has focused on how the mind works in decision making that is designed to choose the best means to achieve whatever the decision maker's ends (or wants) are, in other words, designed to achieve instrumental rationality. As indicated earlier, achieving decision making rationality is problematic because of the limitations of the human mind. The writings of Simon, Kahneman, and Loewenstein have been cited to indicate the different ways that decision making errors are inevitable, and thus how humans are far from being as instrumentally rational as is depicted in the mainstream economic ideal.

There is, however, another significant issue with regard to whether our minds work rationally in decision making. Rationality also involves applying reason to select ends, not just selecting the means to get what one wants. Thus, the rationality of ends is also a significant aspect of decision making. "A decision cannot be truly rational unless a person is doing what is really best for that person" (Tomer 2008a, p. 1704). Simply doing what we desire or want may not be in our best interests. As Rescher (1988, p. 96) points out, "a voyage to a foolish destination—no matter how efficiently conducted—is a foolish enterprise."

This implies that people's true or best interests and corresponding preferences are distinctly different from and better than the preferences that reflect their wants and desires. A person's *true preferences* are the particular preferences that "represent the ultimate, unique truth about what is really right and best for that person" (Tomer 2008a, p. 1706). With rare exceptions, our true preferences will be at least partially hidden from our awareness (p. 1707). Therefore, people need to discover their true preferences, which reflect their values and ends, ones that are really right for them, through reflection and reasoning about the events of their lives. People "need to make sense of their world and to come to know what makes their life worthy" (p. 1704). Such reflectiveness is likely to lead individuals to change their preferences to conform with their discovered inner truth, their ideals. As Frank Knight (McPherson 1984, p. 237) recognized, "what the common sense individual really wants is not satisfaction for the wants he has but more *and better* wants."

To analyze the process of preference change, it is necessary to distinguish true preferences from actual preferences and metapreferences (Tomer 2008a, pp. 1705–1707). Actual preferences reflect one's actual wants and desires and our ability to use and appreciate goods. Metapreferences are one's preferences about one's actual preferences. Unlike for true

preferences, we are generally fully aware of our metapreferences. If there is a significant discrepancy between an individual's metapreferences and one's actual preferences, the individual is likely to experience discomfort, and this is likely to lead the person to change his actual preferences. Moreover, "metapreferences, themselves, may change to the extent that one is subject to important external influences such as the wisdom and moral values of one's elders and/or becomes more conscious of one's true preferences" (p. 1707).

The ultimate of rationality of ends, *true rationality*, occurs if one has transformed one's actual preferences, and thus, comes to choose entirely in line with one's true preferences. An element of true rationality is present when people are making progress in discovering and acting in accord with their true preferences.

Consider an illustrative analysis related to obesity.

> Consider two classes of foods, healthy (H) and junky (J), the latter being less healthy and potentially damaging to one's health. Abe's actual preferences are for J . . . and accordingly he normally chooses J food. However, Abe's true preferences are for H . . . as H food really is better for Abe's health. The problem is that Abe does not know about, that is, has not become conscious of, his true preferences. But Abe is somewhat aware of what knowledgeable nutritional authorities say about H and J foods and has absorbed the influences of his parents and significant family members, not to mention community and religious influences. Abe is also affected by external cultural influences including advertising and the styles of youth culture. As a result, Abe's metapreferences are for a combination of H and J, say 50% H and 50 % J food. In other words, Abe prefers to prefer much more H food than he currently prefers and is consuming. Abe, however, does not want to prefer to eat only H food, as would be the case if his metapreferences were the same as his true preferences. Because of the tension or intrapsychic stress that results from Abe's metapreferences being out of sync with his actual preferences, Abe would be expected over time to "improve" his actual preferences, coming to prefer a combination of foods with a higher proportion of H food than initially. Moreover, it is quite conceivable that with time as Abe absorbs the lessons of his consumption experience and reflects on what is best for himself as well as on the biases of the cultural influences on him, that Abe's metapreferences may come to be significantly influenced by his true preferences. If these new metapreferences then influence his actual preferences, it is possible that A's actual preferences might come to reflect to a significant degree his true preferences, a change which is arguably a [great] improvement, and which makes possible a greater degree of rationality [of ends]. Of course, it could go the other way if Abe is overly

> influenced by certain aspects of popular culture and does not become more conscious of what is really good for him (his true preferences). (Tomer 2008a, p. 1707)[6]

Human Capital Investment to Remedy Decision-Making Errors Due to a Failure of Rationality of Ends

To remedy a failure of rationality of ends and become more truly rational is a much greater task than becoming more instrumentally rational, and it is a much less cognitive one.

> Part of the process of becoming truly rational is to transform one's actual preferences in the direction of one's true preferences. This would require aspiring to know one's true preferences, becoming aware of them, and reorienting one's actual preferences in line with them. This implies making progress toward overcoming one's emotional difficulties, one's neurotic behavior, and one's egoism, the kinds of things that get in the way of appreciating what is really good for us. (Tomer 2008a, p. 1710)

To some extent, coming to know one's true preferences just happens as people grow older, mature, and reflect on their life experiences, but some people may find it necessary to obtain help from religious and/or spiritual guides or therapists. In any case, it requires effort, a very significant investment in HC, that may have a great payoff.

Human Capital Investment Related to the Physiological Functioning of the Brain

The analysis in this chapter has implicitly assumed that decision makers have healthy brains from a physiological stand point. But as Daniel Amen, a psychiatrist and clinical neuroscientist, has explained, there are many reasons why people's brains may be functioning less than optimally, and this can contribute to judgment and decision-making errors. Amen (2010) has advised regarding the many things people ought to do to attain optimal brain functioning (and presumably good decision-making performance, which still might be predictably irrational). His advice is carefully targeted to deal with the many ways that our brains' physiological functioning can be below par. Perhaps unsurprisingly, his overall advice reads like platitudes for being generally healthy. Positively, he advocates eating nutritious foods, taking natural supplements (vitamins, minerals, and so on), positive thinking habits, exercise, sufficient sleep, relaxation, and loving, safe sex. Negatively, he

advocates avoiding smoking, alcohol, drug abuse, excessive use of TV and electronic communications devices, excessive stress, and environmental toxins. People who decide to follow Amen's advice to improve the health of their brains in order to improve its functioning are making investments in HC.

Mental Illness

The earlier sections have outlined how our mind's performance in decision making is often flawed, leading to many predictable errors. None of those errors, however, are caused by any mental illnesses or defects. No doubt humans suffering from mental ailments will make decision-making errors, but these are different from the errors considered previously. It is important to note that mental ailments are not rare; even those of us who have relatively good mental health commonly suffer from a variety of neuroses. That is, most of us have some compulsions, anxieties, and phobias as well as tendencies to impulsiveness or depression, not to mention all the different mental maladies cited in the Diagnostic and Statistical Manual of Mental Disorders (used widely by professionals who treat and deal with people with mental difficulties). Carefully considering these mental ailments' contribution to decision-making error is beyond the scope of this chapter.

Summing Up

The Bad News: Our Minds Often Perform Poorly

The upshot of the previous sections is that our mind's performance is flawed insofar as how our mind works leads to many decision-making errors.[7] First, these mistakes mean we fail to get what we want. Second, these mistakes also mean that too often we focus on trying to get what is not really and truly in our best interests. Herbert Simon's research has helped us understand why optimal instrumentally rational decision making is not possible due to the complexity of the decision-making environment and the limitations of human cognitive capacity. Unavoidably, this means our judgments will be biased and our decisions will have errors. Daniel Kahneman's writings have helped us understand the cognitive reasons for the systematic biases and errors in our decision making. George Loewenstein's writings have helped us understand how in the throes of strong, negative emotions, we often fail to make decisions in our own best interests, sometimes with self-destructive outcomes. My writings on true preferences and true rationality argue that humans often fail to make

decisions in accord with the goals or ends that are truly right for them, settling instead for efforts oriented to satisfying wants and desires.

The Good News: Investment in Human Capital Often Provides a Remedy

Although there is much bad news about the flaws in human decision making, there is considerable good news. Essentially, the good news is that we can learn how to avoid error and become more skilled, good enough decision makers. To become better decision makers, people need to make a variety of investments in HC. First, as Herbert Simon has indicated, although optimal decision making is not possible, we can at least learn to make satisfactory decisions, that is, decisions leading to outcomes meeting our aspirations (boundedly rational decision making). Second, Daniel Kahneman points out that although we commit many decision-making errors, we can learn to avoid errors by recognizing situations where mistakes are likely and working harder to avoid them, especially when a lot is at stake. In many cases, developing new skills, strategies, and methods will be required to avoid error and make better decisions. Third, as George Loewenstein (2000, pp. 430–431) points out, with knowledge of how our emotions affect decision making, we can become aware of and anticipate these effects and, thereby, develop strategies and behaviors to deal with them. Fourth, we may be able to become more truly rational by, not just efficiently pursuing what we want, but by doing the kind of things that enable us to pursue ends that are really right for us. Fifth, as Gerd Gigerenzer explains, decision makers can learn to use and become skilled at using heuristics to deal with complex decision situations and, thereby, make relatively fast decisions that may be able to achieve at least as good performance (in terms of low error) as rationally oriented methods that use much more information. Sixth, Daniel Amen has explained about the physiological reasons for our deficient mental performance and how we can make investments that create healthy living patterns, and thereby, raise our decision making and judgment capabilities.

Food Decision Making

As indicated earlier, there is good reason to believe that the way our minds work can cause us to be poor food decision makers. Food related decision errors derive from, among other things, the affect heuristic, overconfidence, status quo bias, defective forecasting, salience bias, theory-induced blindness, and mental accounting. Relatedly, strong negative emotions such as anger, sadness, and anxiety are a significant stimulus

to compulsive hypereating behavior that is not in people's best interests. Moreover, there is evidence that people can come to understand the sources of their decision-making errors and learn skills and methods enabling them to change their decision behaviors, thereby becoming more rational decision makers in these particular situations. In other words, appropriate types of HC investment can do much to improve the rationality of food decision making. It is also possible for people to make substantial strides in learning what food is really right for them, thereby learning to make better choices, not simply following their irrational wants and desires. Additionally, people can make investments in HC in the form of knowledge concerning food science, nutrition, and health practices in order to use this knowledge to inform their food decision making. In these and other ways, people can remedy their poor food decision making and learn how to make better food choices, the kind that lead to both lower likelihood of becoming obese and to improved overall health.[8] Note that the activity involved in investing in intangible HC actually produces structural and functional changes in our brains as demonstrated by recent research findings related to brain plasticity (see, e.g., Doidge 2007).[9]

The upshot is that a variety of investments in HC can improve people's decision making, thereby substantially counteracting their typical decision-making deficiencies. In other words, intangible investments can make the decision making bad news not quite as bad.

An Economic Implication

The ideas related to decision making outlined in this chapter have implications for the economy as a whole, not just for individuals. Good decision making in business organizations and government is obviously important for the productivity of the economy. Since our brains "naturally" tend to make many decision-making errors and tend not to be oriented toward what is really best for us, it follows that productivity (and economic well-being) will tend to be below potential. Note that there is a strong resemblance between this conjecture and the X-efficiency ideas of Harvey Leibenstein (see, e.g., 1976) who explained that low productivity owing to internal inefficiency (X-inefficiency) in businesses is the usual state of affairs. Accordingly, unless efforts are made to counteract decision-making deficiencies, that is, unless appropriate HC investments to raise decision-making capacity are made, relatively low productivity on this account is to be expected. This raises interesting questions. Are our nations making enough investments in standard HC, personal capital, health capital, and related intangible capital to keep our economies'

decision making, and thus, productivity and economic growth, at a sufficiently high level? Is there a substantial payoff to improving decision making? Answering such questions, however, is way beyond the scope of this chapter.

Conclusions

To understand how our minds work in economic decision making, knowledge of economic man a la mainstream economics does not help much. To realistically understand how our brains function in decision making, it is necessary to consult researchers such as Herbert Simon, Daniel Kahneman, and George Loewenstein. Through their research and thinking, it is possible to understand the limitations of the human mind, why our minds are often subject to bias and error, and why optimal decision making is not possible in the real world. It is interesting to note that predictable decision-making deficiencies could be a significant contributor to low national productivity, and thus be an important reason for an economy's underperformance. With the help of researchers such as Gerd Gigerenzer, we can gain considerable understanding about how humans can best cope with their mental and knowledge limitations and make reasonably good decisions despite the complexity of the decision environment. This chapter has explained how a variety of types of investment in HC can be tailored to provide remedies for decision-making errors of various types. Although people naturally tend to make many decision-making errors and tend to commit many judgment biases, it seems that people with patience, determination, discipline, and knowledge can substantially improve their mind's performance. There is clearly a need for multidisciplinary research on how investment in various forms of intangible HC can help to improve economic decision making.

This chapter has also provided illustrative analyses of consumers' food-related decision making, thereby suggesting some of the ways in which our less than rational mind functioning contributes to the incidence of obesity-related health problems and to huge medical costs. Yes, we humans tend to be fat, irrational boobs! But despite that bad news, there is considerable good news. Our minds' poor performance is not inevitable; we can learn to do better. And economists can come to appreciate this.

CHAPTER 4

SMART PERSONS AND HUMAN DEVELOPMENT: THE MISSING INGREDIENT IN BEHAVIORAL ECONOMICS

Introduction

In chapters 2 and 3, the focus has been on human capital (HC): (1) how the conception of HC is far too limited, (2) how the concept of HC could be broadened and improved by integrating it with the concept of human development (HD), and (3) how a variety of types of investment in HC can foster people's HD efforts and remedy their decision-making errors. In this chapter, the focus is on the human actor in economics. If economics were to incorporate a more human conception of HC, it would make a great deal of sense for economics to utilize an economic actor who is more fully human than has been the case in the past. In particular, it would be a considerable improvement if the stereotypical human in economics had many distinctly human capabilities that develop over time.

No doubt, there is a growing sense among economists, especially behavioral economists, that the human actor in economics is not portrayed well by the economic man stereotype nor by the irrational, error-plagued person who is the stereotype deriving from psychological economics. The purpose of this chapter is first to explain about the inadequacy of these two stereotypical economic actors and second to develop an alternative, a more satisfactory stereotype known as smart person (SP). In the process, this chapter points the way to a better behavioral economics, a behavioral economics with smart people, a behavioral economics that is more realistic and more human. What is missing from the existing stereotypical actors, but present in the SP actor, is the human who develops in stages along a number of developmental pathways over a lifetime. In contrast to the two existing stereotypes, SP's character and capabilities

are neither simply assumed nor inferred from the outcomes of narrow psychological laboratory experiments. SP's character and behavior derive in good measure from the research of a variety of noneconomist scientists and careful observers of human behavior. There is a tremendous need for a behavioral economics with SPs in which the human actor, while far from perfect, develops, and all too often fails to develop, character and capabilities in a realistic way.

This chapter first explains what is missing from mainstream economics and psychological economics. The missing ingredient is the concept of HD. Second, the characteristics of economic man, the human in mainstream economics, and the character and capabilities of the human in psychological economics, the human who lacks economic rationality, are carefully considered. Third, the chapter develops a conception of an alternative human economic actor, SP, an actor whose character and capabilities are much closer to the humans we know. Among these capabilities is the SP's ability to develop virtue. Also explained is how a behavioral economics with smart people has the potential to be a great improvement over the psychological economics (PE) version of behavioral economics with its error-prone stereotype.

The Missing Ingredient: The Concept of Human Development

The ingredient missing from economics is the conception of a human being as an individual who develops in many different ways along a sequence of stages, a developmental path. Many thinkers recognize that humans are capable of attaining a very high level of development. Humans' development certainly involves social, psychological, emotional, biological, and educational dimensions, among others. It is both cognitive and noncognitive in nature. But the ideal or potential HD often fails to occur. Generally speaking, only when the environment is favorable do humans have a chance of developing a high degree of their potential. So a key question is: what has to happen for individuals to develop to, or near to, their full potential? This is a relevant question because for many people the environment will not be favorable in some important respects. As a consequence, many individuals may fail to develop beyond a certain stage unless they can benefit from special developmental interventions. In other words, without such help, a large number of people will not develop their higher capabilities. Conventional economic thinking provides little or no recognition of how individuals can advance along important developmental pathways and how they can overcome the kinds of difficulties that tend to prevent or inhibit their development.

The HD concept was explained in more detail and illustrated graphically in chapter 2. The graphs show three developmental pathways and the essence of the sequence of development along each. HD is conceived of as a three-sided pyramid, each side representing a major developmental pathway. The three developmental pathways are: (1) educational and cognitive development, (2) psychosocial, biological development, and (3) brain development (or neurodevelopment). In each case, the triangles representing the pathways start from very fundamental, early development and proceed stepwise to the highest level of development. Note that there is considerable interdependence among the three pathways.

Probably the easiest triangle/pathway to appreciate is the educational and cognitive development pathway shown on side one of the pyramid (see figure 2.1 in chapter 2). The developmental stages on this pathway start with "Learning the basics: reading, writing, and arithmetic, and so on." The second step is "Learning/appreciating many types of knowledge and acquiring academic discipline." The third step is "Developing skills and talents: Physical, academic, arts, technology." The fourth and final step is "Acquiring overall life direction, interests, outlooks, and motivation."

The second pathway, psychosocial, biological development, is shown as the triangle in figure 2.2 (chapter 2). It starts with "Foundational neurodevelopment" and proceeds to "Early learning, relating, and doing" and then to "Becoming safe, secure, and satisfying physical needs." The fourth step is "Finding oneself: competencies, motivations, values, and emotional intelligence." The fifth step is "Finding oneself: friends, lovers, and loving family relations." The sixth and final step is "Connecting to one's highest values, spirituality, creativity, and aesthetics."

The third pathway, brain development, is shown as the triangle in figure 2.3 (chapter 2). It starts with "Foundational neurodevelopment" and proceeds to "Neurodevelopment associated with doing, achieving, relating, and learning." The third step is "Overcoming brain development deficiencies and problems." The fourth and final step is "Developing creativity and peak performance brain functioning."

Figure 2.4 (chapter 2) shows how the three triangles described earlier combine to form the HD pyramid.

The three developmental pathways along the three sides of the HD pyramid focus attention on three main ways that important human capabilities change, have the potential to change, or fail to realize their change potential. As Wilber (2001, pp. 5–6) has emphasized, HD involves an unfolding, emergent process marked by progressive subordination of older, lower-order behavior and capabilities to new higher-order behavior and capabilities along different pathways or lines. As indicated in

chapter 2, change along one pathway may facilitate change along another pathway, and barriers to change in a pathway may result in a lack of desired change along another pathway.

Economic Man: The Human in Mainstream Economics

Economic man, or Homo Economicus, is the well-known human economic actor in mainstream economics. Because economic man's (econ man) behavior reflects the rational choice theory at the heart of mainstream economics, his/her behavior is machine-like in its perfect rationality (see Simon 1983, pp. 12–17). Econ man chooses in a narrowly self-interested way, using perfect logic and a complete knowledge of alternatives, and thus, selects the alternative that best enables attainment of his/her subjectively defined ends. If econ man is a consumer, the end is utility; if a producer, the end is profit. If econ man were human, we could say that he/she possesses infinite, or at least extremely high, cognitive capacity. In contrast, it seems to be implied that econ man has no or low noncognitive capacity, that is, capacity relating to psychological, emotional, and social functioning. This further implies that econ man has zero capacity for pure empathetic (or other-interest) motivation, the motivation opposite to self-interest. Econ man is also unreflective in the sense that he/she cannot stop to consider the appropriateness or rightness of his/her choices.

It is fairly obvious to many, including a number of leading economic thinkers such as John Stuart Mill (1836), that economics does not consider the whole of man's nature. Accordingly, econ man is a one dimensional being who merely compares alternative ways to achieve his/her economic ends. The econ man concept continues to be widely used in economic modeling and analysis despite the fact that there are many economists who understand (1) that humans do not generally know the consequence of their actions for their long-term physical and mental health and (2) that humans cannot be relied on to make decisions in their strict self and selfish interest.

In their models, economists often use an economic actor who is a representative agent, a typical decision maker of a certain type. In mainstream economics, such agents are econ men who perform a particular role; they are, for example, consumers or decision makers in a firm. These agents presumably have made significant investments in human capital in order for them to carry out their economic role. Regardless of their human capital, the agents in these models behave in a perfectly rational manner, albeit in a particular context.

Econ man's behavior is in accord with the formal model of rational choice known as subjective expected utility (SEU) theory in which econ man chooses the alternative that maximizes his/her expected value of utility. And as Herbert Simon (1983, pp. 12–17) points out, SEU "is a beautiful object deserving a prominent place in Plato's heaven of ideas" (p. 13). Unfortunately, according to Simon, the "SEU theory has never been applied and can never be applied . . . in the real world" (p. 14). This is because "human beings have neither the facts nor the consistent structure of values nor the reasoning power at their disposal that would be required, even in . . . relatively simple [lab] situations to apply SEU principles" (p. 17). In other words, the econ man concept is simplistic and unrealistic.

Consider econ man from a developmental perspective. Econ man is unchanging; he/she has no history and no future. That is, the qualities possessed by econ man did not come about through a process of HD, and there is no prospect of future development that will cause these qualities to change. Econ man's character is simply assumed; it is not an object of theoretical or empirical study. If econ man's character (perfect rationality) had come about through a developmental process, one might say that econ man had reached an egoistic stage of development in which he/she is aware of having many wants and is perfectly logical and persistent in the endeavor to satisfy those wants. Such a hypothetical development stage resembles Wilber's (2001, p. 9) third stage of HD in which the individual is powerful, egocentric, and has a self distinct from his/her "tribe." According to Wilber's (pp. 9–11) estimates, the great majority of people in the twenty-first century world develop beyond this egocentric stage during the course of their lives.

Psychological Economic Man: The Human in Psychological Economics

PE is the prominent strand of behavioral economics that borrows from psychology, especially cognitive psychology, in order to achieve more realistic understanding of human economic behavior than what is possible with mainstream economics. Psychological economic man or psych econ man is the human in PE. Psych econ man's character, in sharp contrast to econ man, is very much an object of study, especially empirical study. PE is oriented to investigating human cognitive performance in relatively narrow and well-defined situations in order to isolate humans' precise decision making and judgment behavior. PE researchers have focused to a large extent on exploring the degree to which human behavior

systematically departs from economic rationality, that is, the extent to which psych econ man is different from econ man.

Overall, the findings of PE research are that humans are much less rational than mainstream economics assumes. That is, we humans are systematically and predictably irrational in all phases of our lives; we make many different kinds of errors in a great variety of particular situations (Ariely 2009, pp. 239–240). These errors derive from, among other things, the anchoring effect, judgment by representativeness, overconfidence, theory-induced blindness, loss aversion, salience, use of mental accounts, framing, inconsistent preferences, defective affective forecasting, difficulties dealing with probabilities and time, the narrative fallacy, hindsight bias, confirmation bias, overestimating rare events, status quo bias, planning fallacy, and the availability and affect heuristics (Kahneman 2011). In light of these findings, it is not surprising that the psych econ man stereotype is very much one of an irrational and error-prone being. In comparison to econ man, psych econ man is decidedly not smart. This characterization of psych econ man's judgment and decision making is more realistic than that of the econ man stereotype precisely because it is based on a great amount of research.

An important aspect of PE involves understanding two systems in the mind, System 1 and System 2. System 1, associated with intuition, is the aspect of our mind that "operates automatically and quickly, with little or no effort and no sense of voluntary control" (Kahneman 2011, p. 20). Many of the predictable human errors which PE focuses on occur when our minds are in System 1 mode. If, in the face of a difficult question or issue, no easy System 1 solution comes to mind, that is when we typically switch to System 2. System 2 refers to effortful mental activities requiring concentration and self-control (p. 22). System 2 is slower; it may involve computation, deliberation, and constructing thoughts in an orderly series of steps.

PE's emphasis is less on explaining the reasons why humans commit cognitive errors and more on accurately characterizing humans' cognitive performance. Nevertheless, a number of the leading researchers have offered explanations for humans' error proneness. According to Ariely (2009, p. 243), our senses and brain filter the information that comes to us so that the input to our decision making is not a fully accurate reflection of the reality of the situations we confront. In other words, the problem stems from "the basic wiring of our brains" (p. 239). In Kahneman's (2011, pp. 50–52) view, errors of judgment and decision making often stem from "a self-reinforcing pattern of cognitive, emotional, and physical responses that [are] . . . *associatively coherent*." The errors often arise because our perception and cognition involve our body, not just our brain.

Psych econ man can learn and acquire the skill necessary to reduce the errors that typically occur when humans are operating in System 1 mode. As indicated in chapter 3, when these error causing difficulties are recognized, humans may switch to System 2 mode and may try harder in order to avoid significant mistakes, especially when the stakes are high (Kahneman 2011, pp. 25–28). To acquire these error reducing, decision-making skills "requires a regular environment, an adequate opportunity to practice, and rapid and unequivocal feedback" on decision-making results (p. 416). It should be noted that this type of learning does not amount to a move to a higher stage of HD. It is simply psych econ man's regular mental mode of operation. It is also important to note that with respect to decision making and judgment, PE is largely concerned with humans' cognitive functioning, not the noncognitive functioning that would likely be part and parcel of humans' move to a higher or lower stage of development.

It is interesting to note that PE researchers, although they do not usually state it explicitly in their writings, strongly suggest that the systematic human departures from rationality that they find in their empirical research are "hardwired" in the human brain and/or body. The term hardwired is understood to mean "'pertaining to or being an intrinsic and relatively unmodifiable pattern'" (Etzioni 2014, p. 394). It is possible though that these cognitive errors are merely strong predispositions rather than the determinative attributes that PE researchers imply.[1] If the errors and biases are not hardwired, it may be that these departures from rationality can be "corrected" (p. 397), possibly by virtue of education and training, by making a bigger effort, or via other interventions that take advantage of the human brain's plasticity.

The upshot of the previous comparisons is that psych econ man is more realistic than econ man, less rational than econ man, and is no better than econ man insofar as neither experiences human developmental stages.

Needed: A Smarter Person in a Better Economics

Essence of the Smart Person

Based on our analysis of the econ man of mainstream economics and the psych econ man of psychological economics, there is clearly a need for a better economics, a behavioral economics in which the actor is more human and less irrational. The desired economic actor should behave more realistically than econ man, be less error-prone than psych econ man, and be more human in a developmental sense than either econ man

or psych econ man. Thus, the needed human actor should not only be a "smart person," a person, who while far from being perfectly rational, is less fallible than psych econ man, but should be a person whose capabilities and character develop in stages over his/her lifetime.

The SP is the boundedly rational decision maker whose decision-making behavior is generally in line with Herbert Simon's understanding of how humans behave when making significant decisions. Therefore, in evaluating decision alternatives, SPs will generally consider a selected set of alternatives, evaluate each alternative sequentially, and then select the first satisfactory alternative, an alternative meeting the SP's aspiration level (Simon 1955, pp. 110–112). This "satisficing" decision-making procedure is boundedly rational in that it is intendedly rational. However, the SP's rationality is limited by the human brain's cognitive capacity and the complexity of the decision environment. It is only in the most simple and transparent situations that SPs can be perfectly rational in the utility maximizing sense (Simon 1959, p. 258). Thus, in the great majority of life decisions, SPs will be boundedly rational, reasonably competent decision makers.[2] It is important to note that SP's decision making can still be expected to manifest many of the errors and biases identified by PE researchers, but these decision-making and judgment deficiencies will not be the defining characteristics of SPs' decision making.

With regard to HD, the SP actor is one who has the ability to develop to his/her potential, progressing along the three developmental pathways mentioned earlier (see also figures 2.1, 2.2, 2.3, and 2.4 in chapter 2) as well as developing along other unspecified paths, advancing stage by stage. SP's development may, however, sometimes fail to occur because the person's developmental environment (parenting, community, society, etc.) has been unfavorable or for other reasons. As a consequence, in the absence of a helpful developmental intervention (e.g., educational or therapeutic), the SP's development along one or more pathways may become stuck. Further, due to the interdependence of the pathways, progress or lack of progress along one pathway may affect progress or lack of progress along another pathway.

Important Features of Human Development

To appreciate the HD aspect of the SP, there are some aspects of HD that need further examination, particularly the noneducational aspects. In this regard, it is useful to give more attention to the neurodevelopment pathway.

Neurodevelopment Success and Failure. Bruce Perry's (2002) work makes clear that we can only develop to our human potential if our

brains develop to their potential. "Development [especially the neurodevelopment part] is a breathtaking orchestration of precision microconstruction that results in a human being" (2002, p. 82). As indicated in chapter 2, eight key processes are involved in creating a mature, functional human brain: neurogenesis, differentiation, apoptosis, arborization, synaptogenesis, synaptic sculpting, and myelination (pp. 82–85). It is not necessary here to consider each of these processes in detail. Suffice it to say that these processes relate to neurons: their birth, movement, specialization, death, formation into dendritic trees, the formation of connections among neurons (synapses), the structuring of the synapsis, and the creation of efficient electrochemical functioning in the neural networks. These neurodevelopment processes occur in response to experience and are most responsive to experience in positive and negative ways during infancy and childhood (p. 82). All of these processes must go well; otherwise, abnormal neurodevelopment occurs, causing profound brain dysfunction (p. 85). "In order to develop properly, each [brain] area requires appropriately timed, patterned, repetitive experience" (Perry and Szalavitz 2006, p. 248). For optimal neurodevelopment, it is crucially important that the lower brain systems develop first in a healthy fashion; otherwise, development of higher, more complex parts of the brain will not be able to occur satisfactorily. Full, healthy brain development may fail to occur for many reasons, most notably, because of adverse early childhood experiences that often involve toxic stress or trauma (see chapter 5). Due to such neurodevelopment deficits, both children and adults can get stuck or partially stuck at a relatively low stage of brain development with serious consequences for their later behavior and functioning.[3]

Other Human Development Failures. In addition to and often coexisting with adverse childhood experiences, three other important noneducational kinds of situations in which humans fail to develop satisfactorily deserve note (see chapter 2):

1) The molecules of emotion (different types of receptors and ligands in the brain and body) may fail to flow freely such as when emotions are repressed or denied. As a consequence, body and brain network pathways get blocked, and people get stuck in unhealthy patterns of behavior and experience negative emotional states (Pert 1997).
2) People may fail to develop important emotional competencies (e.g., inability to handle one's distressing emotions) deriving from a lack of coordination between a person's thinking brain (neocortex) and their lower brain areas (Goleman 2011).

3) People may fail to develop the personality traits that are needed for their educational success, labor market success, health, and positive personal outcomes (Almlund et al. 2011).

The Time Pattern of Human Development

There are several noteworthy features of the time pattern of HD.

Noncognitive versus Cognitive Development. In early childhood just after birth, a child is not ready to develop cognitively. The development that is taking place is noncognitive development, primarily occurring in the lower brain areas (Perry 2002, pp. 86–88; Perry and Szalavitz 2006, pp. 247–248). During very early child development, children are acquiring basic brain organization, a stable emotional basis, a secure attachment to their primary caregiver(s), and the basis for good social relationships. Inevitably, of course, as the child grows older and noncognitive development progresses, the relative amount of time devoted to noncognitive development will decline. In other words, as the child matures and becomes more secure, independent, and confident, the child's need for the nurture and care of a parent will become less and less. And as the child's higher brain develops, a greater proportion of the child's development will be cognitive. More and more of the child's development will involve learning and acquiring skills. It is useful to view expenditure of efforts and resources to aid both the noncognitive and cognitive development of children as investments in HC. After all, both kinds of developmental efforts involve investments of resources that enable humans to function at a higher level whether at home, in the workplace, in the community, or in relationships.

Development in Transitional Periods. It should be noted that in addition to early childhood, there are certain other important times during an individual's lifespan when people typically make transitions from one stage of development to the next. One important example is the transition from middle childhood to adolescence (see, e.g., Papalia, Olds, and Feldman 2009, Chapter 11). Although some people may experience these transitions favorably as important growth opportunities, it is not unusual for other people to experience these transitions as difficult and stressful. In many cases, people, often with a great amount of effort and some distress, successfully make these transitions, moving on to the next stage of their life. But in other cases, people may get stuck or partially stuck at their present developmental stage, and as a consequence of this developmental failure, certain later life opportunities may be precluded. It is useful to think of humans in transitional periods as making

substantial investments in noncognitive HC, investments that sometimes require professional help such as from social workers or psychologists.

Adult Developmental Stages

The developmental stages of children and adolescents have long been recognized, but adult developmental stages have only gained wide recognition in recent decades. Levinson's (1978) study of adult development is arguably the single most important contribution to understanding the progression of adult lives over the years.[4] To understand adult life stages, Levinson studied the life stories of a relatively small number of adults (40 men in four occupations in his 1978 study).[5] His findings led him to conclude that an adult's life has a universal pattern, an underlying systematic, nongenetic progression.

According to Levinson (1978), the life course from the age of 17 to old age consists of a combination of stable periods and transitional periods. During stable periods, a person makes decisions and commits to building a life structure. During transitional periods, a person tends to review and evaluate the present structure of his/her life in order to decide what aspects of their life to keep and what aspects to reject. As Sheehy (1974, p. xvii) explains, humans have a resemblance to lobsters in that during parts of their lives they develop a series of hard protective shells, and during other life segments they shed the shell when it has become too small and confining. Similarly, humans at certain ages tend to find their life structure (a relatively fixed, stable life agenda) coming undone and deteriorating. This may evoke a sense of "crisis," or at least unsettling feelings, that provide them the impetus and opportunity to change their present life structure in order to incorporate life elements that were not previously part of their life's agenda.

Based on Levinson's (1978) research on the pattern of adult development from the age of 17 to 60, he has identified a number of developmental periods. First are two eras, early adulthood and middle adulthood. Early adulthood consists of two transition periods, early adult transition (age 17 to 22) and the age 30 transition (age 28 to 33), as well as two stable periods, entering the adult world (age 22 to 28) and settling down (age 33 to 40) (pp. 56–62). Middle adulthood consists of two transition periods, mid-life transition (age 40 to 45) and the age 50 transition (age 50 to 55), as well as two stable periods, entering middle adulthood (age 45 to 50) and culmination of middle adulthood (age 55 to 60). Levinson mentions but did not study late adulthood (roughly 60 to 80) and late late adulthood.

During the stable periods, an adult develops a life structure which has important life components such as occupation, marriage-family, and friends. Adults seeks to create a structure that is simultaneously "viable in society and suitable for the self" (pp. 53–54). Ideally, persons will decide on and build a life structure that will enable them to make their greatest contribution to society while enabling them to realize their dreams and values (pp. 51, 53–54, 324, 331). If the developmental tasks do not go well and a viable, motivating life structure is not created, the individual likely becomes stuck or partially stuck at an earlier stage of development (pp. 321–322). This generally is associated with decline, loss of vitality, imbalance, and stagnation.

Erik Erikson's (1982) writings on HD preceded Levinson's, and they provide an interesting contrast with those of Levinson. Erikson (pp. 32–33, 56–61, 69, 75) identified eight life (not just adulthood) stages: infancy, early childhood, play age, school age, adolescence, young adulthood, adulthood, and old age. Each stage is concerned with developing a basic strength and avoiding or fending off a core pathology or vulnerability. For example, in Erikson's fourth stage, school age, children are developing competence and trying to avoid inertia and feelings of inferiority. In his eighth and final stage (old age), individuals are developing wisdom and integrity and avoiding despair and disdain. In the seventh stage (adulthood), individuals are developing generativity and care and avoiding stagnation and rejectivity. As Erikson (p. 59) points out, "each [developmental] step is grounded in all the previous ones." When any developmental step fails, the individual may not only realize the vulnerability or weakness associated with that stage but may regress to an earlier stage (p. 67).

According to Levinson's (1978, pp 319–320) theory, the sequential developmental periods do not imply that adult development follows an ascending or hierarchical order. His view is that "the [developmental] tasks of one period are not better or more advanced than those of another, except in the general sense that each period builds upon the work of the earlier ones and represents a later phase in the cycle" (p. 320). Thus, Levinson's view is that the developmental periods are like seasons in that summer must follow spring, but that summer is not more developmentally advanced than spring. Consistent with this, when Levinson (1986, p. 12) refers to adolescence, he uses the term, *adolescing*, to mean "moving toward adulthood" and, referring to adulthood, he uses the term *senescing* to mean "moving toward old age" and death. In other words, when an adult grows older and thereby moves into a later developmental period, it does not imply that the individual's capabilities have grown. I agree with Levinson to the extent that later developmental periods

might simply allow a person to develop a greater range of abilities and interests.[6] However, Levinson's view is contradicted by his findings indicating that certain high-level abilities that middle-aged people were able to develop could not have been developed without their developing certain prerequisite abilities in an earlier period of adulthood. It seems quite clear to me that adults in later life stages are in many cases acquiring capabilities that advance them to higher levels on the HD pyramid than would be possible for individuals in early adulthood. It is certainly true, though, that some older adults are only broadening their range of abilities and interests, not developing higher-level capabilities, and still others' capabilities may unfortunately be declining as they age. Nevertheless, it is important to note that a significant number of Levinson's findings seem to support the view that advancing to a later developmental period makes possible the development of certain types of higher capabilities. This viewpoint of ascending capabilities over the life course is more obvious in Erikson's (e.g., 1982) work. He makes clear that the full development of generativity and care must wait until middle to late adulthood even though it is based on seeds planted earlier. And the full development of wisdom, integrity, and a number of other virtues must wait relatively until old age despite their basis in strengths developed earlier.

From the research of Levinson, Sheehy and others, it is clear that adult HD is generally not a smooth process; stressful episodes and periodic crises are not uncommon. To a certain extent, this is inevitable, and adults need to figure out their developmental paths for themselves. However, as Levinson (1978, pp. 336–340) recognizes, it might make a lot of sense for society to try to smooth people's developmental paths and to help developmentally failing adults. "If a man's early adulthood is dominated by poverty, recurrent unemployment, and the lack of a reasonably satisfactory niche in society, his adult development will be undermined. His energies will [then] go to simple survival rather than the pursuit of a Dream or the creation of a life structure that has value for himself and others" (p. 337). If it were high on a nation's priority list, much could be done to help improve adult developmental experiences especially in workplaces. In this regard, Levinson notes that "for large numbers of men, the conditions of work in early adulthood are oppressive, alienating and inimical to development" (p. 338). Levinson also notes that much could be done to provide "some degree of emotional support, guidance and sponsorship" that would permit better development outcomes in early and middle adulthood. A society that does more along these lines is making the kind of investments in HC that are likely to yield a high payoff for both individuals and society.

Smart Persons and Virtue

In addition to the various types of human growth that we customarily think of as elements of HD, humans may develop virtues. SPs can develop important virtues such as prudence, love of knowledge, courage, firmness, generosity, temperance, and justice. Virtues are acquired capacities or dispositions that enable persons to contribute in some generic way with a high degree of excellence to activities that are challenging and important (McCloskey 2006, p. 64; Roberts and Wood 2007, pp. 60–64). Virtues are not specific, technical skills and do not involve performing specific roles (e.g., managing a business, playing basketball). Virtues are habits of the heart (p. 64), and they are deep, enduring, settled character qualities that are formed by education in the broadest sense (Roberts and Wood 2007, p. 69). Virtues may be perfections in the sense of perfecting our natural qualities. Or they may be correctives in the sense of correcting our natural human defects (pp. 68–69).

Virtues generally enable us to achieve excellence in some sphere of activity such as the interpersonal, the political/civic, the intellectual, or the moral (Roberts and Wood 2007, pp. 60, 215). Virtues may also enable us to achieve the kind of excellence sought in a certain type of society. The predominant virtues people develop in a socialist or communist society are likely to be quite different from those developed in a capitalist society. In general, the virtues people develop will depend on political ideologies, religious ideals, and the prevailing vision of the good society, and so on. As Deirdre McCloskey (2006) explains, capitalist societies, particularly Christian ones, tend to thrive when their citizens manifest the seven "bourgeois virtues" (love, faith, hope, courage, temperance, prudence, and justice). Prudence is the central ethical virtue of the bourgeoisie. But settling for prudence alone, as all too many economists recommend, is a recipe for societal disaster. A good, stable capitalism can only occur when prudence is conditioned by and integrated with the other six virtues. In other words, in a healthy capitalistic society, it is important that prudence, the profane (P) virtue, be sufficiently balanced by the sacred and social (S) virtues, the other six (see Khachaturyan and Lynne 2010; Klamer and Yalcintas 2004).

Virtues, rather than being a product of activities or institutions in which the intended goal is to develop certain virtues, are, generally speaking, developed as a by-product of activities and institutions whose main purpose is something else. For example, in the home, parents' values, teaching, and example contribute to their children's later development of virtue. Similarly, school teachers' values, teaching, and example are an important influence on children's ultimate virtue development.

Another important influence is children's learning about admirable leaders in political, religious, business, military, entertainment, and athletic spheres. Young people's virtue development is also influenced by their learning about important events in which the actions of persons in the news have demonstrated out-of-the-ordinary, inspiring qualities. These different experiences of young people may be instrumental in planting the seeds (values, ideals, and so on) that only later when opportunities present themselves develop (with much intentional practice) into full-fledged virtues. Note that with respect to intellectual virtues what is needed is "*training* that nurtures *people* in the right intellectual *dispositions"* in order that they develop the "habits of mind of the epistemically rational person" (Roberts and Wood 2007, p. 22). This "regulatory" activity would "provide procedural directions for acquiring knowledge, avoiding error, and conducting oneself rationally" (p. 21). Also note that developing human virtues is an activity that is consistent with progressing to the highest level of development along all three developmental pathways. In other words, developing virtue(s) is consistent with: (a) acquiring overall life direction (pathway 1), (b) connecting to one's highest values (pathway 2), and (c) developing creativity and peak performance (pathway 3). Moreover, it is consistent with the idea that virtues represent uncommon, extraordinary development of character (Roberts and Wood 2007, Chapter 3).

No doubt, the person who has developed a high degree of virtue is a wise person whose thinking and decision making reflect his/her wisdom. This wisdom is not the same as one having a high IQ, knowing a lot, or having a good technique. Wisdom is "the moral quality of knowing how to handle your own limitations," notably, "the ability to go against our lesser impulses [vanity, laziness, cowardice, and so on] for the sake of our higher ones" (Brooks 2014). A wise person with many virtues is a person who has reached a very high level of HD. Arguably, a behavioral economics for smart people can help us to appreciate the possibility of a wise human actor, but such a high level of HD is not a conceptual possibility in mainstream economics or PE.

The Smart Person Reconsidered

It is more difficult to specify the qualities and character of the SP than it is for econ man or even for psych econ man. This is because the qualities and character of the SP are determined by multistage developmental processes that do not have well-defined outcomes, even though much can be confidently said about the developmental processes themselves. For example, we now know a great deal about the process of neurodevelopment.

However, for a specific person, the childhood neurodevelopment outcome will depend on factors such as the quality of the person's early childhood environment and the person's genetic endowment. A different set of factors will determine a person's developmental progress in later life stages. In general, a person's development will be determined by the kinds of life challenges the person encounters and how they respond to those challenges. Persons who both experience relatively favorable life situations and who rise to the challenges they face will no doubt develop much farther along the pathways than those for which this has not been the case. Also, a person's development can obviously go further if he/she has benefited from an intervention (an investment in intangible HC) designed to help him/her overcome the difficulties that he/she has experienced in the transition from one life stage to the next (see Tomer 2008b). In the absence of such an intervention, the person might have become stuck, unable to move on to the next stage.[7]

Note that any society has many characteristic developmental patterns which include typical development challenges faced and typical levels of development reached by their citizens. In a particular society, the term SP presumably would refer to a person whose development outcome is at least average. Of course, in any society, there is considerable inequality in developmental outcomes. Thus, it can be useful to distinguish among groups of people with broadly different levels of development and competence. Recognizing this inequality may help us think more clearly about the kind of HC strategy that would be best to achieve a country's HD goals as well as its economic inequality goals.

How does SP compare to econ man and psych econ man from the standpoint of the stage of HD they resemble? As suggested earlier, econ man resembles Wilber's third stage in the development of human consciousness, egocentrism. What stage do the other two stereotypical men resemble? First, psych econ man's characteristics cannot be said to resemble any of Wilber's (2001, pp. 5–13) eight HD stages. This is because psych econ man does not have a single characteristic way of relating to other humans. Second, SP's character cannot definitively be specified, and accordingly, cannot be said to have a close correspondence to the characteristic behavior associated with any of the particular stages of HD identified by Wilber. However, it is possible that SP's character could resemble one of Wilber's five stages of HD above egocentrism. For example, SP's character could be strongly conventional and conformist (level 4) or scientific, materialist, and achievement oriented (level 5), or any of the other stages up to level 8, integrative (uniting feeling with knowledge) (pp. 9–13). The actual position of SP's character on this HD hierarchy will depend on the developmental progress that SP has made.

Since very few people reach HD levels 7 and 8 and many reach levels 4, 5, and 6, SP's development is likely be in the latter range. More generally, SP's character, because it is a developmental outcome, is determined by the quality and duration of his/her developmental experience. In this light, perhaps we need to think more about the character of the people our societies are developing.

The Prospect for a Behavioral Economics for Smart People

The development of a behavioral economics for smart people arguably could wind up being very important. It could represent a significant step forward, not so much because it will replace earlier economic thought, but because it will strongly suggest both new thinking about what is possible with respect to developing human capabilities (a broadening of the HC concept) and new thinking about the goals and prospects for economic policy. It could help economists and the public understand how humans, while not having super rational abilities, do have greater potential than previously understood. An important implication deriving from SP behavioral economics is that there is a great deal of human potential that has heretofore not been realized because of the blinders imposed on economic decision makers by prevailing economic thought. There is reason to believe that research in the SP behavioral economics vein will help to remove the blinders and point toward many of the ways in which individual human potential can be realized, and thereby, the potential of economies around the world can be realized.

Conclusions

What economics needs is a behavioral economics with smart people. Unlike the econ man of mainstream economics and psych econ man of psychological economics, the SP develops capabilities and character in the course of advancing from stage to stage along a number of major developmental pathways during his/her lifetime. Because some persons will experience unfavorable environments without helpful interventions, they may get stuck and fail to develop very far. On the other hand, other people will advance to high levels of HD along a number of pathways. While smart people are far from being perfectly rational, they can improve their capabilities and character, learning to overcome many of their tendencies to error, thereby becoming competent, boundedly rational, virtuous, even wise, decision makers who make big and small decisions in their own best interests and in the best interests of their societies. A behavioral economics with smart people would presumably be a more

optimistic economics. This is because it does not embrace the unrealistic rationality ideal of mainstream economics nor the entirely predictable irrationality of psychological economics. This is also because it embodies an understanding of how humans can in important ways improve themselves and their societies even though they may sometimes fail in the process.

PART III

HUMAN CAPITAL AND SOCIOECONOMIC DYSFUNCTION

Recall that chapter 2 in part II focused on the human development of individuals, how this development might get stuck, and thus, might require an intervention (an investment in HC—human capital) in order to help an individual's development resume. Although the needed investments in HC considered in chapter 2 are much broader in nature than those of standard HC investments, those needed investments nevertheless are investments in individuals, that is, helping individuals resume their development along one or more of the three main developmental pathways.

In part III, a different kind of human developmental failure is considered along with the stuckness involved. Here the focus is on socioeconomic dysfunction due to problematic behavioral patterns. It is argued here that the nature of this type of developmental failure is quite different than is the case for individual development and so are the remedies. In the absence of concerted intervention efforts, the persistence of the dysfunctional pattern may mean that the economy will languish, experiencing lower than potential growth, not to mention pathologies related to physical and mental health. Such developmental failures or socioeconomic stuckness may be hard to identify definitively. They are no doubt easier to identify after they have been resolved and have ceased to be problematic. The reason why people may be unable to identify (or be conscious of) the negative patterns associated with the socioeconomic failure is that when a socioeconomy is experiencing such a developmental failure, many or most people in the society may share the problematic mentality associated with the developmental difficulty. Note that in some cases, the developmental failure may occur largely in a segment, albeit an important segment, of society.

The three chapters that follow consider three different types of developmental failure due to socioeconomic dysfunction. These negative patterns have contributed to: (1) The growth of adverse childhood experiences(ACEs), (2) the growing prevalence of obesity, and (3) the growing importance of chronic diseases.

In the case of ACEs, there are a combination of social/cultural and economic factors that have contributed to the growth of ACEs in the US economy and the growing poverty and inequality associated with them. These socioeconomic factors have been endemic to the functioning of the economy and have contributed to the poor performance of the economy. Part IV deals with the kinds of efforts needed to remedy socioeconomic dysfunctions.

For many, especially economists, the idea that there are problematic socioeconomic patterns at the heart of important social and economic problems may be difficult to fathom. This type of thinking does not easily fit with the individual oriented mindset of mainstream economics. But these negative socioeconomic patterns can be extremely troublesome and may not be resolvable without considerable concerted efforts. As such, the dysfunctional patterns are likely to continue to be a severe drag on the economy in the absence of very substantial remedial efforts. The following three chapters that deal with ACEs, obesity, and other chronic ailments can best be appreciated if one understands that these problems are related to dysfunctional socioeconomic patterns that cannot be entirely resolved utilizing individual oriented HC investments.

CHAPTER 5

ADVERSE CHILDHOOD EXPERIENCES, POVERTY, AND INEQUALITY

Introduction

In 1890, Alfred Marshall wrote "The most valuable of all capital is that invested in human beings; and of that capital the most precious part is the result of the care and influence of the mother" (as quoted in Cunha and Heckman 2009, p. 321). Despite Marshall's early recognition of the importance of mothering, modern day human capital (HC) theory scarcely reflects the role of parents and the home environment as factors influencing the production of HC. Also, there has until recently been relatively limited understanding of what schooling actually does. "In the traditional investment model, schooling itself is often treated as a black box: individuals enter, something happens, and productivity . . . increases" (Oreopoulos and Salvanes 2011, p. 159). The purpose of this chapter is to look more deeply into the earliest phase of child development, from birth to two or three years of age, in order to understand the implications of this development for HC theory. Recently, important noneconomic research has revealed the growing prevalence of adverse childhood experiences (ACEs) among young children and the role this plays in impairing their brain functioning and contributing to later age physical and mental ailments. Accordingly, this chapter explores the role of ACEs for understanding poverty and the growth of inequality of both income and academic achievement. In doing this, the chapter, of course, reviews the important contributions of James Heckman and his colleagues. Further, this chapter attempts to build on Heckman's contributions and to add new HC understandings related to ACEs and early childhood development. Finally, the chapter develops some implications of these understandings for remedies for ACEs.

Economics, Human Development, and the Human Brain

The Limitations of Human Capital Theory

As discussed earlier, although economics no doubt has been greatly enriched by the development of HC theory, this theory has been built upon a limited conception of human development (HD). For the most part, HC theory has emphasized human cognitive development and human acquisition of knowledge and skills that enable enhanced productivity and earnings. Further, HC research has emphasized HC formation taking place in schools in children five-years-old and older and in workplaces. In light of recent research findings, particularly that concerning brain development, it is becoming apparent that economics' HC theory has a far too limited conception of HD, especially with regard to its relative neglect of noncognitive development and the brain development that takes place in early childhood. Further, HC theory needs to incorporate the kinds of insights and theory concerning intangible capital which are developed in my earlier research (Tomer 2008b).

Another limitation of HC theory is that it is very much oriented to individuals. Standard HC is obviously an endowment of an individual; it is, for example, something that individuals might invest in via education and training that develops their cognitive abilities. And as the earlier chapters of this book have emphasized, HC is also something that might be invested in via noncognitive developmental experiences that develop an individual's psychological, social, and emotional functioning. There is, however, another aspect of HC. That is the HC related to the broader social and psychological patterns present in the socioeconomy, particularly the negative patterns associated with a poor functioning socioeconomy. These negative patterns may have developed over time and become an important feature of the socioeconomy's functioning, a feature that is resistant to change. There is, therefore, a need for the kind of investment in HC that is capable of dislodging the negative patterns, thereby freeing the socioeconomy so that it can develop in more positive directions. This latter type of HC could perhaps be considered a type of social capital but to my knowledge it is not a type of social capital that has up to now been analyzed by social scientists. This is because HC (and therefore the social capital component) has not been previously integrated with HD, either as individual HD or as the HD associated with the behavioral patterns of a socioeconomy.

This chapter on ACEs deals with both the individual HC and to some extent with the behavioral pattern related types of HC. Accordingly, some of the remedies recommended for ACEs and its associated economic problems involve making investments in individual HC, and some

of the remedies are oriented to countering the developmental failures related to the negative socioeconomic patterns.

The Importance of Early Childhood Development

Human Brain Development in Early Childhood. In contrast to the relatively even growth of one's physical body until about the age of 20, one's physical brain growth is most rapid from its time in utero until the age of four. By the age of four, the human brain is 90 percent of adult size (Perry and Szalavitz 2006, p. 247). Despite this early rapid physical growth, the brain's growth at the age of four is far from finished; a great deal of brain development and organization takes place during later childhood and adolescence as the brain's systems become more complex and major cortical restructuring occurs. But the early childhood period is extremely important for neurodevelopment because it is a period when the brain is very sensitive to experience. Thus, it is a time of great malleability and vulnerability (Perry 2002, p. 82). Favorable development at this time makes possible the later realization of many human potentials. If, however, the young child experiences severe neglect and trauma, this can have a destructive effect and may close off the development of important later potentials.

The human brain develops sequentially starting with the brain stem, followed by the midbrain, then the limbic system, and then the cortex. This implies a hierarchical ordering from lower to higher brain regions. Each area of the brain specializes in different functions. The brainstem deals with the relatively automatic functioning related to, for example, body temperature, heart rate, and blood pressure. The midbrain deals with bodily functions which we have some control over such as appetite and sleep. The limbic system deals with emotional reactivity, sexual behavior, and attachment. The cortex deals with abstract thought, concrete thought, executive functions, and affiliation, among other things (Karr-Morse and Wiley 2012, p. 98; Perry and Szalavitz 2006, p. 248). "In order to develop properly, each area requires appropriately timed, patterned, repetitive experiences" (p. 248). This means there are time periods (*sensitive periods*) when experience can easily modify the biochemistry and architecture of neural circuits in particular parts of the brain. There are also *critical periods,* limited time periods when certain crucial kinds of brain development can only occur (Cunha and Heckman 2009, p. 331; see also Perry 2002, p. 87). Optimal development of the higher, more complex brain functioning requires healthy development experience in the lower, less-complex brain systems in the right amounts and in the right sequence.

Parenting and the External Environment. Why do some children grow up to be productive, responsible, kind people, and others become unproductive and abusive? An important part of the answer relates to the kind of early parenting that some children receive. Children need consistent, physical affection and need patterned, repetitive stimulation "to properly build the systems in the brain that connect reward, pleasure and human-to-human interactions" (Perry and Szalavitz 2006, p. 86). To realize their brain development potential, young children's brains need both quality and quantity of use and stimulation (Karr-Morse and Wiley 2012, p. 98). "It takes a modulated adult to monitor and balance newborn over- or under- arousal and help regulate . . . [their] raw and reactive systems" (p. 100). Sometimes this requires swaddling and soothing; at other times it requires lively stimuli. In addition to being safe, nurturing, predictable, repetitive, and gradual, it is important for parental care to be attuned to the child's developmental stage (Perry and Pollard 1998, p. 37). Crucial to early childhood development is the forging of a strong attachment relationship between the child and the parent(s). The attachment relationship is something that develops over time in the presence of a committed, loving caregiver (Karr-Morse and Wiley 2012, p. 193; Perry and Szalavitz 2006, pp. 85–86). In addition to providing a safe, stabile base, parents need to allow the child to explore his or her world, and thereby, develop resilience which enables them to do well in the face of external stressful situations (Perry and Pollard 1998, p. 40).

Stress and Trauma. A child is subject to stress when he or she is exposed to dramatic, rapid, unpredictable changes to his or her environment which are likely to be upsetting and which may make returning to homeostasis difficult (Perry and Pollard 1998, p. 35). Trauma occurs when the stressful event is severe enough to disrupt the physical and emotional balance and security provided by the child's primary caregiver (Karr-Morse Wiley 2012, p. 103). Trauma is overwhelming stress; it is in excess of what the child can manage or bear (p. 24). Instead of inducing a fight or flight response, trauma is typically followed by freezing or dissociation (p. 25). The traumatized child is unable to restore his or her previous equilibrium. The new equilibrium is generally less favorable, less flexible, consumes more energy, and is maladaptive (Perry and Pollard 1998, p. 36).

If, instead of attuned, loving parenting, the caregiving is inconsistent, inattentive, chaotic, ignorant, abusive, or neglectful, this can be a source of stress or trauma that may adversely affect the child's brain development. Such adverse brain development has been documented through the use of advanced neuroimaging techniques (Perry 2002, p. 93). These techniques, for example, have shown dramatically different brain images

for normal children compared to the brains of children experiencing extreme sensory neglect. Poor, neglectful childcare, which is experienced early and chronically, is the cause of dysregulation of the child's hypothalamic-pituitary-adrenal (HPA) axis (Karr-Morse Wiley 2012, p. 236). Such disregulation is associated with exaggerated reactivity, overly sensitive, maladaptive emotional, behavioral, and cognitive problems (sensitization) (Perry and Pollard 1998, p. 42). A child who is constantly being overstimulated by internal or external reminders of unhappy events will find it extremely difficult to pay attention to classroom learning (Karr-Morse and Wiley, pp. 37–38). "For these youth . . . delayed gratification is almost impossible. They are quite literally unable to consider the potential consequences of their behavior" (Perry and Szalavitz 2006, p. 250). Also these children tend to function at their most primitive level of self-interest (Karr-Morse and Wiley 2012, pp. 247–248). A calm, untraumatized child processes information quite differently than such a traumatized, sensitized child. "The calmer child can more readily focus on words of the teacher and, using her neocortex, engage in abstract thought and reasoning" (Perry and Szalavitz 2006, 249).

Adverse Childhood Experiences. In the early 1990s, Robert Anda and Vincent Felitti with the aid of the Kaiser Health Plan and the Centers for Disease Control pioneered a large empirical study of the relationship of adults' ACE to these adults' physical and mental health and behaviors. The ACE studies focused on the ACE Score, "the number of 'yes' responses to questions about each of ten ACE categories (not incidents) that include: emotional, physical, and sexual abuse, emotional and physical neglect, witnessing domestic violence, growing up with mentally ill or substance abusing household members, loss of a parent, or having a household member incarcerated" (Larkin et al. 2012, p. 264). Findings from the ACE studies demonstrate strong relationships between these adults' ACE scores and many health and social problems throughout their lives. In general, the research found that "ACEs are common, highly interrelated, and exert a powerful cumulative impact on human development" (p. 264). The findings support the view that "childhood stressors, such as abuse, affect the structure and function of the brain" (p. 265). The studies also show that ACEs are related to prevalent diseases (heart disease, cancer, lung disease . . .), health risk factors (smoking, alcohol abuse, promiscuity . . .), mental health (depressive disorders, anxiety, hallucinations . . .), and general health and social problems (p. 265; Anda et al. 2006).

The link between childhood trauma, as indicated by one's ACE score, and adult outcomes is striking. "People with an ACE score of 4 were seven times more likely to be alcoholics as adults than people with an

ACE score of 0. They were six times more likely to have had sex before age 15, twice as likely to be diagnosed with cancer, four times as likely to suffer emphysema. People with an ACE score above 6 were 30 times more likely to have attempted suicide" (Brooks, *NY Times* 2012). As part of their ACE research, Felitti and Anda examined the "relationship of childhood abuse and household dysfunction to many causes of death in adults" (Felitti et al. 1998). They found a graded or linear relationship between the number of ACEs and each of the adult risk behaviors and diseases studied. Persons who had four or more ACEs, compared with those with none, had 4–12 fold higher risk of alcoholism, drug abuse, depression, and suicide attempts (p. 245). A study by Dube et al. (2003) examined the relationship of ACEs to six health problems among four successive birth cohorts dating back to 1900. Again, the results indicated a consistent, strong, graded relationship, a long-lasting one, between adults' ACE scores and their health problems (p. 268). They found these results to be "consistent with emerging information about the neurobiological effects of early traumatic experiences on the developing brain of infants and young children" (p. 274).

The pyramid in figure 5.1 summarizes the essence of the findings from the ACE research studies.[1] The occurrence of ACEs lead to disrupted neurodevelopment, which leads to social, emotional, and cognitive impairment, leading to the adoption of health-risk behaviors, further leading to adult disease, disability, and social problems, all of which lead to early death.

Implications for Human Capital Theory

James Heckman's Contributions

James Heckman and his coauthors have over the last 15 years or so done much research related to early childhood HC formation. There is no doubt that Heckman is the clear leader in this area. These research efforts have led to numerous new important insights, many of which are at odds with mainstream HC theory. The following is a short list of important insights deriving from this research:

1) The human brain capacities developed in early childhood are crucial for the subsequent successful development of other brain capacities in later childhood and adulthood (Heckman 2004, p. 197; 2007, p. 13253; 2008, pp. 311–312; Knudsen et al. 2006, pp. 10155, 10156, 10158).

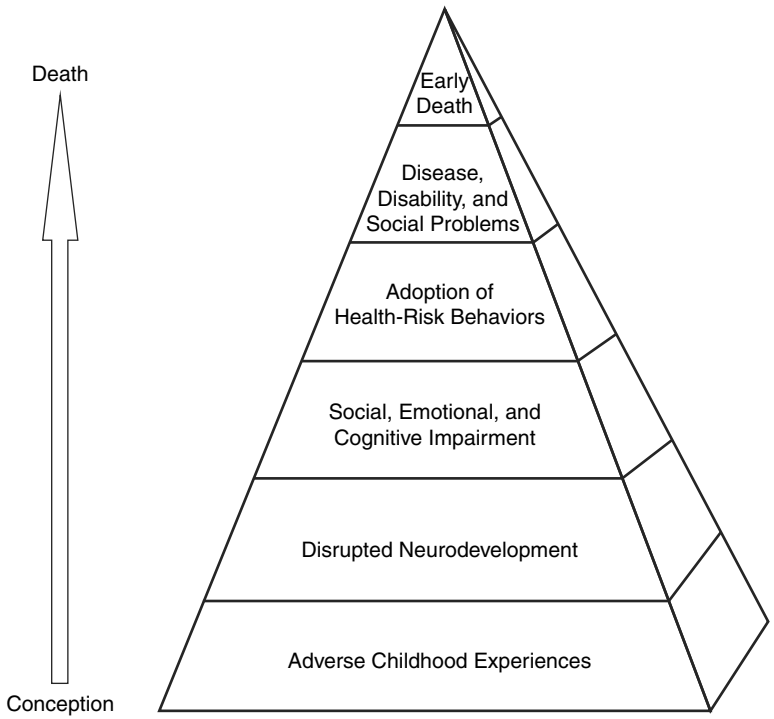

Figure 5.1 Influences of adverse childhood experiences throughout the lifespan.

2) These crucial human brain capacities require development during certain sensitive or critical periods of early childhood (Heckman 2006, p. 1900; Knudsen et al. 2006, pp. 10155, 10158, 10160).
3) The human capacities developed during early childhood are largely noncognitive ones such as self-regulation, self-control, motivation, low rates of time preference, far-sightedness, conscientiousness, adventurousness, perseverance, and tenacity that reflect the organization and regulation of the brain occurring during this time (Heckman 2007, pp. 13250, 13252).
4) The family is the major producer of human capacity in early childhood. A major factor that explains the variation among persons in HC formation in early childhood is the quality of the child's home or family environment, which reflects the behavior of the parents. Successful family functioning in early childhood enables development of the child's human capacity, capacity that cannot be

duplicated by later schooling. Adverse family environments lead to serious deficits in HC formation during early childhood. These deficits reflect abnormal development of children's brains which can be detected by brain imaging technology (Heckman 2004, p. 180; 2006, pp. 1900–1901; 2007, p. 13251; 2008, pp. 290, 314; Heckman and Masterov 2007, pp. 447–448, 487; Knudsen et al. 2006, p. 10161).

5) Adverse family environments are typically characterized by the absence of a father, low financial resources, low parental education, poor parenting skills, lack of cognitive and emotional stimulation, among other things (Heckman 2007, p. 13251; 2008, pp. 304–305; Heckman and Masterov 2007, p. 448).
6) In recent years, relatively more children are being raised in adverse environments (Heckman 2008, pp. 289–290, 301–302, 306; Heckman and Masterov 2007, p. 487; Knudsen et al. 2006, p. 10155).
7) There is evidence that the rate of return on investment in HC in early childhood is much greater than the rate of return on investment in HC during later childhood and adulthood. Making early childhood investments in disadvantaged children is not only the fair thing to do, but also the societal rate of return to early childhood investment in disadvantaged children is relatively high. So it makes sense from a productivity standpoint (Heckman 2006, pp. 1901–1902; 2007, p. 13252; 2008, p. 311; Knudsen et al. 2006, p. 10161).
8) The big issue raised by these insights is: What should society do to deal with the presence and growth of adverse family environments that are leading too many people to enter adulthood with low HC endowments? (Heckman and Masterov 2007, p. 448).

Further Human Capital Implications

As far as I have been able to discern, Heckman does not mention the research on ACEs. He does consider adverse family environments, poor parenting, and some of their detrimental effects, but he does not consider, at least not explicitly, ACEs, the trauma they cause, and how they severely affect the young brain. As a result, his conception of the importance of early childhood development is missing a major factor. Including ACEs in the analysis would, if anything, strengthen his analysis and policy recommendations. Moreover, the parental role in HC formation needs more emphasis and elaboration. Accordingly, it is important to appreciate that parents not only need to prevent ACEs and other highly stressful events

from impacting their children, but also to allow their child to reach his or her full potential, they need to be nurturing, committed, attuned, consistent, loving caregivers. This parental role is extremely important, particularly in the first three years of the child's life. If things do not go well then, it will undoubtedly compromise later developmental possibilities.

Authors such as Bruce Perry and Robin Karr-Morse who are both therapists and students of brain functioning, realize that the very early years are the ones in which the child's brain is becoming organized and regulated. If this process goes poorly, the child may enter school behaving badly due to exaggerated reactivity and sensitivity, and thus, they may not be able to have a good balance of cognitive and noncognitive behavior and learning, the kind that allows them to have a satisfactory schooling experience, and which provides the basis for their next learning stage and ultimately their worklife. Without appreciation of the importance of the early years for developing balanced brain capabilities, recommendations for HC policy are likely to be inefficient. That is, they are likely to ignore the importance of early childhood and devote too much investment to HC formation in the later childhood years, particularly to cognitive HC formation, in a mistaken hope that later schooling can make up for the missing brain development and noncognitive HC formation during the early years.[2]

Children who chronically behave badly because their brain development went poorly in early childhood can be said to lack the kind of personal capital sometimes associated with emotional intelligence (see Tomer 2008b, Chapter 6). Because their brains failed to develop in a healthy way, these children typically lack the ability to manage or regulate their own emotions and the ability to manage their relationships with others. In other words, such children lack a variety of personal and social competencies which are critical to educational and work achievement, and thus these children can be said to have a low personal capital endowment.

Current Trends in Inequality

Careful observers of trends in socioeconomic inequality such as Charles Murray (2012) and Brink Lindsey (2013) have recently discerned a distinct polarization among classes. In Murray's examination of this issue, he focuses on the trends among white people since the early 1960s and finds it useful to compare the upper-middle class (top 20 percent) with the new lower class (bottom 30 percent). On many dimensions, he finds that the upper-middle class is doing relatively well; whereas the new lower class is clearly in decline. The data show polarization in the labor market

as well as cultural polarization between these two classes. For example, with respect to the personal quality of industriousness, the data show that from 1970 to 2010, the percent of prime age males not in the labor force grew substantially for the bottom 30 percent relative to the top 20 percent group (Murray 2012, p. 173). Over a similar time period, for the bottom 30 percent, the percent of males with jobs who worked fewer than 40 hours in the preceding week grew significantly relative to the top 20 percent class (p. 176). And for the bottom 30 percent, the male unemployment rate compared to the national unemployment rate grew very substantially relative to the top 20 percent group (p. 175). Thus, for a variety of reasons, males in the bottom 30 percent class had a substantially worse labor market experience than the top 20 percent which in part reflects, Murray argues, the declining industriousness of the lower-middle class.

The data also supports the view that the marriage experience of the new lower class is worsening, especially relative to the upper-middle class. In 2010 the percent of whites ages 30–49 who were married among the lower 30 percent was about 50 percent compared to about 85 percent for the top 20 percent (Murray 2012, p. 154). In 1960 the respective figures were 86 and 96 percent. With regard to the percent divorced or separated, the rate for the new lower class has dramatically increased to about 35 percent, while the rate for the upper-middle class has been flat at around 7 percent for the last 30 years (p. 156). There is also a large and growing gap between these two groups in the percent of self-reported "very happy" marriages. Moreover, from a marital standpoint, the divide between the children of the bottom 30 percent and the children of the top 20 percent is large and growing. The percent of children living with a single, divorced, or separated parent for the bottom 30 percent has reached over 20 percent; whereas for the top 20 percent, it is a little over 2 percent (p. 159). Also notable is the large and rising gap between the percent of nonmarital births among mothers with 12 years or less education and mothers with a college education (p. 161). Among the new lower class, all too often, the men are not making a living and single women are raising the children. In addition, Murray has made similar comparisons illustrating the absolute and relative decline of the new lower class in regard to the qualities of honesty (including crime) and religiosity.

Reflecting the cultural differences between the two classes, childrearing practices are sharply different between the two groups.

> The children of the new upper class[3] are the object of intense planning from the moment the woman learns she is pregnant. She sets

about researching her choice of obstetrician immediately (if she hasn't already done it in anticipation of the pregnancy), and her requirements are stringent. She does not drink alcohol or allow herself to be exposed even to secondhand smoke during her pregnancy. She makes sure her nutritional intake exactly mirrors the optimal diet and takes classes (along with her husband) to prepare for a natural childbirth—a C-section is a last resort. She gains no more and no less than the prescribed weight during her pregnancy. She breastfeeds her newborn, usually to the complete exclusion of formula, and tracks the infant's growth with the appropriate length and weight charts continually. The infant is bombarded with intellectual stimulation from the moment of birth, and sometimes from the moment that it is known that conception has occurred. The mobile over the infant's crib and the toys with which he is provided are designed to induce every possible bit of neural growth within the child's cerebral cortex. (Murray 2012, p. 39)

On the other hand,

Mainstream America is a lot more relaxed than the new upper class about their children. I don't mean that other American parents care less, but that, as a group they are less inclined than upper-class parents to obsess about how smart their baby is, how to make the baby smarter, where the baby should go to preschool, and where the baby should go to law school. They buy the car seat that's on sale at Walmart instead of spending hours searching the web for the seat with the best test results in simulated head-on collisions. When their children get into trouble at school, they are less determined than upper-class parents to come up with reasons why it's the teacher's fault, not their child's. (Murray 2012, p.41)

The sociologist Annette Lareau in her 2003 book *Unequal Childhoods*

has identified a clear, class-based difference in parenting styles. Among the poor and working-class families she observed and studied, the focus of parenting was on what she calls 'the accomplishment of natural growth.' In these families, 'parents viewed children's development as unfolding spontaneously, as long as they were provided with comfort, food, shelter, and other basic support.' By contrast, for middle-class families with college-educated parents, the aim is 'concerted cultivation.' 'In these families,' Lareau writes, 'parents actively fostered and assessed their children's talents, opinions, and skills. They scheduled their children for activities. They reasoned with them… *They made a deliberate and sustained effort to stimulate children's development and to cultivate their cognitive and social skills.'* (Lindsey 2013, p. 65)

Toward a New Behavioral Economic Model Explaining Inequality

One important part of the educational gap between the children of the upper-middle class and those of the new lower class is the more intensive parenting styles of the upper group. "High-income families are increasingly focusing their resources—their money, time and knowledge of what it takes to be successful in school—on their children's . . . educational success" (Reardon, *NY Times* April 27, 2013). They are definitely spending more time on child care (Lindsey 2013, p. 64). And it is paying off.

> Students growing up in richer families have better grades and higher standardized test scores, on average, than poorer students; they also have higher rates of participation in extracurricular activities and school leadership positions, higher graduation rates and higher rates of college enrollment and completion. (Reardon, *NY Times* April 27, 2013)

Much of the widening gap is because the children of the upper and upper-middle groups are increasingly entering kindergarten better prepared than the middle- or lower-class kids, and the gap persists throughout their schooling. This indicates the central importance of early childhood experience.

The other important part of the educational gap relates to the family environments of the new lower class. As indicated earlier, family break up has become increasingly common in this lower group as indicated especially by the growth in the percent divorced or separated and the growth in the percent of children living wth a single parent, usually the mother. Such single-parent families are not well off. "The median family income for single mothers—who are more likely to be younger, black or Hispanic, and less educated—is $23,000 (Rampell, *NY Times* May 29, 2013). Never-married mothers (whose numbers in the new lower class have grown dramatically) have even lower incomes than those who are divorced or widowed. According to economist David Autor, research shows that lower-income children raised by their mothers are at a particular disadvantage; this is especially true for their sons who on the average are believed to get fewer hours of attention from their mothers than their daughters do (Appelbaum, *NY Times* March 20, 2013). Single mothers who generally have to work are often stressed and generally do not have a great deal of time or money to devote to child care, much less trying to give their children the special advantages that upper-class children receive. In light of the above, one suspects that ACEs are more prevalent in families headed by single parents. However, at present there is no data directly bearing on this latter issue.

The educational success gap between high- and lower- income students has grown substantially because of what upper-class parents are increasingly doing and what lower-class parents are increasingly unable or neglecting to do. Of course, higher-income families have the monetary resources necessary to purchase the best preschool and childcare not to mention a variety of child enrichment resources and activities. Lower-income families, on the other hand, are clearly constrained by the rising costs of education and childcare as well as poor job markets. This means that the children of the new lower class are arriving at kindergarten much less prepared than the children of the more affluent group. And schools, although they have tried, have not reduced this inequality (Reardon, *NY Times* April 27, 2013). Nor is there any convincing evidence that schools have increased the inequality. Thus, there has been much more, and more successful, HC investment going on among the higher-income families, particularly during early childhood. Lower-class males, in particular, are apparently not responding to the rising returns to investment in HC, especially the rising return to college education (Lindsey 2013, pp. 60–61); Appelbaum, *NY Times*, March 20, 2013). This is hard to understand. However, the analysis here points to two major causal factors. First is that elite culture is very much fostering educational achievement, while lower-class culture is moving in the opposite direction (Lindsey 2013, p. 61). Second is the growing family breakup and dysfunction, which there is reason to believe is increasing the prevalence of ACEs among the lower class. Unfortunately, data necessary to verify this supposition is not currently available. If ACEs are higher among the lower class, this will no doubt contribute to their children's educational disadvantages, and these disadvantages are not easily remedied.

The explanations above constitute in essence a new behavioral economic macro model explaining educational (and income) inequality. The core features of this model are as follows and are displayed in figure 5.2. For higher-income families, high monetary resources and strong cultural support for child development lead to high time and money available for childcare, preschool, and enriching, stimulating activity which contributes to their children entering school with high HC. Also making the same contribution is this group's relatively lower rates of family break up and dysfunction leading to low rates of ACEs.[4] For lower-income families, low monetary resources and weak cultural support for child development lead to low time and money available for childcare, preschool, and enriching, stimulating activity which contributes to their children entering school with low HC. Also making the same contribution is the group's relatively high rates of family break up and dysfunction leading

to high rates of ACEs. The gap between the HC endowments of children from higher-income families and those of lower-income families at school entry constitutes the educational inequality which presumably leads in later years to income inequality. The model offered here is intended to provide an important explanation for inequality, but not necessarily one that is at odds with other worthy explanations such as the ones cited below. It is anticipated that testing the model's main hypothesis will not be an easy task given the current lack of data on the incidence of ACEs among socioeconomic classes. Note that in Figure 5.2 HC refers to both cognitive and noncognitive HC, the noncognitive HC or personal capital arguably being the more significant part in very early childhood.

This paragraph and the next contrast briefly the main argument concerning the cause of the growth in educational (and consequent income) inequality with competing causal explanations. First, Murray's (2012) account focuses to a great extent on character as the key causal variable. For example, in his analysis, it is the decline of industriousness, honesty, and religiosity of the new lower class that contributes to the rise in their poor behaviors and outcomes such as relatively low income and happiness. Lindsey's analysis, on the other hand, focuses largely on the cognitive ability, especially fluency with abstraction, of the relatively high-income elites who invest in this type of HC that society needs most given the growing complexity of the socioeconomy. Lindsey's account gives almost no consideration to the childhood problems or adversities of

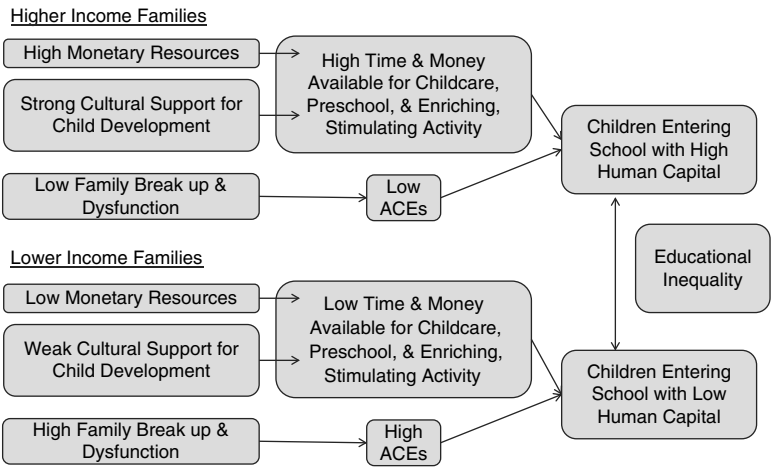

Figure 5.2 Behavioral economic macro model explaining educational (and income) inequality.

the lower-income groups, but he does briefly mention "the collapse of the traditional nuclear family structure among the less educated" and the "divorce divide along educational lines" as well as pointing to cultural polarization and that many lower-income people are not responding to the substantial incentives to invest in needed HC.

In their book review essay article, Acemoglu and Autor (2012) outline a more mainstream economic theory that explains the growth of income inequality among higher-, middle-, and lower-income groups. A key factor in their analysis is the growth of factor augmenting or skill-biased technology. In recent times, this kind of technological change has arguably complemented the skills of high-skill workers and has tended to substitute for the skills of middle-skill workers. Thus, this technological change leads to an increased demand for high- skill workers and a declining demand for middle-skill workers as the latter are displaced with the installation of the new technology. In recent periods, the wage premium for high skill relative to middle-skill workers has increased. This is the expected result because the supply of high-skill workers (with college and post-college education) has not kept up with the demand, whereas the supply of middle-skill workers has kept up, or more than kept up, with the sagging demand for them. An important implication of this theory is that there is a great need to improve the efficacy and efficiency of US education at all levels but especially in order to increase the supply of high- skill workers (p. 460). This mainstream theory no doubt has validity, but their account leaves no room for alternative considerations relating to noncognitive HC and to ACE. Thus, it fails to come to terms with important reasons for the educational gap between higher and lower-income groups, which arguably are elements necessary for a full understanding of inequality and what HC policies would be most appropriate to deal with it.

Toward a Cure for the Problem

The heart of the problem as outlined earlier is the poor parenting and ACEs that sabotage early childhood neurodevelopment leaving children with reduced human capacities for later life learning and work. In contrast to most economists in the HC field, Heckman and Masterov (2007) understand the essence of what needs to be done.

> It makes sense to invest in young children from disadvantaged environments. Substantial evidence shows that these children are more likely to commit crime, have out-of-wedlock births, and drop out of school. Early interventions that partially remediate the effects of adverse environments

> can reverse some of the harm of disadvantage and have a high economic return. They benefit not only the children themselves, but also their children, as well as society at large. (p. 446)

Heckman and Masterov point out that postschool remediation programs such as public job training and general educational development (GED) cannot make up for the damage done in early childhood (p. 447). To successfully deal with the problem requires supplementing the childrearing resources of disadvantaged families during early childhood (p. 448). "Millions of parents don't have the means, the skill or, in some cases, the interest in building their children's future" (Brooks *NY Times*, February 14, 2013). Therefore, these disadvantaged parents need the special kinds of help that will either enable their children to pass through early childhood with their brain development unimpaired or provide remedial help for the child's early impairment in order that they can be fully ready for later childhood development and learning. As indicated in the next section, the required types of HC investment take quite a few different forms.

A Remedy for the Worst Cases

For children who have experienced severe trauma and consequent severe impairment of their neurodevelopment in their early years, the neurosequential approach developed by Bruce Perry, psychiatrist and PhD, is a remedy that has worked in many cases. This approach is based on the understanding that neural systems organize and become functional in a sequential manner starting from the lower and proceeding to the higher brain regions (Perry and Szalavitz 2006, pp. 138–139). In the neurosequential approach, the therapist provides the child with "patterned repetitive experiences appropriate to their developmental needs, needs that reflect the age at which they'd missed important stimuli or had been traumatized, not their chronological age" (p. 138). One example is cuddling a seven-year-old boy, providing the touch and rhythm he had missed as an infant (p. 138). The key is for the therapist to discover the brain regions and functions that are underdeveloped or poorly functioning and then figure out how to help the child gain the missing stimulation or developmental experience (p. 248). In treating a traumatized child, the therapist must create an atmosphere of safety and develop a predictable, respectful, nurturing relationship (p. 154). Another key part of the process is calming the child's stress response system enabling the child to rely on their higher brain functioning, thereby reducing the child's sensitization or high arousal time (p. 250).

One of Perry's significant therapeutic stories is that of Sandy, a girl who witnessed the murder of her mother, had her throat slit, and was left for dead at the age of three (Perry and Szalavitz 2006, pp. 31–56). Not surprisingly, in the nine months until her therapy with Perry began around the age of four, Sandy suffered from severe mental difficulties. Sandy had profound sleep problems, was pervasively anxious, and had a high startle response, jumping at the slightest unexpected noise (p. 42). Sometimes she had aggressive, tantrum-like outbursts; she was especially afraid of knives; and she had become sensitized (pp. 42–43). An important part of the therapy was for Perry to allow Sandy to reenact the traumatizing experience, thus enabling her to gain tolerance for her traumatized memories, gaining control of her life, and gradually reducing her sensitization. It was a slow process but the reenactments along with the safe, nurturing therapeutic environment were able to transform Sandy and eliminate her symptoms (p. 56). Sometime later, Perry reported that Sandy had "made friends, got good grades, and was notably kind and nurturing in her interactions . . . [and is] having the kind of satisfying and productive life we had all wanted for her" (p. 56). Many other interesting examples of Perry's therapeutic approach to helping children who were early childhood victims of severe neglect and trauma can be found in other chapters of Perry and Szalavitz (2006).

Perry and his colleagues' work helping children overcome their severe victimization is an excellent example of HC investment in early childhood. But, is this a remedy that can be applied broadly? After all, Perry is an outstanding psychiatrist and innovator in this field. Would it be possible to train enough therapists with sufficient skills to successfully treat all the children in need of this service? Would it make sense to devote a very large amount of resources to this effort? From a purely economic standpoint, the answer depends on the rate of return to this investment. Another way to look at the question is to ask: can we afford the wasted lives and social discord of not making such investments? To definitively answer this question, it is also necessary to consider two broad alternatives to intensive therapy. First are approaches that would prevent early childhood neural impairment from occurring in the first place. Second is utilizing less-costly approaches that provide remedies for the many children who are less-severely impacted by adverse family environments.[5]

Preventative Approaches

As writers in the child development field generally recognize, it is much better to prevent child maltreatment than it is to rely on remedies after it occurs (see, e.g., World Health Organization 2006, p. 8). What

circumstances would prevent children from experiencing the neglect and trauma that lead to impaired neurodevelopment of their brains? The consensus answer is an environment in which all children lived with both parents who provide a safe, nurturing, loving environment and who have sufficient and relatively secure income sources. Under these circumstances, it is very unlikely that their children would encounter development compromising adverse experiences. This answer suggests the kinds of prevention that are needed. First, poverty (entailing low income) or the threat of it needs to be prevented. Second, low-quality parenting needs to be prevented. Third, divorce and separation need to be prevented.

The first type of prevention can be achieved through paid parental leave (Heckman and Masterov 2007, p. 448; Karr-Morse and Wiley 2012, p. 245; Perry and Szalavitz 2006, p. 235; Pressman and Scott 2014). The goal of this policy is to overcome poverty in families with infants in order to counter the many negative consequences of poverty, especially for the child and mother (Pressman and Scott 2014, pp. 165–183). Paid parental leave can be viewed as an investment in HC in that these governmental transfers to parents should enable the parents to provide more and better child care yielding substantial benefits. The most important of these benefits is enabling children to avoid brain impairment; this in effect raises these children's mental capacities. Unlike many economically developed European countries, the United States lacks a paid parental leave program. Mainly because of this, child poverty rates in the United States are far higher than those in other developed nations (pp. 176–177).

The second type of prevention involves improving parenting. If the parental environment plays a key role in children's neurodevelopment, and if, too often, parents are failing in this role, it makes sense to invest in parents' HC in order to improve the quality of their parenting (Reardon, *NY Times* 2013).

> This means finding ways of helping parents become better teachers themselves. This might include strategies to support working families so that they can read to their children more often. It also means expanding programs like the Nurse-Family Partnership that have proved to be effective at helping single parents educate their children. (Reardon)

As Perry and Szalavitz (2006, p. 237) note, it is important to educate parents about the needs of infants and how to address them. Ideally, efforts along this line can help create a more infant- and child-literate society. Parents can also benefit from simply learning to take the time to pay attention and listen to their children (p. 244). Karr-Morse and Wiley (2012, p. 243) has proposed the creation of a "Parenting Institute" which

"would bring together key units of emotional developmental information from world-renowned experts, combined with the fundamentals of brain science." Note also that it is possible to improve the parental environment by including extended family members in childcare, especially the grandparents (Perry and Szalavitz 2006, p. 237).

Healthy Families New York has been particularly successful in helping new parents who are at risk for child maltreatment. Their Home Visiting Program has provided intensive in-home services to parents until their children enter school. These services are designed to promote positive parenting skills and parent-child bonding and interaction, prevent child abuse and neglect, promote child health and development, and enhance family self-sufficiency. A careful study of the child outcomes seven years later indicated the success of the program. Compared to a control group, children in the home-visited group were substantially less likely to repeat first grade, and performed above grade level in three behaviors that promote learning. Girls, especially, in this program were much more likely to perform above grade level on reading and math compared to the control group (based on a summary of details from Kirkland and Mitchell-Herzfeld (2012)).

The third type of prevention involves either preventing divorce or separation or providing a way for the missing parent, usually the father, to be available for regular parenting. If more marriages could be saved or more missing fathers could resume involvement in their children's lives, that would certainly be helpful (Appelbaum, *NY Times* 2013). It should be noted that there is no point in trying to keep husband and wife together if domestic violence is the highly likely outcome. That could be worse for the children than a marital breakup. In any case, there is a clear need for domestic violence services for victims and batterers as well as fatherhood programs which engage and teach young men how to be a father for their children. There is not sufficient space here to consider all the many things that could be done in this general vein.[6]

Remedies for Moderately Disadvantaged Children

This section deals briefly with the kind of remedies (involving investments in HC) suitable for moderately disadvantaged children, but not children requiring intensive individual therapy. The main candidate here is enriched preschool. The "flagship" example is the Perry Preschool Program. Because of its worthwhile features and because of the availability of data and analysis on it, it makes sense to focus on this program despite the fact that there are many other variants of enriched preschool.

The Perry Preschool started in Ypsilanti, Michigan in the mid 1960s as a two year experimental intervention for disadvantaged three- and four-year-old African Americans (Tough 2012, pp. xix-xxi). The children chosen were ones with relatively low IQ and socioeconomic status; no children with untreatable mental defects were chosen (Heckman et al. 2010, p. 116). The chosen children were randomly assigned to either a treatment group (Perry Preschool) or a control group (no preschool). The school program involved two-and-a-half-hour weekday morning sessions and a one-and-a-half-hour afternoon visit by a teacher to the child's home once a week (Heckman 2008, p. 308; Heckman and Masterov 2007, p. 478). The purpose of the latter was to involve the child's mother in the educational process.

> The curriculum was based on supporting children's cognitive and socio-emotional development through *active learning* where both teachers and children had major roles in shaping children's learning. Children were encouraged to plan, carry out, and reflect on their own activities through a plan-do-review process. (Heckman et al. 2010, p. 116)

Follow-up interviews were done when the children reached ages 15, 19, 27, and 40 years (p. 116). Information from these interviews has enabled researchers to learn how the preschool participants were doing in later life relative to the control group.

The findings from the Perry Preschool experiment are very noteworthy. First the preschool children's test scores showed an initial IQ improvement, but this did not last after the third grade. The more important finding was the improvement in the preschool children's noncognitive skills such as curiosity, self-control, social fluidity, and motivation (Heckman 2008, p. 308; Tough 2012, p. xx). These improvements led in turn to a large number of improved behaviors and outcomes (relative to the control group). These included: more likely to graduate from high school, more likely to earn more than $25,000 at the age of 40, less crime and delinquency, greater literacy, higher achievement test scores, decreased grade retention, reduced time in special education, more likely employed, less likely on welfare, lower teenage pregnancy, higher marriage rates, better jobs, more likely to own home, and higher four-year college participation rate. As Heckman and Masterov (2007, p. 487) point out, the preschool intervention's greatest impact was in creating the attitudes and motivation (noncognitive qualities) that ultimately lead to the favorable outcomes.

It is important to note that preschools cannot duplicate what a well-functioning family gives its children (Heckman and Masterov 2007,

p. 487). But enriched preschool can to some extent make up for the lack of a well-functioning family. That is what the Perry Preschool apparently has done. Moreover, programs such as Perry Preschool that have a home visit component can "affect the lives of the parents and create a permanent change in the home environment," a change which continues to support the child even after the preschool has ended (Heckman 2008, p. 314). Heckman and his colleagues (2010) have attempted a careful, rigorous assessment of the Perry Preschool Program using the data from the intervention and the follow-ups. They estimate that "the overall annual social rate of return to the Perry program is in the range of 7–10 percent" (p. 115). These researchers also find that "the benefit-cost ratio for the Perry program . . . ranges from 7 to 12 dollars per person, that is, each dollar invested returns in present value terms 7 to 12 dollars back to society" (pp. 115–116). In other words, from a conventional economic standpoint, the investment in the Perry Preschool was very successful.

It is worth noting that the Obama Administration's recent preschool proposal has a general similarity to the Perry Preschool Program (see, e.g., Brooks, *NY Times* February 14, 2013). One important difference is that the Perry program was only targeted at disadvantaged children; whereas the Obama plan aspires to "make high-quality preschool available to every single child in America."

As explained earlier, critical brain development occurs very early in childhood, and ACEs and poor parenting can prevent necessary neurodevelopment from occurring. For this reason, it is important for remedial childcare to occur very early when young brains are plastic. That is why the Abecedarian Program is of particular interest. This program, like the Perry Program, served disadvantaged, mostly Afro-American children. The Abecedarian program started earlier (age 4 months), was more intensive (6–8 hours per day), and lasted longer (close to five years) than the Perry Preschool (Heckman 2006, p. 1901; Heckman and Masterov 2007, pp. 479, 481, 484–486). The Abecedarian Program's relatively favorable outcomes may at least in part be due to its starting earlier in the child's life.

One other preschool intervention should be noted. The intervention during the early 1990s in Jamaica involved psychosocial stimulation and nutritional supplementation of growth-retarded toddlers living in poverty (Gertler et al. 2013). "The intervention consisted of one-hour weekly visits from community Jamaican health workers over a 2-year period that taught parenting skills and encouraged mothers to interact and play with their children in ways that would develop their children's cognitive and personality skills" (p. i). Twenty years later, the study participants were reinterviewed and the findings were analyzed carefully.

The nutritional intervention did not have a long-term impact, but the stimulation "proved to have large impacts on cognitive [and psychosocial] development 20 years later" (p. 2). The analysis also showed that the stimulation increased average earnings of the participants (then about 22-years-old) by 42 percent compared to the control group.

The Human Capital Remedies for Adverse Childhood Experiences

The previous section outlined the main types of remedies for the problems associated with ACEs. All these remedies involve some type of investment in HC. Now it is important to step back in order to obtain some overall perspective on the ACEs related problems and their growth. In doing this, it is useful to consider all these seemingly separate problems as one large negative socioeconomic pattern. The essence of the larger pattern is inadequate appreciation and understanding of the developmental needs of young children. A key part of the pattern is that the needs of children, especially those whose parents have lower socioeconomic origins, are not being met. Dysfunctional family relationships that have contributed to the incidence of ACEs are an important reason for this. The pattern also involves a poor functioning economy that too often is not serving the needs of the lower socioeconomic strata. For that lower group, there are far too few secure decent paying jobs that can provide the security and support that these families need.

To a certain extent, an individual oriented HC approach can deal with the ACEs related problems. Traumatized children can no doubt benefit greatly from competent psychotherapeutic interventions, done one at a time. Parents can benefit greatly from programs that impart parenting skills, and subsequently benefit their children. Moderately disadvantaged children can benefit greatly from enriched preschools that improve these children's noncognitive skills and, thereby, enable them to make a good start when they enter school.

These and other types of HC investments are all highly beneficial. To a considerable extent, they can be understood using individual oriented HC concepts. However, unless the ACEs related problems are viewed as part of a larger socioeconomic problem or pattern, these individual remedial efforts may not be enough to make substantial progress toward resolving the negative pattern associated with ACEs. In other words, in addition to individual HC investments, there needs to be a larger HC investment approach designed to lift families with young children out of poverty and create an environment in which many more children are able to live in safe, nurturing situations relatively free from adverse

experiences and material want. There needs to be something more than particular investments. There needs to be an overarching approach to countering these negative ACEs related patterns. Ultimately, the needed approach should involve many kinds of related investments in HC all of which are oriented to countering and resolving the severe, negative socioeconomic pattern.

Needed: A Caring Economy and Economics

According to Riane Eisler (2007; 2012), the problems associated with the lack of adequate childcare are part of an even larger problem, that is, the lack of a caring economy. And the latter is related to the fact that caring is not a central part of the economics discipline. Eisler (2007, pp. 16–17) defines caring work as "actions based on empathy, responsibility, and concern for human welfare and optimal human development." In Eisler's view, the economy's rules and practices too often fail to satisfactorily value the "most essential human work: the work of caring for ourselves, others, and our Mother Earth." One part of the difficulty is that the household sector is generally excluded from the economic map toward which our economic thinking is directed. This is significant because the household sector is an important locus of caring behavior, especially early childhood caring (pp. 12–14). The exclusion of the household sector makes it difficult for economists, much less noneconomists, to think about how the economy's caring problems can be solved and how this is related to a more general difficulty, lack of full HD. What is needed is developing a more caring economy and economics, which would enable us to attain "a future where all children have the opportunity to realize their potential for consciousness, empathy, caring, and creativity—capacities that make us fully human" (Eisler 2012, p. 82). It is a future in which the full development of HC of all people in higher and lower classes would be emphasized. In a caring economy, the recent breakdown of the household sector among the lower-socioeconomic classes and the deterioration of childhood caring there would not be tolerated.

A Human Capital Future

Another useful overarching perspective is provided by Thomas Courchene (2001) who envisioned a "human capital future for Canadians." In an era of globalization and the rapid spread of knowledge and information technologies, Courchene realized that Canada needed to make a transition from a resource and physical capital based

economy to an economy and society that was more competitive and based on skill. Moreover, he strongly believed that competitiveness needed to be integrated or balanced with equality of opportunity and social cohesion. Thus, the key to his economic development strategy is skill (or human capital) development for all citizens. And as Courchene pointed out, "the family is the effective locus for the production of human capital" (p. 11). Therefore, in keeping with his overarching themes, it makes sense to put a strong emphasis on early childhood development in order to counter ACEs and growing inequality, and thereby build the needed HC.

Conclusions

> The most reliable way to produce an adult who is brave and curious and kind and prudent is to ensure that when he is an infant, his hypothalamic-pituitary-adrenal axis functions well. And how do you do that? It is not magic. First, as much as possible, you protect him from serious trauma and chronic stress; then, even more important, you provide him with a secure, nurturing relationship with one parent and ideally two. (Tough 2012, p. 182)

The model developed here that explains the large educational inequality between the upper- and lower-income classes needs much more research. In particular, there is a need for (1) more and better data on the socioeconomic incidence of ACEs and (2) sound empirical analysis to test the hypothesis embodied in the model. Nevertheless, more and more children from lower income, lower-socioeconomic backgrounds seem to be coming from broken homes and have single parents. There is at least some reason to believe that these are the children most likely to have high ACE scores and less likely to have a secure attachment with a parent. Moreover, there is evidence that they have below-average executive function skills, difficulty handling stressful situations, poor concentration in the classroom, inability to sit still and follow directions, impaired social skills, and are perceived as misbehaving (p. 192). These children need and deserve help. They need the kind of carefully targeted HC investment that will enable them to ultimately arrive at school and their work with their brains unimpaired.

Because too many of these kids are not ready for school and are unable to become productive, skilled workers, fewer of them are graduating from high school and fewer are entering the labor force. Not only is this producing greater inequality, but it is also lowering the economy's productivity. In short, it is a waste of human resources. This is a situation that

cries out for intelligent investment in humans, in particular, investment in early childhood development. This chapter provides some guidelines regarding the main kinds of HC investment that are needed. It also suggests that these efforts would work best if they were part of an overall effort to create a caring economy which values the development of a high-level HC strategy.

CHAPTER 6

WHAT CAUSES OBESITY? AND WHY HAS IT GROWN SO MUCH?

Introduction

In recent years, economists have attempted to explain the rising levels of obesity not only in the United States during the last three decades, but also in many developed countries. For the most part, these economists' models have utilized neoclassical economic tools and relied on the conventional wisdom of health science practitioners. The results of this theorizing have been disappointing at best. The main purpose of this chapter is to develop an alternative socioeconomic model of obesity based more on behavioral economics concepts and on an alternative to the conventional health science wisdom. The development of this model is important because it involves an attempt at a novel synthesis of all the key factors contributing to the obesity problem. Instead of fully rational economic decision makers, this chapter assumes decision makers are partly or limitedly rational. Instead of weight gain and obesity being strictly determined by the amount of calories consumed minus the calories expended, weight gain is determined much more by what people eat. Also, the weight-obesity outcome is determined by how different people respond to the growing infrastructure of obesity (notably the suppliers of fast food and processed foods). In general, obesity in the present model is the result of individual decisions to choose poor diets and poor life behavior patterns (including exercise). Unlike in the rational obesity model, these are not decisions of rational economic men or women. Although more than a few economists have analyzed obesity as an example of rational economic behavior, it is fair to say that few noneconomists consider it to be a product of rational economic behavior. The rising obesity levels are the result of poor decisions by many not so rational individuals who have encountered very significant changes in food supplying industries and society overall.

A secondary purpose of this chapter is to characterize obesity as a negative socioeconomic pattern that represents a developmental failure, a persistent failure of the socioeconomy to develop in ways contributing to the well-being of its populace. That failure is shown by the magnitude, breadth, and the growth of the incidence of obesity. Also, that failure is indicated by the degree to which the obesity problem has become embedded in the functioning of important socioeconomic institutions. In other words, there is reason to believe that the socioeconomy's growth has become stuck on a particularly detrimental developmental trajectory with all too few signs of becoming unstuck. It is argued that the socioeconomic model of obesity developed in this chapter is much more useful in characterizing the socioeconomic pattern and developmental failure associated with obesity than is the rational obesity model. Moreover, because of its realism, there is reason to believe that the socioeconomic model of obesity is also much more useful than the rational obesity model with respect to devising remedies to the obesity problem. Note that the negative obesity pattern is not just problematic for individual health; it is problematic for the functioning of the entire economy. This is true to the extent that dealing with the health problems associated with obesity absorbs a great amount of resources and reduces labor productivity, thereby lowering overall economic growth.

The Magnitude of the Obesity Problem

Obesity rates in the United States are high and have been rapidly rising over the last 30 years albeit with some leveling off of the growth very recently. Using body mass index (BMI) greater than 30 as the criterion, the percent of the adult population who are obese was 13.95 in 1976–1980. By 1999–2000, this figure had risen to 29.57 percent, and by all reports was continuing to rise (Rosin 2007, p. 619). The US obesity rate is substantially higher than even the European countries (United Kingdom, Germany) with the highest rates (p. 620). Further, the percent of overweight and obese children has also been rapidly rising over the last 30 years (pp. 620–622). The problem is not just in the United States. Rates of obesity are rising in almost all developed and developing countries, even in Japan that has one of the lowest rates in the world (Bleich et al. 2008, pp. 280–281; Delpeuch et al. 2009, pp. 7–9).

Obesity is a major health problem in that it "is a major risk factor for many chronic conditions [the diseases of civilization, also known as the Western diseases], including type 2 diabetes, cardiovascular disease, hypertension, hypercholesterolemia, certain types of cancer . . . stroke . . . " and six other conditions (diabetes is the one most closely linked to

obesity) (Rosin 2007, pp. 621–622). The annual total costs of obesity are estimated to be nearly 7 percent of annual medical expenditures. Obesity is implicated in 300,000 premature deaths per year in the United States, which is somewhat less than the number associated with tobacco use but substantially more than the numbers associated with alcohol and illicit drug use (Chou et al. 2004, p. 566). In addition to physical ailments, obesity has been found to be "related to lower satisfaction with work, family relations, partner relationships, and social activities" and depression (Stutzer 2007, p. 10).

The Rational Obesity Model

In the rational obesity model, individuals, based on their preferences, attempt to maximize their expected utility over a long time period by choosing their type and amount of food consumption (diet) and the amount and strenuousness of their exercise activity. The former choice determines the calories they consume and the latter determines the calories they expend. The difference between these two is net calories consumed or expended. A positive net calorie balance is associated with weight gain; a negative balance is associated with weight loss. Over time the accumulated weight changes tend to produce an equilibrium or desired weight (W_U) reflecting the individual's preferences for tasty, filling food on the one hand and health and appearance concerns on the other. Typically the rational actor's choice of diet and exercise causes his/her W_U to exceed $W^{\star}$, the optimal weight based on health considerations. When W_U (or more precisely, desired BMI) substantially exceeds the individual's $W^{\star}$, the optimal healthy weight or BMI, say by 20 percent, this would be considered to be rational obesity. Figure 6.1A depicts the essence of the model.

This model emphasizes that obesity is an outcome of an individual's choices and is, thus, an avoidable condition. The obese person has evaluated the long-term expected benefits and costs associated with his diet and exercise pattern and has chosen a combination involving obesity. If these benefits and costs were to change, it would be expected that the individual would change his diet and exercise pattern accordingly. These expected benefits and cost might change due to changes in external conditions or because of changes in the individual's preferences. According to Philipson and Posner (1999, p. 2), this model can explain the growth of obesity during the last several decades. The key factor in their view is "technological change [which] has both lowered the cost of intake of calories and raised the cost of expending calories . . . The price of calories has fallen because food prices have declined" with innovation in food

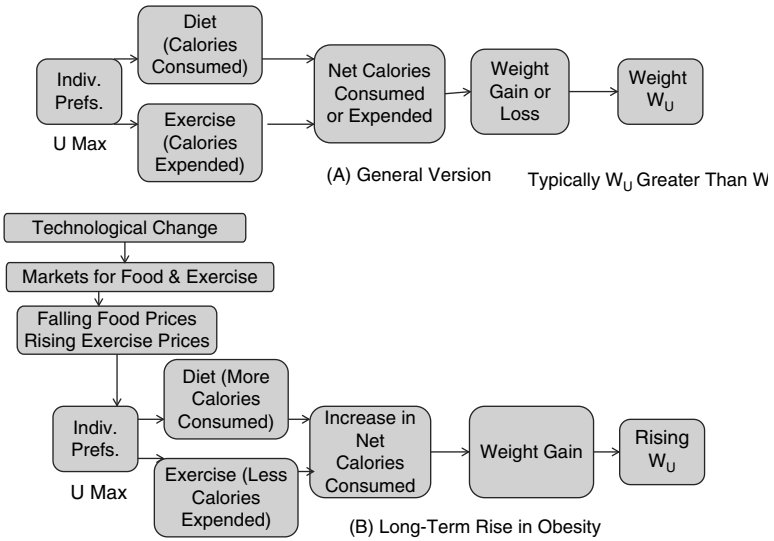

Figure 6.1 The rational obesity model.

industries. Moreover, as a consequence of this and other innovation, most work now requires much less strenuous exercise than it once did (see also Lakdawalla and Philipson 2002). Workers who desire more exercise than their work affords must in many cases pay for the opportunity (for somewhat different models of rational obesity, see Cawley 2004 and Goldfarb et al. 2006). Figure 6.1B depicts the factors causing a long-term rise in obesity according to the rational obesity model.

An Alternative Health Science

A number of writers have challenged the conventional scientific wisdom or dogma regarding calories and weight gain. This chapter draws especially on two such writers: Gary Taubes, a distinguished science journalist who has been a correspondent for *Science* magazine, and Mark Hyman, a medical doctor who has pioneered in the relationship between diet and health. In particular, this chapter draws upon Taubes' *Good Calories, Bad Calories: Challenging the Conventional Wisdom on Diet, Weight Control and Disease* (2007) and Hyman's *UltraMetabolism: The Simple Plan for Automatic Weight Loss* (2006).

Taubes and Hyman are largely in agreement on the main problems with the conventional scientific wisdom. Among the important elements of their critique are the following: (1) It is wrong or at least very

misleading to view weight gain or loss as strictly determined by net calories consumed; (2) Hormones, especially insulin, and hormonal balance are crucial in determining what causes the body's fat deposits to grow; (3) Simply eating too much fat is not a cause of obesity (Hyman emphasizes the importance of eating "good fats" and avoiding "bad fats"); (4) Diets rich in starchy, sugary, refined, easily digestible, and processed carbohydrates which raise insulin levels are the most important factor contributing to obesity; (5) Our bodies, especially our digestive and metabolic systems, have a natural tendency to homeostasis, automatically regulating and maintaining our health, including our weight (this automatic regulation, however, can be thrown off by poor health habits and patterns).

From the point of view of Taubes and Hyman, the rational obesity model incorporates faulty health science insofar as (1) it views weight gain or loss as determined by net calories, (2) it ignores the role that hormones play in obesity, (3) it ignores the role of simple carbohydrates in obesity, and (4) it ignores the homeostatic aspect of our bodies. Therefore, what is needed is an alternative model of obesity, in particular a socioeconomic model of obesity that incorporates this alternative health science, one which is arguably better than the mainstream health science.[1] In what follows, my treatment relies on Hyman's writings.

The essence of Hyman's view is that there are nine factors, four dietary and five life behavioral patterns that are the key causes of obesity. The dietary factors are: (1) diet high in refined, processed carbohydrates, (2) diet high in bad fats, (3) diet low in fiber, and (4) diet low in antioxidants and high in oxidants. The problematic life behavioral patterns are: (1) overly rapid eating, (2) eating in the presence of stress, especially chronic stress, (3) sleep deprivation, (4) lack of exercise, and (5) high exposure to toxins that cause an overloaded detoxification system.

With regard to diet, Hyman (2006, pp. 42–43) explains that our health and weight regulation require phytonutrients, healing plant chemicals, which one can acquire by eating real, whole, unprocessed plant food. The *phytonutrient index* (PI) indicates how rich the carbohydrates you eat are in phytonutrients. The problematic carbohydrates, the ones with too much sugar too quickly absorbed, cause the insulin levels in an individual's blood to become elevated. Over time this could lead to insulin resistance where it takes more and more insulin to help the sugar get into one's cells. This condition has been called the metabolic syndrome. The *glycemic load* (GL) is a measure of the response of your blood sugar (and insulin level) to a meal. Eating food with a high GL and low PI is likely to cause poor health outcomes including obesity (Hyman 2006, pp. 44–47).

The good fats that Hyman (2006, pp. 33–39) recommends are: omega-3, monounsaturated, some polyunsaturated, and some saturated fats.

On his list of bad fats are most saturated fats and all trans fats. In general, "bad fats . . . turn off your fat-burning genes, making it much harder for you to lose weight" (p. 33). On the other hand, good fats increase your metabolism and help you burn fat. As Hyman (2006, pp. 149–156) also explains, oxidation occurs when the body is damaged by free-radical oxygen which "steals" an electron from a molecule in the body. If enough antioxidants are present and not too many oxidants, this oxidation will be reduced. Besides eating foods that reduce oxidation and avoiding foods that cause it, Hyman (pp. 151–155) recommends various steps people can take to keep oxidation from being problematic and contributing to obesity.

With regard to behavior patterns, Hyman (2006, pp. 110–118) explains that eating fast (pp. 61–63) and sleep deprivation (p. 118) in the presence of chronic moderate to high stress cause one's body to release into the bloodstream a hormone called cortisol that sets off a number of physiological responses including becoming less sensitive to the hormone that tells your brain you are full. This is one important pathway from stress to weight gain. The same thing happens to animals such as lab rats. Lab rats exposed to stress "ate less, exercised more and gained weight . . . from stress alone!" (p. 111). Consistent with this, a study of 20 pairs of human twins who differed by more than 37 pounds in weight found that the overweight twins had higher levels of stress hormones and poorer health outcomes (p. 117).

Another important life pattern is exercise or lack thereof. Hyman (2006, pp. 158–161) finds that exercise (1) dramatically improves the efficiency at which your cell's mitochondria transform food and oxygen into energy, and (2) increases the number of mitochondria one has, thereby increasing one's metabolic rate. A higher metabolic rate makes it possible for one's body to burn more calories. Conversely, a sedentary pattern contributes to weight gain, and possibly obesity, by lowering the metabolic rate. Further Hyman (2006, pp. 190–205) finds that the environmental toxins that all of us are exposed to "play a major role in the current obesity epidemic . . . and people's ability to lose weight in general" (p. 193). The problem is that "the total load of all toxins—pesticides, industrial chemicals, mercury and more—has exceeded our bodies ability to get rid of them . . . contributing to metabolic problems that promote weight gain and prevent weight loss" (193). These toxins are typically stored in fat tissue (pp. 194–195). Such "toxins inhibit the function of your thyroid and your mitochondria as well as throwing your hormones out of balance, all of which wreak havoc on your metabolism" (p. 205).

The health science related to the causes of obesity and poor health is summarized in figure 6.2 in the following section. Figure 6.3 focuses

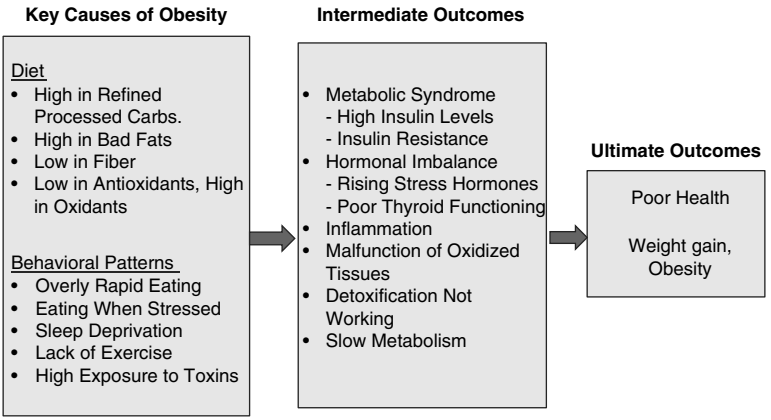

Figure 6.2 Health science on causes of obesity and poor health.

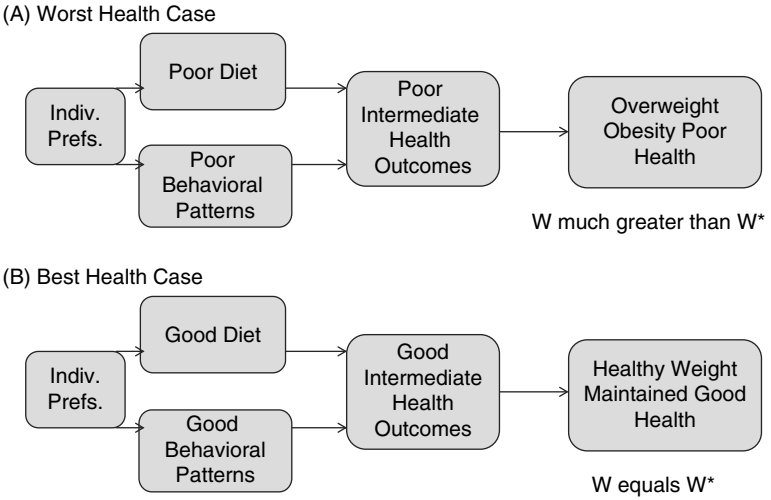

Figure 6.3 Health choices of the bounded rational actor.

on an individual who is faced with choices about diet and life patterns. Unlike in the rational obesity model, the individual's decision making exhibits bounded rationality because the individual's knowledge and ability to process information is quite limited, and the health reality is complex. Figure 6.3 leaves out all the health science specifics of figure 6.2. However, it indicates the range of health and obesity outcomes from worst (figure 6.3A) to best (figure 6.3B) which are a consequence

of the choices. Not surprisingly, as Hyman explains, individuals who choose or who find themselves with poor diets and poor behavior patterns are likely to have poor health outcomes including being overweight or obese. On the other hand, individuals who choose really good diets and behavior patterns will not only have good health, but also are highly likely to maintain an optimally healthy weight (W★).

The Principal Elements of an Alternative Socioeconomic Model of Obesity

To understand the growth of obesity during the last 30 years or so, it is necessary to consider much more than health science. It is necessary to consider the many external and internal factors that influence an individual's choice of diet and life patterns. There are many reasons why these external and internal factors influence or reinforce individuals' choices of diet and behavioral patterns. Further, there is much evidence that at least some of the important external factors have become increasingly negative, thereby leading individuals increasingly to make poor diet and life pattern choices. Figure 6.4 depicts the worst case where the external and internal factors impinging on the individual make poor diet and behavioral pattern choices likely and obesity probable as a consequence of these choices. In the sections that follow, these internal and external factors are explained. The internal factors are the individual's endowment of

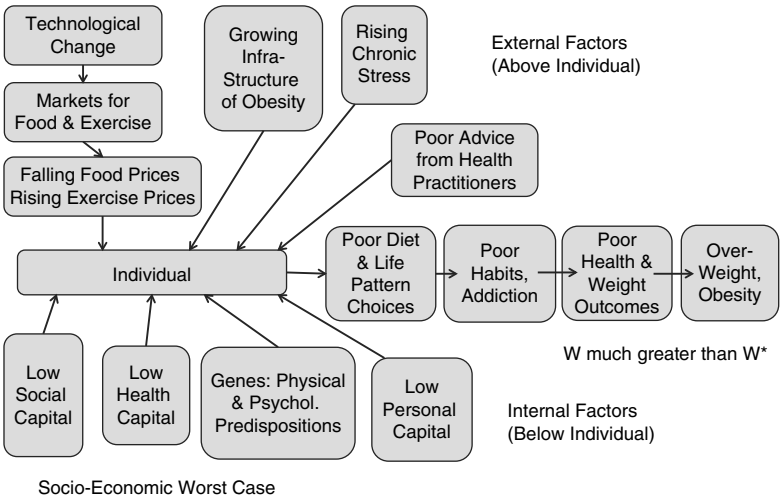

Figure 6.4 Factors causing increase in overweight and obese individuals.

(1) personal capital (PC), (2) social capital (SC), (3) health capital (HLC), and (4) genes that determine an individual's physical and psychological predispositions to obesity. The external factors are: (1) technological change impacting on markets causing changes in the prices of food and exercise, (2) the infrastructure of obesity, especially the behaviors of various suppliers of processed food, (3) socioeconomic factors contributing to chronic stress in individuals, and (4) the advice about eating and behavior from health professionals. The essence of the argument is that obesity tends to occur when vulnerable individuals who have low PC, low SC, low HLC, and genes predisposing them to obesity encounter stressful situations, lower prices of food and higher prices of exercise, poor advice from health practitioners, and the large and growing infrastructure of obesity.

The External Factors Contributing to Obesity

Four external factors contributing to obesity are analyzed in this section.

The Infrastructure of Obesity

The infrastructure of obesity, the first external factor, refers to the features of the socioeconomy that influence eating negatively, and thus, tend to contribute to food consumers' poor health and obesity. One important part of this infrastructure is the changing behaviors of important actors in the food industry, behaviors that lead to poor diet choices on the part of consumers. Another part is changes in important socioeconomic patterns that contribute to consumer's poor decision making with regard to food.

First, consider the influences deriving from food suppliers, in particular the agricultural, food processing, food distribution, and food preparation industries, especially the food processors and food preparers. There is a great deal of evidence that they are increasingly selling unhealthy foods. What do we mean by unhealthy foods? Following Hyman (2006, Chapters 3 and 4), unhealthy foods are foods high in (1) bad fats and (2) carbohydrates with a low phytonutrient index and high glycemic load, especially refined grains, sugar, and sugary items, processed food, and junk food. Many of these unhealthy foods are ones quickly turned to sugar by the body, and people experience them as stressful, therefore resulting in increases in adrenaline and cortisol in their bloodstream. David Kessler (2009) emphasizes that unhealthy foods are ones high in sugar, fat, and salt, often added by food processors. Healthy foods in contrast are whole, unprocessed foods, full of

fiber, antioxidants, vitamins, minerals, phytonutrients, and healthy fats (Hyman 2006, p. 52).

The following are typical characteristics of the unhealthy foods of today: (1) cheap, (2) convenient, (3) fast (delivered quickly), (4) attractively packaged, (5) tasty, (6) marketed extensively and attractively, (7) mass produced with high productivity, (8) prepared quickly, (9) available throughout the country, (10) available in big portions, (11) easy to eat, not much chewing required, (12) palatable, has the capacity to stimulate the appetite and prompt more eating (Kessler 2009, p. 36), (13) light, refined, (14) uniform quality, (15) habit forming, (16) tending to override the body's satiety signals, (17) provide a multisensory experience, (18) calorie dense, and (19) contain added chemical flavors (Kessler 2009, pp. 115–119; Schlosser 2001, Chapter 5).

The food suppliers are not just supplying these unhealthy foods because they are being demanded by consumers. As Kessler (2009) explains, food suppliers are actively designing these foods to enhance their appeal. More specifically, they are creating foods with added sugar, fat, and salt (1) to make them hyperpalatable, (2) to make them override the body's satiety signals, which indicate when one is full, and (3) to make them more habit forming. As such, these firms are optimizing every element in the hedonic equation (p. 127). The goal according to an industry expert "is to get you hooked" by creating foods with "craveability" (p. 125). As Kessler sees it, the food suppliers are creating customers who are "conditioned hypereaters" (pp. 137–141). In a variety of ways, they have attempted to create a hyperstimulating environment conducive to triggering hypereating. As Kessler (pp. 16–17) notes, under these conditions people's natural homeostatic tendency to maintain a desirable weight goes awry. To support all these food design efforts, food processing companies have been making huge investments (Acs et al. 2007b, p. 141).[2]

In addition to food suppliers' product design efforts, these companies have aggressively used advertising and other marketing strategies to persuade consumers to buy more of their products. Indicative of the magnitude of their efforts is the fact that "the food industry is the second largest advertiser in the United States (after the automotive industry)" (Philipson and Posner 2008, p. 980). Only 2 percent of this advertising goes for foods low in sugar, fat, and salt; one-third of this is targeted at children; 11 percent of this food advertising is for fast food advertising, and much of the rest is for sugary snacks and cereals, soft drinks, and candy (Brody 2010; Brownell and Horgen 2004, p. 102; and for a statistical analysis, see Chou et al. 2008). The junk food advertisers have not just used television and radio; they have used product placement in movies and have found numerous ways to get their products advertised and sold in schools

(Brownell and Horgen 2005, Chapters 5 and 6). Regrettably, as the country's main pediatrics association, a broad coalition of organizations concerned with child welfare, an organization concerned with media and children, a leading nutrition watchdog group, and a top medical journal conclude, these advertising practices are all too effective as well as being "deceptive, exploitative, and harmful to the health and well-being of our children" (p. 116). The result, according to Brownell and Horgen (p. 21) is that "eating in American culture is like swimming in a tsunami. The best of intentions get pulled under by massive forces."[3]

In the background are a number of important socioeconomic patterns that add to the potency of the food suppliers' efforts. First, people are spending more time away from home and eating less at home. To some extent, this is because more women are working away from home. This has led to more eating at restaurants, especially fast food establishments (Brownell 2004, pp. 36–37; Finkelstein et al. 2005, pp. 245–246). Because people have less time at home, many are shifting to foods requiring less preparation time at home. Another pattern is that more food is being consumed as snacks, which are often unhealthy processed foods (Acs et al. 2007b, p. 139; Kessler 2009, pp. 174–175). The introduction and wide-scale adoption of microwave ovens during the last three decades is important because this has made it easier and cheaper to buy and consume prepackaged foods in the home (Finkelstein and Zuckerman 2008, p. 24). Further, many schools are serving more unhealthy food, having accommodated to students' desire for fast food type fare. Finally, the United States unfortunately does not benefit from a French cultural pattern (involves slower eating, smaller portions, no snacks) that serves to dampen or inhibit conditioned hypereating (pp. 175–176).

Another factor (part of the infrastructure of obesity) contributing to obesity is the built environment, the human-made environment, which often reflects our society's cultural values and priorities. What Richard Jackson in *Designing Healthy Communities* (2012) understands well is that "urban design, especially the buildings and roads . . . can give people access to the places that help them fill their life needs, including food, shelter, work, and health care—or take it away" (p. xi). Jackson clearly recognizes that community health depends not only on the "software" of human relations, but also on the "hardware" of homes, workplaces, roads, and other structures. In particular, the prevalence of obesity is influenced by people's daily habits and regular exercise, and these in turn are influenced by the built environment (p. 50). Too often because of the priority on building roads through communities, neighborhoods lack good places to walk, lack bicycle paths, lack access to fresh fruits and vegetables, lack access to work play, health care, lack access to physical activity

and exercise, lack safe routes to school, and lack structures that encourage interaction. Thus, people are discouraged from needed physical and social activity. And as a result, chronic disease, especially obesity, will be much more likely to occur (p. 130). Papas' et al. (2007) review article summarizes recent empirical research relating the built environment to obesity. Although the findings from this quantitative research review are less than compelling, they do find that "most articles (84%) reported a statistically significant positive association between some aspect of the built environment and obesity" (p. 129).

The basic idea related to the obesity infrastructure is that "The root of the [obesity] problem . . . lies in the powerful social and cultural forces that promote an energy-rich diet and a sedentary lifestyle" (Brownell and Horgen 2004, p. 27). This environment has gotten a lot more potent over the last 30 years. It's not that these influences will cause everyone to change their diet and become obese. Some people's genes will not allow this. Some people are not easily influenced; some people already are very knowledgeable about nutrition or otherwise not susceptible to this influence. But unfortunately, many are very susceptible or vulnerable to this toxic food environment.

Technological Change, Markets, and Prices

The second external factor is the impact of technological change on the markets for food and exercise. As indicated earlier in the section on the rational obesity model, technological change has led to lower food (or calorie consumption) prices and higher exercise (or calorie expenditure) prices. This factor has relevance for the present model but requires some further explanation. First, the relative price changes for different types of food have been quite different. Although the price of food relative to other goods has declined by 16 percent since 1960, the prices of fresh fruits and vegetables, fish, and dairy products have increased relatively since 1983 (Finkelstein and Zuckerman 2008, pp. 20–21). On the other hand, the prices of unhealthy foods including fats and oils, sugars and sweets, and carbonated beverages have become relatively less expensive. In the case of carbonated beverages, it is clear that the lower relative price has resulted in increased consumption (p. 22). The same is true for fats and oils. Thus, the evidence supports the view that it is the relative decline in price of unhealthy foods, not food in general, that has contributed to obesity. Note that the price of high fructose corn syrup (originally developed in the 1970s), a sweetener considered to be unhealthy, is 20 percent cheaper than table sugar, a fact which goes far to explain why it has been added to many products in place of sugar (p. 25). As a result of the relative price changes mentioned earlier, "whole

foods . . . have come to represent a smaller proportion of calories consumed, while products that are more highly processed . . . have increased in terms of calorie intake" (Acs et al. 2007b, 138).[4] What accounts for the decreasing relative prices of these unhealthy food products?

> The answer lies largely in advances in food processing, preservation, and cooking technologies that have allowed more foods to be produced in a central location and then consumed quickly and cheaply. Innovations such as vacuum packing, improved preservatives, deep freezing, stretch-wrap films, irradiation, hydrogen peroxide sterilization, and microwaves, to name a few, have significantly lowered the monetary and nonmonetary cost of food, including the time cost of acquiring, preparing, cooking and cleaning up after food, as well as the financial cost of purchasing food. Foods more dependent on technology are often those with the greater amounts of added sugars and fats and therefore the highest in calories. It is exactly these foods that have seen the greatest drop in prices and preparation time, and as a result, the greatest increases in consumption. (Cutler et al. 2003, 105–107; Finkelstein and Zuckerman 2008, pp. 22–23)

The processing of potatoes into French fries is a prime example (Schlosser 2001, Chapter 5).

Poor Advice from Health Practitioners

The third external factor is poor health advice. If Hyman and Taubes are correct about the health science of obesity, that is, that the health science mainstream has gotten significant elements of the causes of obesity wrong, it follows that their advice regarding healthful eating has been deficient in some very important respects. Recall Hyman and Taubes critique of the conventional scientific wisdom noted previously. Based on this, Hyman and Taubes have identified the two most important elements of the poor health advice which has been widely disseminated over recent decades:

1) To keep weight from rising, avoid eating more calories than your body uses (Taubes 2007, p. 292). Moreover, "the treatment for obesity is to create a caloric deficit by eating less and/or expending more" (p. 357).

> The fact that semi-starvation methods have failed as a treatment for obesity (p. 258), and increased exercise has not been found to be an effective method for treating obesity (pp. 259–260) is strong evidence that the earlier advice is poor or inadequate.

2) Eat a low-fat diet either to avoid accumulating excess body fat or to reduce body fat and lose weight (Hyman 2006, p. 29).

> For several decades, "the U.S. government (Department of Health and Human Services, 1988), the American Heart Association (1996), and the American Diabetes Association (1997) have all recommended a low-fat diet to prevent and treat obesity. It seems perfectly logical: if you don't eat fat, you won't gain fat. There's one problem—science does not support this recommendation." (Hyman 2006. p. 29; see also Taubes 2002, pp. 6–8)

Further, this mainstream health advice is not helpful because in focusing people's efforts on calories and fat, people fail to do what is important in order to be healthy and to avoid obesity, namely they fail to eat healthy carbohydrates and healthy fats, thereby failing to maintain appropriate hormonal balance.[5]

Rising Chronic Stress

The fourth external factor is rising levels of chronic stress. Earlier, following Hyman (2006, pp. 110–118), the role of stress with respect to obesity was explained. Essentially, chronic moderate to high stress in people can set off hormonal and other physiological changes which can lead to weight gain and obesity. Arguably, the last 30 years when obesity levels have risen substantially are ones during which US people have experienced rising levels of chronic stress. Divorce rates have been high, economic instability appears to have increased, and other socioeconomic factors may well have increased stress levels. However, without careful research on different types of stress and their levels over time for different socioeconomic groups, the importance of this factor would be hard to determine. Any statement at this point on this factors' importance would only be speculation.

The Internal Factors Contributing to Obesity

Genetic Predispositions

The first internal factor analyzed here is a person's genetic predispositions. Clearly, people's genetic physiological and psychological predispositions cannot explain the rapid rise of obesity over the last 30 years. People's genetics can only change slowly over long periods of time as their genes mutate, adapting to changing environmental conditions (Finkelstein and Zuckerman 2008, p. 54; Rosin 2008, p. 624). Differences in individual and

group genetic predispositions are, however, very important in explaining corresponding individual and group differences in weight and the prevalence of obesity. According to Hyman (2006, pp. 24, 197–198, 205), a person's genes determine his or her metabolism, ability to detoxify their bodies, and production of hormones, among other things, all of which affect their weight gain and likelihood of becoming obese. The studies of adopted adults and twins reared apart provide much support for the relative importance of genetics in determining a person's weight (Brownell and Horgen 2004, p. 23). Although the growing infrastructure of obesity may be a very important factor contributing to weight gain and obesity during recent decades, an individual will not become obese unless he or she has a "willing" biology or genetic predisposition (p. 24). Exactly how much of the variability in body weight from person to person is accounted for by genes is subject to some disagreement. According to Brownell and Horgen, 25–40 percent of this variability is explained by genes; other authors, however, have cited higher figures (Finkelstein and Zuckerman 2008, p. 52).

Personal Capital

The second internal factor is the individual's endowment of personal capital. PC is a kind of human capital embodied in individuals. However, it is different from standard human capital which is generally associated with investment in education and training (Tomer 2008b, Chapter 6). Investment in PC is intended to improve the quality of an individual's psychological, physical, and spiritual functioning (p. 82). Unlike standard human capital, the PC capacities are for the most part noncognitive and nonacademic in nature. Many PC qualities are essential to successful job performance; however, this chapter focuses largely on the qualities linked to consumption activity and related aspects of one's personal life.

> A person's stock of personal capital is partly a product of one's genetic inheritance, partly a result of the life-shaping events that one has encountered, and partly an outcome of one's efforts to mature and to grow in nonintellectual ways. (Tomer 2008, p. 82)

PC is relevant here because an individual's accumulated PC will determine much about how she responds to the influences deriving from the infrastructure of obesity as well as to the economic incentives from the markets for food and exercise. Recall that the prices of unhealthy foods, typically processed carbohydrates and some fats and oils, have decreased substantially relative to healthy, whole foods. Not only have the prices

come down, but also the availability, aggressive marketing, and various aspects of the appeal of fast, processed foods have increased making them more difficult to resist. Therefore, it is not hard to understand why persons with small endowments of PC will to a great degree succumb to the many influences from the infrastructure of obesity.

Others who have acquired greater endowments of PC in the form of emotional competencies, ingrained habits of thought, feeling and behavior, will be in a much stronger position to resist these influences. Among the important PC qualities relevant here are the ability to be self-regulating or self-controlling which involves, for example, the ability to control impulse, the ability to delay gratification, and the ability to keep distress from swamping the ability to think (see Goleman 1998, pp. 26–27; Tomer 2008, pp. 84–85). In general, people who have acquired a sufficient set of these basic competencies will have achieved a desired "balance" involving integration of emotions and thinking, more specifically an integration of the functioning of the amygdala and the prefrontal lobes of the brain.

> The amygdala is the seat of emotion; its messages trigger emotional responses. These unrestrained emotional messages can be very strong and in an emergency very rapid. In contrast, the role of the prefrontal lobes is to comprehend the situation confronting a person and to coordinate, moderate, and regulate the individual's emotional response in order that the response is appropriate to the situation. Complementary functioning of the amygdala and the prefrontal lobes is prerequisite for emotionally intelligent behavior. As people learn better ways to manage their emotions, new brain pathways and circuitry are created enabling the desired complementary functioning as well as desired biochemical balance. (Tomer 2008, pp. 163–164 based on Goleman 1994, pp. 13–29)

People with a low endowment of the relevant PC are vulnerable to the infrastructure of obesity, and accordingly, easily develop the attitudes, behaviors, and habits encouraged by the food suppliers (Kessler 2009, p. 155). Another way of looking at it is that low PC people are easily induced into making investments in consumption capital in which they acquire the ability to use and appreciate the various fast, processed foods. These consumption capital investments are complementary to their stock of PC, and these investments play an important role in keeping these people coming back as customers of the fast food and processed food suppliers. Following Kessler (pp. 6, 145–162), the low PC people typically become conditioned hypereaters. These hypereaters have become powerless in the face of certain foods; they have become emotional or

compulsive eaters who are driven to respond excessively to the sensory stimuli of palatable foods, especially ones high in sugar, fat, and salt (pp. 27–28). When experiencing the stimulus of a palatable food reward, conditioned hypereaters are out of control because they have an inability to feel satisfied; they continue to eat in a way that overrides the wisdom of the body (pp. 9, 145). Such vulnerable people are typically individuals with significant imbalances who often experience emotional distress with strong feelings of anxiety, anger, or depression. A strong conditioned hypereating pattern may be formed when eating particular foods helps the person restore at least temporarily a sense of balance and control otherwise missing. Thus, eating this food is a kind of self-medication; it has a "hedonic calming effect" (Kessler 2009, p. 150). Further, as Hyman (2006, pp. 61–62, 111, 118) emphasizes, these vulnerable, low PC people typically experience chronic stress, eat rapidly, lack exercise, and are sleep deprived, patterns frequently leading to obesity. On the other hand, high PC people who have invested in complementary consumption capital have acquired an appreciation of the virtues and healthfulness of whole foods as well as an appreciation of the seductive, unhealthy aspects of fast, processed foods. They, therefore, have the ability to choose healthy food wisely and to resist the attractions and incentives of unhealthy food.

Kessler also understands that it is possible for vulnerable people with low PC endowments to make the kind of investments in PC that will enable them to make more healthy eating choices. For further discussion of this, see chapter 7.

Health Capital

The third internal factor is the individual's endowment of health capital. HLC is a stock consisting of the accumulated individual learning that contributes to his or her physical health and some aspects of mental health. These learned behaviors relate to our eating patterns, exercise activity, use of nutritional supplements, use of medicines, use of potentially toxic substances (alcohol, illicit drugs, etc.), recreational activity, and other lifestyle patterns. Certain kinds of HLC would be particularly important from the standpoint of avoiding obesity. Following Hyman, it would be important to learn (1) to eat slowly, (2) get sufficient sleep, (3) understand the nutritional value of different foods, and (4) get sufficient exercise. In general, a person who has adopted a healthful, wholesome lifestyle and established many good habits would be high in HLC and unlikely to become obese. Note that the category, HLC, overlaps with some aspects of consumption capital and PC.

Social Capital

The fourth internal factor is the individual's endowment of social capital. SC refers to the capacity that is embodied in an individual's social relationships or the bonds and connections between an individual and others. SC is embodied in families, institutions, civic communities, and the larger society. The strength and quality of an individual's SC endowment arguably has a relationship with the person's likelihood of becoming obese. "In the presence of strong positive social relationships, people's imbalances are likely to be more muted and less problematic. Conversely, when social capital is weak and negative, people's imbalances are likely to be more pronounced and problematic" (Tomer 2008, p. 165). This implies that people with weak and/or negative SC are more likely to be vulnerable to the influences from the infrastructure of obesity and the economic incentives from the markets for food and exercise.

Individual Decision Making

As indicated earlier and summarized in figure 6.4, the socioeconomic model of obesity developed here includes four external factors that influence individual decision making: technological change and market prices, the infrastructure of obesity, chronic stress levels, and advice from health practitioners. However, the individual decisions regarding diet, exercise, and lifestyle depend very much on how different individuals respond to the external factors. The responses are determined to a great extent by individual endowments of PC, social capital, and HLC as well as their genes. Given strong, positive endowments of the three types of intangible capital, an individual is likely to choose a good diet and good behavioral patterns even if the negative influences from the infrastructure of obesity are strong and the prices of unhealthy food are falling. However, when the intangible capital of an individual is weak, the external factors, for example, a strong, negative infrastructure of obesity, are likely to produce an unfavorable outcome involving poor diet and poor behavioral patterns, the kind likely to cause obesity. Note that an individual may not have the possibility of becoming obese unless they have at least some genetic predisposition to obesity.

In this model, unlike in the rational obesity model, the individual is not maximizing utility or targeting a particular weight or net calorie consumption. The individual may have some outcome aspirations, but these aspirations are likely to be for a complex combination of health, good looks, and weight. Further, the decision-making outcome will be determined to a great extent by the relative strength of the internal and

external factors. If the negative external factors are getting stronger over time, as they apparently were during the last three decades, without any significant changes in the internal factors, this would indicate a rising level of obesity as has been observed.

Is It an Addiction?

A number of authors have explored whether the poor eating patterns leading to obesity involve addictions. Brownell (2004, pp. 33–34) does not take a definitive stand on this issue, but he cites evidence of addictive-like withdrawal symptoms in rats whose sugar intake was stopped and testimony of many people who have emphatically claimed to be addicted to sugar and sweets. According to the Rudd Center for Food Policy and Obesity at Yale University, "neurobiological research has identified similarities in the way the brain responds to drugs and highly palatable foods" (www.yaleruddcenter.org; see also Avena et al. 2007 and Cawley 2007, pp. 33–34). Recall that Kessler's (2009) view is that many succumb to a pattern involving conditioned hypereating of palatable foods. To be sure, these are strong, compelling habits, but they are not quite addictions.

What is an addiction? An addiction is (1) a habit, (2) harmful, (3) a pattern where the user is dependent on the commodity, (4) a pattern involving compulsive consumption and craving, and (5) a pattern in which deprivation of the good causes significant withdrawal symptoms (Tomer 2008, pp. 155–156). The typical pattern of food consumption leading to obesity is certainly habitual and harmful. However, the negative eating patterns typically involve a lower degree of dependence, craving, and withdrawal symptoms than what are recognized to be full-fledged addictions. In other words, while conditioned hypereating is a strong, harmful pattern, it usually does not involve the total dependence and severe craving that addiction does.

The Distribution of Obesity Among Different Socioeconomic Groups

The model developed here clearly indicates that socioeconomic groups with low PC, low HLC, and low SC will be expected to have higher obesity rates than socioeconomic groups with higher endowments of intangible capital. This implies that these groups will be likely to eat more unhealthy food as the relative price drops. While getting good measures of these three types of intangible capital for different groups would no doubt be very difficult, there are data on the rates of obesity for certain racial, ethnic, and income groups, data that lends support to

the model's distributional implications. According to Drewnowski and Darmon (2005, p. 270S),

> The rates of obesity and type 2 diabetes in the United States and other industrialized countries follow a socioeconomic gradient, with highest rates observed among minorities and the poor. At the individual level, [high] obesity rates are linked to low incomes, low education, minority status, and a higher incidence of poverty . . . [Further] low-income consumers are more likely to be frequent users of fast-food as opposed to full-service restaurants and are more likely to live in areas with less physical access to healthier foods. It is well established that higher diet quality, as measured by the Healthy Eating Index, is associated with higher incomes, more education, and with lower rates of obesity and overweight. (See also Acs et al. 2007a, pp. 224–225 and Henderson 2007, pp. 59–66)

Thus, the implications of the present model are at least consistent with the main facts regarding the distribution of obesity among socioeconomic groups.

The Obesity Pattern as Developmental Failure

The socioeconomic model of obesity developed here is valuable because it draws attention to the main elements of the negative socioeconomic patterns associated with obesity. The first major element is the infrastructure of obesity that embodies all the dysfunctional patterns of food businesses. These business patterns include both technological change in food industries and the practices associated with marketing relatively unhealthy food. A second major element of the obesity pattern is the persistence of incorrect health science understandings embodied in the conventional scientific wisdom. A third major element is the vulnerability of substantial segments of the population to the marketing of low nutrition and harmful foods. A fourth major pattern relates to changing patterns of work and family life that involve less time spent at home, particularly less time for food preparation. Many lesser elements reinforce and contribute to the overall obesity pattern. This pattern has developed over many years in many countries. In fact, it is a pattern strongly associated with the modern process of economic development. Thus, this group of reinforcing obesity patterns, even though dysfunctional, is extremely persistent and tends to preclude the emergence of more positive patterns. At the same time, these patterns are relatively invisible as indicated by the fact that a great many people, educated or not, tend to think of obesity as simply a problem of particular overeating individuals.

Conclusion

This chapter develops a model providing a novel synthesis of the important health science and socioeconomic factors related to obesity. This model along with the accompanying explanations indicates that the obesity problem is very much embedded in the socioeconomic patterns of countries such as the United States and is unfortunately likely to continue growing in the absence of concerted efforts to arrest the key factors contributing to its growth. As this chapter indicates, while obesity is explainable and understandable, it is not correct to think that obesity is a consequence of economically rational choice. With regard to explaining the rapid rise of obesity rates, the socioeconomic model of obesity developed here is a clear alternative to the rational economic model of obesity. Arguably, this alternative model is based on better health science, better assumptions about individual decision making, and better understanding of the external and internal factors influencing individual choices regarding diet and other behavior patterns relevant to obesity. This model makes sense insofar as it explains the main "stylized facts" about obesity in developed and developing countries. Hopefully, skilled empirical researchers will be able to gather sufficient data in order to rigorously test the model's propositions. Chapter 8 explains about the kind of societal and policy efforts that would be necessary to resolve the social problem of obesity.

CHAPTER 7

INTANGIBLE CAPITAL, CHRONIC AILMENTS, AND OTHER PERSISTENT SOCIOECONOMIC PROBLEMS

Introduction

When mentioning the sources of an economy's productivity, economists typically list tangible capital and human capital. But economists do not usually mention the more intangible forms of human capital. Generally, economists have been very slow to grasp the significance of the intangibles. It should be noted that in this chapter the term intangible capital is an umbrella term used to denote all the human capacities embodied either in individuals or in human relationships. These individual capacities may be cognitive or noncognitive, and the relationships may be in organizations or outside organizations. This chapter focuses on the more intangible of these capacities, the ones that have tended to be neglected by economists.

This neglect of intangible capital has (1) hampered economists' ability to understand the key causes of important socioeconomic problems, (2) limited our ability to understand why industrial productivity is typically below its potential, and (3) impeded our ability to understand why we typically are not as happy as we could be and why our quality of life is not what it could be. The main body of this chapter explains how low or poor intangible capital is related to two socioeconomic problems: (1) chronic health problems and (2) poverty and inequality. Also considered are the problems of low industrial productivity and lack of happiness. At the heart of these problems is insufficient investment in intangible capital of the right kind. Accordingly, to this extent, the solution to these socioeconomic problems lies in increased investment in appropriate intangible capital. If a country could make substantial progress in

solving these socioeconomic concerns, this would greatly help to raise its standard of living. Unfortunately, economists' single-minded preoccupation with growth in material outputs seems to have led us to neglect the intangible factors that contribute importantly to our well-being.

An important perspective developed more fully later in the chapter is that socioeconomic problems typically arise when new negative external factors come on the scene, and people respond to them in unskillful ways. People's unskillful responses can be seen as a consequence of not having adequate investments in the intangible capital that would enable them to successfully deal with the new socioeconomic environment. Because it may take a long period of time to recognize and understand these negative external factors and to make the needed societal investments in intangible capital, these socioeconomic problems may persist for very long periods of time.

This chapter draws heavily on past research. The first section below on defining intangible capital draws on Chapter 2 of Tomer (2008b). The second section related to a socioeconomic model of chronic health problems is closely related to Chapter 6 of Tomer (this book). The third section on poverty and inequality draws heavily on the research of Heckman and Carneiro (2003).

Defining Intangible Capital

Carefully defining intangible capital is particularly important because of the confusion associated with many different definitions and usages of the term capital in the different social science literatures. It is desirable to utilize an intangible capital definition that is consistent with economists' understanding of the term capital as well as with economists' recognition of the different forms, physical, human, social, and so on, that capital takes. What is capital in the most general sense? As defined in chapter 1, capital is that which is produced by humans, is long lasting, represents productive capacity (in the broadest sense), involves a cost, and is invested in by someone making a self-conscious calculation relating to the future.

Intangible capital is human capital in the sense that it refers to all the human capacities or skills (mental, social, or physical) embodied in humans. However, intangible capital is much more than the standard human capital that most economists utilize. As indicated earlier, Gary Becker (1964) defined human capital as the resources in people, typically skills and knowledge, that raise their productive capacity. The Becker definition is essentially what has been called standard human capital, the mainstream economic version of human capital. This definition involves

a fairly limited view of human capital. It is limited in the sense that it refers largely to skills and knowledge acquired using cognitive mental capacities and involving explicit technological knowledge. This standard human capital is relatively tangible because the process of acquiring it is generally very observable as it typically takes place in a classroom or on the factory floor.[1]

Intangible capital as defined here is an umbrella concept that includes all the elements of human capital in the broadest sense indicated above plus one type of intellectual capital. Intangible capital refers to all the capacities or skills that are embodied in humans or their relationships. Intangible capital includes standard human capital, social capital, the more intangible types of human capital such as personal capital (PC), a part of intellectual capital, and a number of overlapping categories such as organizational capital, moral capital, ethnic capital, cultural capital, customer capital, and so on.

Social capital, another important human capacity, is an important component of intangible capital. It refers to the enduring features of the social landscape that provide productive capacity by enabling important recurring social activities. Social capital in its pure form is embodied in social relationships, but it may be at least partly embodied in individuals. It can exist within formal organizations, between or among organizations, or entirely outside organization boundaries. Every type of social capital has a specific form, an intermediate purpose, and an ultimate purpose.[2] The specific forms of social capital include obligations and expectations, information channels, social norms and effective sanctions, authority relations, family and friendship bonds, and intentional organization. Social capital's intermediate purposes include facilitating coordinated actions, gaining access to resources or opportunities, reducing transaction costs, making possible efficient organization, and overcoming perverse short-run temptations. The ultimate purposes of social capital include not only relatively tangible purposes like greater economic growth, making possible more effective public institutions, greater productivity, and greater wealth, but also the relatively intangible purposes such as improving the standard of living and happiness. Depending on the historical time period, the type of economic system, and the particular institutions and enterprises involved, social capital can take on many different forms that serve many different purposes. Some social capital is relatively tangible; this is so when its form involves structure and networks that can be observed. Other social capital is relatively intangible insofar as its form involves different relationship dimensions such as trust, norms, obligations, and identification.

Personal capital, like standard human capital, is a type of human capital that is embodied in individuals, but it is very different from standard

human capital in that it consists of human capacities that are largely noncognitive and nonphysical. PC relates to an individual's personal qualities and reflects the quality of an individual's psychological, physical, and spiritual functioning. One's stock of PC partly comes from one's genetic inheritance, partly from the life-shaping events that one has encountered, and partly from one's efforts to mature and grow in nonintellectual ways. In other words, it is in part produced intentionally (Tomer 2003, p. 456). A very important component of PC is emotional intelligence (see, e.g., Goleman 1994, 1998). Emotional intelligence relates to a variety of personal and social competences. Different kinds of jobs, organizations, and industries require different kinds of emotional intelligence. Individuals who have the kinds of emotional competence demanded by their work situation can be expected to be successful in their job performance. On the other hand, people with emotional competence deficiencies may benefit substantially by making PC investments designed to correct these deficiencies. *Noncognitive human capital* is quite similar to PC. Investments in noncognitive human capital are designed to raise noncognitive skills, enhancing personal qualities such as motivation, persistence, and self-esteem (e.g., Carneiro and Heckman 2003). Recent research by Heckman and others has demonstrated that noncognitive abilities matter as much or more than cognitive abilities for success both on the job and in school (Heckman et al. 2006, p. 27). The difference between PC and noncognitive human capital is that the latter is defined largely by what it is not, that is, it is not cognitive. Whereas PC, although largely noncognitive, is defined in terms of the specific human qualities that it contains.

Figure 7.1 summarizes the essence of what intangible capital is. It includes: (1) standard human capital, our knowledge and skills; (2) personal capital, the quality of our personal attributes; and (3) social capital, the quality of our relationships, in or outside organizations. It also includes personal intellectual capital, the personal, informal, informational aids to work performance that we possess. Essentially intangible capital is all of what is embodied in or possessed by humans that makes human effort more productive than it would be if the labor were totally unskilled. It is, thus, what would be lost if the existing labor force died and was replaced by totally unskilled and unaided laborers (using the word skill in the broadest possible sense). To the extent that intangible capital is an input into the production of private and public goods and services, the absence of intangible capital would mean much lower output, and correspondingly, lower provisioning, that is, a lower standard of living. But there's another way to understand the importance of intangible capital. That has to do with the role of intangible capital in important socioeconomic problems which is dealt with in the following sections. So intangible

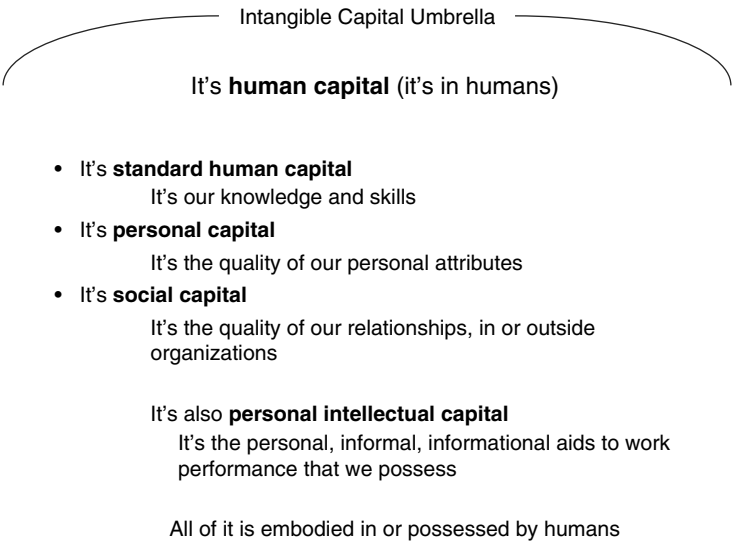

Figure 7.1 What is intangible capital?

capital is not only an input to tangible production, but it is also an important contributor to the nonmaterial aspect of the standard of living.

The following sections deal with two socioeconomic problems: (1) chronic health problems and (2) poverty and inequality. In each, the important cause of the problem is discerned utilizing a socioeconomic model. For each social problem, the cause or part of the cause is an important actor(s)'s deficiency in some type of intangible capital. It follows that an important part of the remedy is to correct the deficiency through appropriate investment in the needed type of intangible capital. The standard of living would be expected to rise once the socioeconomic problems are resolved or substantially reduced.

A Socioeconomic Model of the Chronic Diseases of Civilization

Chronic, degenerative diseases are distinctly different from acute, communicable diseases not only in their character, but also their incidence. Generally speaking, chronic diseases have been present only at low levels or not at all in non-modern, less civilized populations. It was only after these populations came into regular contact with modern, Western lifestyles and dietary practices and perhaps started on the road to greater economic prosperity, that their incidence of chronic diseases rose

dramatically (Taubes 2007, pp. 89–99). Thus, these diseases have been variously referred to as the diseases of civilization, the diseases of affluence, or the Western diseases. Among the many diseases of civilization are: obesity, diabetes, cardiovascular disease, hypertension and stroke, various forms of cancer, dental cavities, periodontal disease, appendicitis, peptic ulcers, diverticulitis, gallstones, hemorrhoids, varicose veins, and constipation (pp. 90–91).

The model of the causes of chronic health problems described here closely resembles the socioeconomic model of obesity explained in chapter 6. That model explained about the socioeconomic factors, external and internal to the individual, that contribute to obesity by influencing individuals to make poor diet and behavior choices. It should be noted that the obesity model is an alternative to the mainstream economic model of obesity and that the health science part of the model is an alternative to the conventional wisdom on health science. The socioeconomic model developed here is an alternative to a mainstream-type model because there is no assumption of neoclassical economic rationality; instead bounded rationality is assumed on the part of the relevant actors. Decision makers are boundedly rational in that their cognitive capacities are quite limited especially in regard to dealing with complex real-world situations.

As in chapter 6, the health science component of the model is based on the writings of Mark Hyman (2006) and Gary Taubes (2007). According to Hyman, many chronic health problems are caused by poor diet and poor behavioral patterns. A poor diet is one that is: (1) high in refined, processed carbohydrates, (2) high in bad fats, (3) low in fiber, (4) low in antioxidants, and (5) high in oxidants. The five poor behavioral patterns are: (1) overly rapid eating, (2) eating when stressed, (3) sleep deprivation, (4) lack of exercise, and (5) high exposure to toxins.

However, to understand the growth of chronic health ailments, it is necessary to consider much more than health science. Just as important are the many external and internal factors that influence an individual's choice of diet and life patterns. These external and internal factors influence individuals' choices of diet and behavioral patterns. Further, much evidence indicates that at least some of the important external factors have become increasingly negative, thereby leading individuals increasingly to make poor diet and life pattern choices. Figure 7.2 depicts the worst case in which the external and internal factors impinging on the individual make poor diet and behavioral pattern choices likely. The internal factors are the individual's endowment of (1) personal capital, (2) social capital, (3) health capital, and (4) genes that determine an individual's physical and psychological predispositions to chronic diseases.

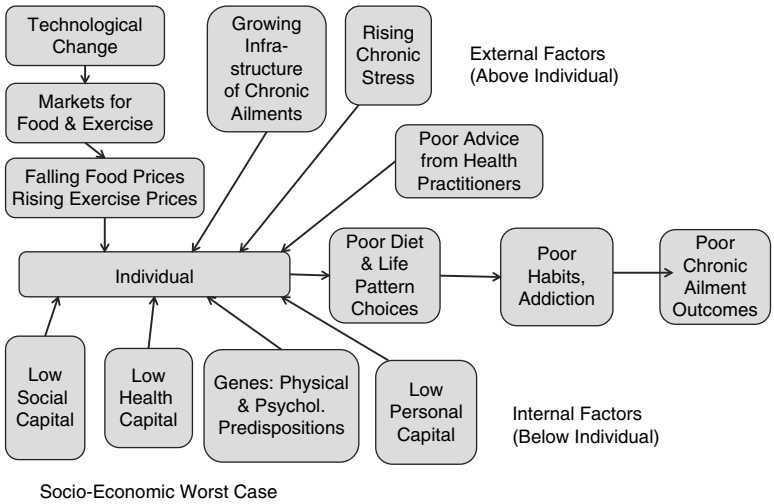

Figure 7.2 Factors causing increase in chronic health problems.

The external factors are: (1) technological change impacting on markets causing changes in the prices of food and exercise, (2) the infrastructure of chronic ailments, the socioeconomic structures that have a negative influence on the incidence of chronic disease, especially the behaviors of various suppliers of processed food, (3) socioeconomic factors contributing to chronic stress in individuals, and (4) the advice about eating and behavior from health professionals. The essence of the argument is that chronic health problems tend to occur when vulnerable individuals who have low PC, low social capital, low health capital, and genes predisposing them to particular chronic ailments encounter stressful situations, lower prices of unhealthy food and higher prices of exercise, poor advice from health practitioners, and the large and growing infrastructure of chronic ailments.

The External Factors Contributing to Chronic Health Problems

It is important to give a little background to the dietary changes related to growth in chronic diseases. It was during the second half of the nineteenth century in the United States that white flour and sugar became inexpensive enough, thus leading to a dramatic increase in their dietary consumption (Taubes 2007). This in turn, along with increased consumption of other refined easily digestible carbohydrates, led to correlated increases in chronic diseases such as diabetes and various types of

cancer. This pattern is part of a broader pattern known as the nutrition transition that typically begins as countries start along the path to economic development (Caballero and Popkin 2002). In the United States at least, the food suppliers role in the continuing nutrition transition has accelerated over the last 30 years or so. It is interesting to note that there are a few small places in the world where the outcome of the nutrition transition from traditional diets has been more favorable. These are places that have retained the best of their traditional diets, keeping the whole foods and not transitioning to refined, processed foods (for more on this see chapter 8 and Beare 2006).

The first external factor is the infrastructure of chronic ailments. This is essentially the same as the infrastructure of obesity (chapter 6), because the same kinds of external factors that lead to obesity are implicated in the incidence of most other types of chronic ailments. This infrastructure refers particularly to the features of the socioeconomy that influence eating negatively, and thus, tend to contribute to food consumers' chronic poor health. One important part of this infrastructure is the changing behaviors of important actors in the food industry. Another part is changes in important socioeconomic patterns that contribute to consumer's poor decision making with regard to food.

The influences deriving from food suppliers include those from the agricultural, food processing, food distribution, and food preparation industries, especially the food processors and food preparers. There is a great deal of evidence that they are increasingly selling unhealthy foods. As indicated in chapter 6, unhealthy foods are foods high in (1) bad fats and (2) carbohydrates with a low phytonutrient index and high glycemic load, especially refined grains, sugar and sugary items, processed food, and junk food. Healthy foods in contrast are whole, unprocessed foods, full of fiber, antioxidants, vitamins, minerals, phytonutrients, and healthy fats.

Food suppliers today are not just supplying these unhealthy foods because they are being demanded by consumers. As explained in chapter 6, food suppliers are doing everything they can in terms of product design and marketing to hook consumers on their processed foods, thereby creating a toxic food environment.

As also explained in chapter 6, there are a number of important socioeconomic patterns that add to the potency of the food industry's efforts. People are spending more time away from home and eating less at home. Because people have less time at home, many are shifting to foods requiring less preparation time at home. Typically, these foods are not fresh, whole foods. Another factor (part of the infrastructure of chronic ailments) contributing to chronic health problems is the built environment,

the human-made environment, which often reflects our society's cultural values and priorities. As chapter 6 indicates, the "hardware" of homes, workplaces, roads, and other structures can discourage people from needed physical and social activity. And as a result, chronic disease will be much more likely to occur.

The second external factor is the impact of technological change on the markets for food and exercise. As explained in chapter 6, technological change has led to lower food (or calorie consumption) prices and higher exercise (or calorie expenditure) prices. Overall, the evidence supports the view that it is the relative decline in price of unhealthy foods, not food in general, that has contributed to chronic health ailments.

The Internal Factors Contributing to Chronic Health Problems

Personal Capital. As explained in chapter 6, personal capital is an important internal factor because an individual's accumulated PC will largely determine how he/she responds to the influences deriving from the infrastructure of chronic ailments as well as to the economic incentives from the markets for food and exercise. Recall that the prices of unhealthy foods, typically processed carbohydrates and some fats and oils, have decreased substantially relative to healthy, whole foods. Not only have the prices come down, but also the availability, aggressive marketing, and various aspects of the appeal of fast, processed foods have increased making them more difficult to resist. Therefore, it is not hard to understand why persons with small endowments of PC will to a great degree succumb to many of these external influences. Others with larger endowments of PC in the form of emotional competencies, ingrained habits of thought, feeling and behavior, will be in a much stronger position to resist these influences.

Further, as explained in chapter 6, vulnerable people low in PC typically experience chronic stress, eat rapidly, lack exercise, and are sleep deprived, patterns frequently leading to obesity and other chronic health ailments. On the other hand, people high in PC have acquired an appreciation of whole foods as well as an appreciation of the seductive, unhealthy aspects of fast, processed foods. Thus, PC is a key factor determining people's ability to choose healthy food wisely and to resist the attractions and incentives of unhealthy food.

Health Capital. The second internal factor is the individual's endowment of health capital. As explained in chapter 6, health capital is an individual's stock of knowledge relating to his or her physical health and some aspects of mental health. This knowledge and learned behavior relate to our eating patterns, exercise activity, use of nutritional supplements, use

of medicines, use of potentially toxic substances (alcohol, illicit drugs, and so on), recreational activity, and other lifestyle patterns. Certain kinds of health capital would be particularly important from the standpoint of avoiding chronic ailments. In general, a person who has acquired substantial health knowledge and adopted a healthful, wholesome lifestyle and established many good habits would be high in health capital and less likely to suffer from chronic poor health.

Social Capital. The third internal factor is the individual's endowment of social capital. Social capital as explained in chapter 6 refers to the capacity that is embodied in an individual's social relationships or the bonds and connections between an individual and others. People high in social capital, those with strong positive social relationships, are less likely to be vulnerable to the enticements of low-quality food and behavior patterns. Conversely, people low in social capital are more likely to succumb to the enticements from the infrastructure of chronic ailments and the economic incentives from the markets for food and exercise.

Individual Decision Making

As indicated earlier and summarized in figure 7.2, the socioeconomic model of chronic health problems includes four external factors that influence individual decision making: the infrastructure of chronic ailments, technological change and market prices, chronic stress levels, and advice from health practitioners. However, the individual decisions regarding diet, exercise, and lifestyle depend very much on how different individuals respond to the external factors. The responses are determined to a great extent by individual endowments of personal capital, social capital, and health capital as well as their genes. As explained in chapter 6, the decision-making outcome will be determined by the relative strength of the internal and external factors.

The Investments Needed to Overcome the Chronic Diseases of Civilization: Policy Implications

Admittedly, this section is not based on separate research for each of the chronic diseases. Presumably despite the commonality among these diseases, there are enough differences among them, which would be important to consider if one were making recommendations for remedies. However, making such specific recommendations for each disease is beyond the scope of this chapter. It is, though, important to emphasize that these chronic ailments are all strongly associated with excessive

consumption of refined carbohydrates and other behavioral patterns of modern civilization and economic development.

The socioeconomic model of chronic ailments clearly points to low or poor endowments of personal capital, health capital, and social capital as an important cause of the high rates of chronic health problems. It follows that the frequency of these ailments could be lowered if people who are relatively poor in certain types of intangible capital were to make significant efforts (i.e., investments) to raise certain of their intangible capacities.

As an example of this kind of intangible investment, consider Kessler's (2009) discussion of obesity. Although Kessler (pp. 181–225) does not explicitly use the language of intangible capital, his remarks on how to deal with the obesity problem recognize that people would need to make significant efforts to bring about lasting qualitative changes in their behaviors. In particular, Kessler has explained specifically and carefully what conditioned hypereaters need to do to overcome their compulsive, bad habits. "The cornerstone of treatment for conditioned hypereaters is developing the capacity to refuse the [food] cue's invitation to the brain in the first place. That refusal must come early, and it must be definitive" (p. 182).

According to Kessler (2009, pp. 184–189), the ability to change entrenched habits involves five major components: (a) developing awareness of the food choice situations and the associated risks (pp. 185–186), (b) learning and developing alternative responses to these situations (pp. 186–187), (c) "formulating thoughts that compete with and serve to quiet the old [dysfunctional] ones" (p. 187), (d) developing relationships with people who can provide crucial support, thereby helping the habit plagued individual recognize and avoid [tempting food] cues and acknowledging his or her success in doing this (pp. 188–189), and (e) developing new emotional responses to food such as "changing one's emotional appraisal of salient food" (p. 197). Further, it is necessary for the afflicted individuals to develop a set of rules which provide needed structure in order to keep them from becoming aroused by unhealthy food (p. 190). The latter "requires attention, practice, and advance planning, motivated by the expectation that…[the individual] will ultimately derive emotional satisfaction in new ways" (p. 195). Essentially, the intangible investment necessary to overcome habitual hypereating of unhealthy foods involves making a "perceptual shift and learning new behavior that eventually becomes as rewarding as the old" (p. 201).

The needed PC investments can be viewed as drastically altering the relationship between the brain's prefrontal lobes and its limbic system,

that is, between the brain's thinking/executive part and its emotional part. If vulnerable people are to resist the negative influences from the infrastructure of chronic ailments, they need to develop more emotional intelligence and character, becoming more self-regulating, more able to think clearly in stressful situations, and generally to achieve a better integration of emotion and thinking. Such investments in PC may help many overcome their poor personal qualities acquired as a result of adverse childhood experiences. Although this investment in PC must be carried out by an individual, sometimes with the aid of a therapist or counselor, there are likely to be many opportunities for communities, businesses, and governments to play significant roles in fostering or influencing the process.

In essence, Kessler's recommendation for dealing with obesity (or other chronic ailments) is for food consumers to make intangible capital investments in themselves and their relationships that will enable them to resist the influences of the infrastructure of chronic ailments and the incentives from the food market that are pushing them toward poor diet and behavioral patterns. No doubt some obese (or otherwise afflicted) people will find the knowledge and motivation to make the kind of investments that Kessler suggests and realize the benefits of a nonobese, healthy life. But, one suspects, many more will be too stuck in dysfunctional eating and lifestyle patterns to avail themselves of the wisdom of Kessler's recommendations. This raises a further issue. Perhaps many additional people could be helped to reduce or eliminate their chronic health problems (including obesity) through the aid of government or other programs designed to encourage, prod, or facilitate people with chronic ailments to make the needed intangible capital investments. See chapter 8 for discussions concerning government policies and other efforts needed to encourage people to make healthier food and lifestyle choices and to invest in needed intangible capital.

A full discussion of the policy implications of the socioeconomic model of chronic health problems is beyond the scope of this chapter. Besides working with the internal factors, another policy approach would be to improve the external factors. In particular, this approach would involve reducing or eliminating the negative effects of the infrastructure of chronic ailments as well as reducing the negative effects of food technological innovation and food price change. Discussion of these aspects can be found in chapter 8.

Nevertheless, some useful broad policy observations can be made based on the general understanding that excessive consumption of refined carbohydrates plays a key causal role in the diseases of affluence. It should, of course, be noted that behavioral problems such as lack of physical exercise

also play a very important role. As some have recognized, dealing with the burden of nutrition related noncommunicable diseases by only relying on medical treatment will entail enormous health care expenditures, not to mention the constraint on economic growth due to the reduced capacity of afflicted workers. This is why relying on prevention rather than treatment is a much better bet in the long-term. To achieve the desired prevention will require a comprehensive effort to reverse the negative patterns arising from the nutrition transition. Such an effort will entail, among other things, the kind of investment in intangible capital necessary to help people deal with their personal, social, and health situations, thereby helping them discover and adopt satisfying and healthful eating, physical exercise, and other behavior patterns. The necessary effort will also entail many changes in the food market and in food businesses so that the negative socioeconomic influences and incentives from external factors will be reversed. Although taxes on unhealthy goods or activities, nudges, and education will presumably be part of the overall policy effort, many more elements will be required to create a comprehensive program necessary to make a major reduction in the patterns causing these chronic health problems. For a more thorough discussion of these policy related issues, see chapter 8.

There is considerable evidence that in the United States at least the worst case scenario represented in figure 7.2 approximates the reality of the last 30 years or so. Processed food has become a larger part of people's diets, and it has become cheaper in the sense of a lower price per calorie. Unfortunately, due to the lowered nutrition of processed food, it is at the same time becoming more expensive in the sense of a higher price for a given amount of nutritional value. As economic output (conventionally measured) grows, many of us are able to buy a greater volume of goods, including food, but it is making us less healthy as more and more of us suffer from debilitating chronic ailments. We seem to be on a nonsustainable growth path. What is happening in the food arena is, if anything, reducing our standard of living. Also, arguably, it is contributing to greater inequality due to the unequal socioeconomic incidence of nutrition-related noncommunicable diseases.

The Socioeconomic Problem of Inequality and Poverty

An Important Cause of Inequality and Poverty

This section deals with the related problems of inequality and poverty insofar as the causes are due to people's differential investments in intangible capital. Let's start with skill inequality. There is much evidence

that "differences in levels of cognitive and noncognitive skills by family income and family background emerge early and persist. If anything, schooling widens these early differences" (Heckman and Carneiro 2003, p. 92, henceforth H and C). These skills when acquired early make possible later learning, thereby raising the productivity of later human capital investment. Conversely, the rate of return on human capital investment on the part of people who have not acquired many of these early skills is low. Thus, only a relatively few people will attain the highest ability level by virtue of acquiring many skills early and building on that. As a consequence, H and C (p. 86) observe that the labor supply of those with the highest skills is not keeping pace with the rapidly growing demand for their services (p. 86). On the other hand, the supply of low-skill workers is more than meeting the demand. Not surprisingly, this increases inequality as it tends to raise the returns to the highest skill group, and the returns to the low-skill group tend to fall at least relatively.

One reason hypothesized for low earnings is the existence of credit constraints for children of low-income parents. Certainly, if this group is unable to obtain educational loans, it would lower their college attendance and consequently their skills. H and C (2003, pp. 96–99) indicates, however, that there is not much evidence supporting the view that credit constraints are an important cause of low income. According to H and C (p. 102), it is long-run family influence factors (parental education, family structure, place of residence, and so on), not credit constraints, that are the key to producing (or not producing) the early cognitive and noncognitive skills that raise the return to future schooling. H and C (p. 92) also finds that noncognitive abilities are particularly important for attaining success in schooling and in the labor market, even if these noncognitive skills are difficult to measure. Evidence for this comes from early childhood interventions that primarily improve noncognitive skills and have led to substantial positive effects on school and work outcomes. As a result, H and C (p. 93) believe that "current analyses of skill formation focus too much on cognitive ability and too little on noncognitive ability."

The Investments Needed to Reduce Poverty

The main point of the preceding section is that long-run family influence factors are crucial for the development of important skills in early childhood, especially noncognitive skills, which are the basis for later learning. It follows that in order to raise the low incomes of the poor, it is necessary to make efforts to either improve the long-run family factors or to improve the skills of disadvantaged youth at an early age. As H and

C (2003, p. 135) put it "The relevant policy issue is to determine what interventions in bad families are successful." H and C makes the case that raising the noncognitive skills of poor youth is more feasible (less costly) than raising IQ. They also point out that "remediation efforts for noncognitive skills are effective at later ages" (p. 137). In other words, H and C (pp. 137–139) recommends early investments in PC to improve these youths' personal qualities such as self-discipline, persistence, dependability, perseverance, consistency, self-esteem, optimism, and future orientation. Early childhood programs have been effective to the extent that they have raised noncognitive skills and motivation (p. 146). Mentoring and motivation programs for disadvantaged teenagers have also been found to be effective. Whereas IQ is fairly set by the age of 8, personal qualities such as self-discipline and motivation are much more malleable at later ages (p. 146). Thus, H and C recommends that "social policy should be more active in attempting to alter noncognitive traits, especially in children from disadvantaged environments who receive poor discipline and little encouragement at home" (p. 147). It is these "noncognitive skills [that] substantially determine socioeconomic success later in life" (p. 148).

Because parental inputs have much to do with the development of the important noncognitive skills, it can be argued that society should intervene in the life of families whose children's noncognitive skills are very low. But this is a position that most would find controversial at best. Yet as H and C state "paternalistic interventions in the early life of children in certain dysfunctional families may be appropriate" especially given evidence of the remarkable success of these preschool PC investments for children from severely disadvantaged backgrounds (2003, p. 164). The successes have not only been in the school and workplace, but also have included reduction in criminal activity and integration into the societal mainstream (p. 171).

There is evidence that "an increasing fraction of all U.S. children are growing up in adverse environments" (H and C 2003, p. 207). This is an important reason why the growth of the quality of the US workforce has slowed dramatically and the quality of US high school graduates has been declining (pp. 77, 81). For these and other reasons outlined above, there is great need for devising family policies that emphasize investments in PC, especially investments in noncognitive skills in early childhood.

Timothy Bartik's (2011) research has demonstrated that governmental investments in high-quality early childhood programs make sense as an economic development strategy. Bartik has estimated the economic development effects of three different early childhood programs: (1) universal prekindergarten education, (2) the Abecedarian program involving

free childcare and early education for disadvantaged families, and (3) the Nurse-Family Partnership program involving 30 nurse home visits (from prenatal to children two-years of age) for first time mothers from disadvantaged backgrounds. These programs provide substantial benefits to parents, notably increased education and/or labor supply, and to the child participant, notably future increases in education and employment as well as greater occupational attainment. Not surprisingly, the benefits to children only come in the long-term after they reach the age of 20 or so.

Despite this, Bartik's careful, conservative estimates indicate that the present value of the economic development benefits of these programs substantially exceeds the present value of the costs. Further, the resulting improvement in state and local employment and earnings from these childhood programs compares favorably with those of more traditional economic development programs which involve business incentives. The business incentives approach pays off quicker than early childhood programs and tends to be better at raising earnings (but is less effective at raising earnings of the lowest income groups); whereas the childhood programs tend to be better for creating employment. For both types of programs, the present value of the economic development benefits is estimated to be two to three times their costs. Thus, much evidence indicates that these kinds of expenditure on early childhood programs are worthwhile investments in intangible capital. These expenditures are particularly important for raising the noncognitive qualities of children, thereby preparing them for higher education and ultimately for work life. As a result, there are some signs, even if faint, that more state and local governments are starting to pay attention and are considering investments in early childhood programs as part of their economic development efforts.

Another approach to raising childhood intangible capital endowments, and thereby lowering poverty, has been recommended by Steven Pressman and Robert Scott (2014). As indicated in chapter 5, they argue that the United States has been remiss in not adopting a paid parental leave policy, which typically involves paying parents for some minimum period of time before and after the birth of their child. A key to their case for paid parental leave is the understanding that in the absence of paid parental leave, many young families fall into poverty. As a consequence, the children of these poor families suffer a variety of physical health problems "due to poor nutrition, lack of a decent living environment, lack of immunizations, and not following proper infant care" (pp. 168–169). Children in poverty also suffer from poor social and emotional development. Thus, they experience "greater moodiness, more tantrums, greater anxiety, and increased aggression" (p. 169). It follows, as Pressman and Scott (pp. 178–179) point out, that paid parental leave can be viewed as

an investment. It is an investment in PC because with parental leave, and in the absence of poverty, parents should be able without undue stress to care for their children in a manner that develops their emotional intelligence and other noncognitive capacities, not to mention other types of human capital. Thus, while paid parental leave is not itself an investment in intangible capital, when it is given to parents who otherwise would be low income, it allows those families to engage in the kind of child care that builds a variety of types of intangible capital. And this intangible capital enables these children to do better in all phase of their life, not just work and education.

What is important to emphasize is that the occurrence of economic growth in the usual material sense is no guarantee by itself that poverty will be reduced. If families are unable to provide the needed care to their children during the crucial early years, their children are likely to grow up without the kinds of noncognitive abilities that make possible productive work lives and positive adult relationships. Children without these critical personal and health capital endowments are, thus, unlikely to escape poverty and low socioeconomic circumstances even in the presence of economic growth.

Two More Examples

As Harvey Leibenstein (1976) observed, a firm's actual output is typically much less than its potential output. Leibenstein used the term X-inefficiency to refer to this below potential productivity situation which he believed to be the usual state of affairs. This inefficiency reflects such things as low worker effort and best business practices not being used. When worker efforts are low or misdirected, this in turn likely reflects the state of the firm's organization and management. In regard to these organizational considerations, the firm's capacity is a result of the amount and quality of its investment in organizational capital. Organizational capital refers to the relationships and patterns of behavior that businesses intentionally create to raise the productivity of groups of workers. Organizational capital is a kind of social capital within the organization. When a firm makes appropriate investments in organizational capital, it raises its productivity because it lowers its X-inefficiency. The kind of organizational investments that raise X-efficiency (and worker effort) include improving the organizational structure, improving the overall pattern of work supervision, creating clear and meaningful goals for jobs and the organization, developing a favorable implicit psychological contract between employer and employees, creating worker career paths with positive long-term incentives, and developing a system that matches

workers with tasks that are both accomplishable and challenging (Tomer 2006). Inevitably, many viable investments in organizational capital are not made, and thus some degree of X-inefficiency is a fact of life. Clearly, more investment and more appropriate investment in organizational capital is needed to overcome the typical organizational inefficiencies.

The intangible capital concept is also needed to understand why we are typically not as happy as we could be and what we can do to improve that. Both hedonic and eudaimonic factors contribute to happiness, that is, both relatively utilitarian factors and factors related to the realization of one's true self are sources of happiness (Tomer 2011b). Among the intangible capital contributors to the hedonic aspect of happiness are (1) consumption capital, acquired skills and appreciations enabling people to gain satisfaction from consumer goods and services, and (2) health capital, learned behaviors contributing to physical health and some aspects of mental health. With respect to the eudaimonic aspect of happiness, there are two intangible capital contributors. First, the personal quality of equanimity, that is, the acquired ability to buffer pain and negative experience so that one experiences relatively little suffering. Second, the qualities that enable a person to realize a high degree of his/her potential, and thus experience high life satisfaction and flourishing. Persons who have made substantial self-improvement efforts, and thus have invested wisely in a variety of these kinds of intangible capital, are more likely to realize a high degree of enduring happiness. Conversely, when the people of a region or nation are experiencing a lack of happiness, no doubt they could benefit from making more wise investments in intangible capital.

Conclusions

This chapter has examined in detail two different socioeconomic problems, chronic health problems and poverty and inequality. In addition, it has provided shorter analyses of below potential business productivity and lack of happiness. The analysis has focused on how investment in particular kinds of intangible capital can be a key to resolving these problems, thereby raising the standard of living. For instance, with respect to chronic health problems, the analysis indicates how investment in PC (especially personal competences related to self-regulation and self-control) and health capital (especially learned behaviors related to eating and exercise) raise the personal capacities that are important for lowering the likelihood of chronic disease. In the case of poverty and inequality due to skill disparity, greater investment in PC, notably the noncognitive capacities of very young children, raises the rates of return on later human capital investment and ultimately leads to more skilled and higher-paid

workers. In the absence of these investments, poverty and chronic poor health are likely to persist even as material economic growth continues. In light of this, it makes sense both for individuals and for society to make concerted efforts to invest in the types of intangible capital needed to lower the incidence of these problems. If successful, these investments will raise the productive capacity of workers, raise the performance of students, improve family relationships, among other things, thereby raising the standard of living. Developing effective policies to resolve these socioeconomic problems is, however, difficult to do particularly because the difficulties are caused by problematic socioeconomic patterns of consumption (and production) involving many goods, not just a single one. Counteracting deep-rooted socioeconomic problems such as a chronic ailment like diabetes will no doubt require comprehensive societal efforts that go far beyond the usual economic prescriptions which often simply call for a change in the economic incentives. Because of the high and worrisome growth rate of these problems, not only in developed, but also in developing nations, and because of their implications for the standard of living, economists have an obligation to lead the way in conducting research about the importance of human intangible capacities for the growth and maintenance of satisfactory standards of living. And targeted intangible investment should become a high priority, not just for combating socioeconomic problems like chronic health ailments and poverty, but also for dealing with tough societal issues like chronically low industrial productivity and happiness. Ultimately, to achieve the kind of economic development that raises the standard of living for all, society must make the key investments in people that enable everyone to have health, productivity, and well-being.

PART IV

REMEDYING SOCIOECONOMIC DYSFUNCTION

Part III dealt with three social problems that are examples of human developmental failure due to problematic behavioral patterns: adverse childhood experiences, obesity, and chronic diseases. Part IV is concerned with understanding the efforts that will be needed to remedy these problems. Because each of these problems stems in part from human capital (HC) deficiencies, the remedy for each involves appropriate investment in HC. In some situations, the needed investments are ones that help individuals overcome their failure to develop; in other cases, the investments are helping society overcome the persistent dysfunctional socioeconomic patterns that cause the developmental stuckness. Chapter 8, "Stemming the Tide of Obesity," is concerned with all the societal and policy efforts that would be necessary to resolve the obesity problem. These efforts, tantamount to a socioeconomic transformation, follow from the causes of obesity highlighted in the socioeconomic model of obesity developed in chapter 6. Although each of the chronic ailments have specific difficulties, the general model of chronic ailments is very much the same as the obesity model. Accordingly, many of the types of efforts needed to remedy chronic ailments are similar to the ones advocated for obesity. Chapter 9, "Toward Lasting, Significant Improvement in Our Socioeconomies," provides a more general context to understand the problems involving HC deficits and how they can be prevented and remedied. This chapter explores the common origins of the social problems. Typically, these problems originate as people and businesses adapt to new economic and technological developments, thereby causing new and dysfunctional socioeconomic patterns. Further, chapter 9 examines the core underlying human factors involved and what this implies for remedial efforts.

CHAPTER 8

STEMMING THE TIDE OF OBESITY

Introduction

This chapter argues for the kind of societal and policy efforts that would be necessary to resolve the social problem of obesity. The perspective of this chapter is, thus, extremely ambitious and idealistic. Because of the large scale of the problem, it is necessary to explain about (1) why a social movement is necessary and (2) the kinds of government policy efforts that would have a real chance of eliminating or drastically reducing obesity. As is widely known, in the last 30 years, the obesity problem in advanced industrial countries such as the United States and a fair number of developing countries has grown rapidly and reached epidemic proportions. Moreover, obesity is associated with quite a few severe medical afflictions, not just for older adults but also for young people. It follows that efforts to end obesity are extremely important for countries such as the United States that suffer from high rates of obesity. Accordingly, developing a viable approach to fixing the obesity problem is also extremely important.

The purpose of this chapter is *not* to provide details of a specific anti-obesity policy plan(s). Its purpose is first to explain about the essential causes of obesity and second to outline the kinds of efforts that need to happen to fix the obesity problem. The needed efforts are not just those of governments; they include efforts of communities, grassroots groups, individuals, and food businesses. The needed efforts are numerous and taken as a whole constitute a socioeconomic transformation. To begin, consider the following socioeconomic model that focuses on the key causal patterns contributing to obesity.

A Socioeconomic Model of Obesity

The model of obesity's causes described here is a brief version of the model explained in chapter 6. It should be noted that this model is an

alternative to the mainstream economic model of obesity, and the health science part of the model is an alternative to the conventional wisdom on health science. Essentially what this means is that the model (1) does not assume neoclassical economic rationality on the part of food consumers (or producers) and (2) does not assume that weight gain (or loss) is determined strictly by calories consumed minus calories expended.

The health science component of the model is based on the writings of Mark Hyman (e.g., 2006) and Gary Taubes (2007). According to Hyman, obesity is caused by a poor diet and poor behavioral patterns. A poor diet is one that is: (1) high in refined, processed carbohydrates, (2) high in bad fats, (3) low in fiber, (4) low in antioxidants, and (5) high in oxidants. The five poor behavioral patterns are: (1) overly rapid eating, (2) eating when stressed, (3) sleep deprivation, (4) lack of exercise, and (5) high exposure to toxins.

To understand the growth of obesity during the last 30 years or so, it is necessary to consider much more than health science. Just as important are the many external and internal factors that influence an individual's choice of diet and behavioral patterns. Further, much evidence indicates that at least some of the important external factors have become increasingly negative, thereby leading individuals increasingly to make poor diet and life pattern choices. Figure 8.1 depicts the worst case in which the external and internal factors impinging on the individual make poor diet and behavioral pattern choices likely and obesity probable. The

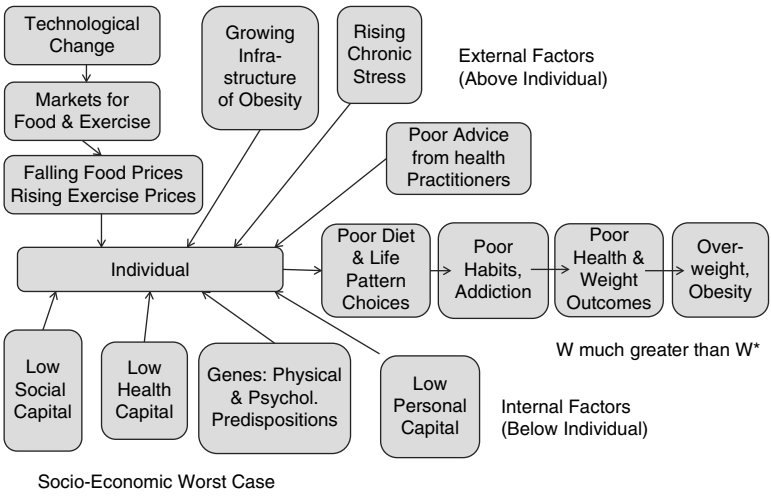

Figure 8.1 Factors causing increase in overweight and obese individuals.

external factors are: (1) technological change impacting on markets causing changes in the prices of food and exercise, (2) the infrastructure of obesity, especially the behaviors of various suppliers of processed food, (3) socioeconomic factors contributing to chronic stress in individuals, and (4) the advice about eating and behavior from health professionals. The internal factors are the individual's endowment of (1) personal capital (PC), (2) social capital (SC), (3) health capital (HLC), and (4) genes that determine an individual's physical and psychological predispositions to obesity. The essence of the argument is that obesity tends to occur when vulnerable individuals who have low PC, low SC, low HLC, and genes predisposing them to obesity encounter stressful situations, lower prices of unhealthy food and higher prices of exercise, poor advice from health practitioners, and the large and growing infrastructure of obesity.

The External Factors Contributing to Obesity

The first external factor is the infrastructure of obesity. It refers to the features of the socioeconomy that influence eating negatively, and thus, tend to contribute to food consumers' poor health and obesity. One important part of this infrastructure is the changing behaviors of important actors in the food industry. This includes food suppliers in the agricultural, food processing, food distribution, and food preparation industries, especially the food processors and food preparers that are increasingly selling unhealthy foods. A second part is changes in important socioeconomic patterns that contribute to consumers' poor decision making with regard to food. A third part is the built environment, the human-made environment, which often reflects our society's cultural values and priorities. See chapter 6 for detailed explanations regarding the elements of the infrastructure of obesity.

The second external factor is the impact of technological change on the markets for food and exercise. Technological change has led to lower food (or calorie consumption) prices and higher exercise (or calorie expenditure) prices. For further explanation of this factor, see chapter 6.

The Internal Factors Contributing to Obesity

Personal Capital. PC, like standard human capital, is a type of human capital (HC) that is embodied in individuals, but it is very different from standard HC in that it consists of human capacities that are largely noncognitive and nonphysical. PC relates to an individual's personal qualities and reflects the quality of an individual's psychological, physical, and spiritual functioning.

PC is an important internal factor because an individual's accumulated PC will determine much about how she responds to the influences deriving from the infrastructure of obesity as well as to the economic incentives from the markets for food and exercise. See chapter 6 for more on PC and its relevance to understanding the causes of obesity.

As Hyman (2006, pp. 61–62, 111, 118) emphasizes, vulnerable, low PC people typically experience chronic stress, eat rapidly, lack exercise, and are sleep deprived, patterns frequently leading to obesity. On the other hand, high PC people who have invested in complementary consumption capital have acquired an appreciation of the virtues and healthfulness of whole foods as well as an appreciation of the seductive, unhealthy aspects of fast, processed foods. They, therefore, have the ability to choose healthy food wisely and to resist the attractions and incentives of unhealthy food.

Health Capital. The second internal factor is the individual's endowment of HLC, which is a stock consisting of the accumulated individual learning that contributes to his or her physical health and some aspects of mental health. These learned behaviors relate to our eating patterns, exercise activity, use of nutritional supplements, use of medicines, use of potentially toxic substances (alcohol, illicit drugs, and so on), recreational activity, and other lifestyle patterns. Certain kinds of HLC would be particularly important from the standpoint of avoiding obesity. Following Hyman, it would be important to learn (1) to eat slowly, (2) get sufficient sleep, (3) understand the nutritional value of different foods, and (4) get sufficient exercise. In general, a person who has adopted a healthful, wholesome lifestyle and established many good habits would be high in HLC and unlikely to become obese. Note that the category, HLC, overlaps with some aspects of consumption capital and PC.

Individual Decision Making

As indicated earlier and summarized in figure 8.1, the socioeconomic model of obesity includes four external factors that influence individual decision making: the infrastructure of obesity, technological change and market prices, chronic stress levels, and advice from health practitioners. However, the individual decisions regarding diet, exercise, and lifestyle depend very much on how different individuals respond to the external factors. The responses are determined to a great extent by individual endowments of PC, SC, and health capital as well as their genes. Given strong, positive endowments of the three types of intangible capital (IC), an individual is likely to choose a good diet and good behavioral patterns even if the negative influences from the infrastructure of obesity are

strong and the prices of unhealthy food are falling. However, when the IC of an individual is weak, the external factors, for example, a strong, negative infrastructure of obesity, are likely to produce an unfavorable outcome involving poor diet and poor behavioral patterns, the kind likely to cause obesity. In general, the decision-making outcome will be determined by the relative strength of the internal and external factors.

Related Patterns and Issues Associated with Obesity

The socioeconomic model of obesity described earlier is in my opinion particularly useful for spotlighting the major patterns associated with obesity in modern, economically developed societies. To obtain greater perspective on the problem, it is necessary to take a much longer-term view. Barry Popkin's work on the "nutrition transition" is helpful in this regard. According to Caballero and Popkin (2002, pp. 2–4), societies at an early stage of development can be characterized as having: (1) high fertility and high mortality, (2) a high prevalence of infectious diseases, and (3) a high prevalence of undernutrition. As these societies have developed, moving toward modernity, (1) their mortality and fertility became lower, (2) infectious diseases receded, (3) famine was reduced, and (4) nutrition-related noncommunicable diseases (NR-NCD) became the predominate health problem. In nonmodern, economically backward populations, the chronic noncommunicable diseases have been present only at low levels or not at all. As mentioned in chapter 7, it was only after these populations came into contact with modern, Western lifestyles and dietary practices and started on the road to greater prosperity, that the prevalence of NR-NCDs began to rise dramatically (Taubes 2007, pp. 89–99). The NR-NCDs are sometimes called the diseases of civilization, diseases of affluence, or Western diseases. Among the many diseases of civilization are: obesity, diabetes, cardiovascular disease, hypertension and stroke, various forms of cancer, dental cavities, periodontal disease, appendicitis, peptic ulcers, diverticulitis, gallstones, hemorrhoids, varicose veins, and constipation (pp. 90–91). "When any diseases of civilization appeared, all of them would eventually appear" (p. 91). While the transition to "civilized lifestyles" has been a significant part of the changing overall pattern, it is very clear that certain dietary changes have been a major part of the process. For instance, according to Taubes (pp. 96–97), the rising use of white flour and sugar during the nineteenth century has been strongly correlated with the growing incidence of certain chronic diseases such as cancer. Now Taubes (chapters 6 and 8) and others recognize that all refined, easily digestible carbohydrates are culprits in the growth of the NR-NCDs, especially obesity.

Developed countries like the United States, which have undergone the nutrition transition, suffer from a poor socioeconomic environment that makes it difficult for individuals to be responsible in their eating and physical activity choices (Brownell 2010, p. 381). According to Nestle and Jacobson (2000, p. 18), the toxic environment is the "unintended consequence of our post-industrial society . . . [involving] deeply rooted cultural, social, and economic factors that actually encourage overeating and sedentary behavior and discourage alterations in these patterns." Further, Thomas Frieden believes that "just being an American can naturally lead you to be obese: obesity is an almost inevitable consequence of living with our cultural norms, our history of agricultural production and subsidies, our long-standing socioeconomic inequalities, and the impact of technology on our behavior and bodies" (Ambinder 2010, p. 77). In Egger and Swinburn's (1997, p. 480) view, the obesity problem involves people behaving normally within a pathological or obesogenic environment. But their view is different from what the previously mentioned socioeconomic model implies, namely that the toxic external environment induces pathological behavior (e.g., compulsive consumption) in a part of the population (the vulnerable part), leading them toward obesity (and/or chronically poor health) as a consequence of their choices.

There is some interesting anecdotal evidence supporting the view that the dietary changes involved with the nutrition transition are a key cause of obesity. The first comes from Sally Beare's book titled *50 Secrets of the World's Longest Living People* (2006) that describes five places in the world that do not suffer from famine, high mortality, or high levels of infectious diseases characteristic of societies at an early stage of development. However, unlike most places in the highly developed world, these places also do not suffer from high rates of noncommunicable diseases. The five places are: (1) Symi, an island in Greece, (2) Okinawa, an island in Japan, (3) Campodimele, a village in southern Italy, (4) Hunza, a valley in northwest Pakistan, and (5) Bama, a county in southern China (p. xvi). The people in these five places are all exceptionally healthy and long-lived, and in Beare's view this stems in large part from their diets. These five places have managed to retain much of the best of their traditional whole food diets and have avoided the negative dietary changes associated with the nutrition transition.

Two other pieces of anecdotal evidence come from two personal acquaintances of mine. The first is a then 75-year-old man who occasionally visited my College office to buy books. Through our conversations, I learned that he was in excellent health and had not visited a doctor in 60 years. He only did so in his seventy-fifth year at the insistence of

his wife. His daily exercise included the use of a trampoline. But as he explained, his most significant health practice was his diet that consisted largely of uncooked whole foods. I failed to get all the details on his diet, but he mentioned that he was in Northern India at an early age, and his eating practices stemmed from what he learned there. The second acquaintance is a former student who took my seminar course in behavioral economics. She grew up in Bolivia where her family lives. One day I presented to this economics class my ideas on the causes and growth of obesity. During the class, I asked her about obesity in Bolivia. Her observation was that obesity did not exist in Bolivia. Further, she contended that Bolivians basically eat fresh food that they buy every day in the local market and that Bolivians mostly avoid buying fast foods and processed foods that are more expensive than what they buy in the market.

What Should We Expect from Antiobesity Efforts?

The Goal

Basically, the goal for antiobesity efforts should be for everyone in the population to be in excellent health with everyone maintaining their ideal weight. To achieve this requires that everyone has an excellent diet and genuinely satisfying and health maintaining behavioral patterns including exercise. The problem, of course, is that too many of us have been influenced by negative socioeconomic influences and incentives, and thus have adopted problematic behavioral patterns conducive to obesity and other chronic health ailments. It follows that if we really want a successful antiobesity policy, in terms of making dramatic progress toward the goal, we need to transform the dysfunctional patterns at the heart of the problem. To do this will obviously require a large effort. This chapter makes a case for a comprehensive policy plan along with a social movement due to the existence of many negative patterns that are deeply embedded in the functioning of most economically developed countries. The remainder of this chapter is devoted to providing a sketch or outline of what such a comprehensive antiobesity effort should involve. Many of the specific measures have been at least mentioned by other authors. The novelty or contribution of the antiobesity approach proposed here is partly its comprehensive nature and partly its targeting, that is, its focus is on countering the many dysfunctional patterns contributing to the problem. This means that the emphasis is, first, on changing the elements of the infrastructure of obesity that give rise to the toxic food environment. Second, it means taking actions to help individuals overcome their negative consumption patterns as well as other negative behavioral patterns.

Also, the desired antiobesity policy ought, like other important public health efforts, to emphasize prevention and health promotion.

Prevention

With respect to obesity, societies have a choice: either they can rely on medical care or they can try prevention. For the most part, the United States has chosen medical treatments along with hope for cures from medical science breakthroughs (Ambinder 2010, p. 79). The drawbacks of this choice have become all too clear. For one, using medical care for chronic diseases such as obesity requires an enormous amount of resources, imposing an intolerable economic burden on the country (Caballero and Popkin 2002, pp. 241, 248; Milio 1976, p. 435). Second, as Milio (p. 435) explains, medical care has a very limited ability to improve the health of populations. On the other hand, prevention makes a lot of sense. "Chronic diseases are preventable . . . [as] has already been demonstrated by successful programs" (Bellagio Declaration in Caballero and Popkin 2002, p. 248). In the case of obesity, to prevent excessive weight gain "requires changes in individual behavior patterns as well as eliminating environmental barriers . . . [that keep people from] healthy food choices and active lifestyles" (Nestle and Jacobson 2000, p. 12). In terms of the socioeconomic model, this means, among other things, eliminating the negative influence of the infrastructure of obesity, eliminating the negative incentive effect of food market prices, and fostering needed investment in individuals' PC, HLC, and SC. Thus, there is a great deal of agreement among public health professionals that "prevention is the only feasible approach to nutrition-related chronic disease" for all countries, not just developing nations (Caballero and Popkin, p. 248).

Health Promotion

Health promoting activity is needed along with obesity prevention as an important part of antiobesity policy efforts. This involves, among other things, the promotion of healthy diets and the promotion of the virtues of regular physical activity. Ideally, these promotional actions should bring about favorable changes in "consumer knowledge and attitudes through systematic public education and social marketing efforts" (Caballero and Popkin 2002, p. 244; see also Lang and Rayner 2005, pp. 316–317). For success, it is important that the options promoted be readily available to individuals (Caballero and Popkin, p. 249; Milio 1976, p. 437). For both health promotion and health damage prevention, "the focus for changing behavior should be on . . . how to make

health-generating choices more easy, and how to make health-damaging choices more difficult" (Milio, p. 435).

The Scope of Antiobesity Efforts

A Comprehensive Government Antiobesity Effort Is Needed

Because the patterns of obesity are very much embedded in the socioeconomic relations of many nations, efforts to fix the obesity problem will necessitate making important changes to countries' socioeconomic systems. In recognition of the needed scale of such antiobesity undertakings, a fair number of authors have called for governments to embark on comprehensive antiobesity programs. Among them are Brownell et al. (2010), Finkelstein et al. (2004), Freedman (2011), Klein and Dietz (2010), Lang and Rayner (2005), Nutrition and Physical Activity Work Group (2002), Salazar (2011), Sassi (2010), and Ubel (2009). For example, Finkelstein et al. propose seven interventions targeted at children, adolescents, and adults: (1) eliminate soft drink vending machines in schools, (2) implement nutrition guidelines for foods sold anywhere in schools, (3) increase availability of fruits and vegetables in schools, (4) regulate food advertising and marketing efforts targeting children. (5) mandate nutrition labeling in restaurants and food-away-from-home sources, (6) implement targeted taxes and subsidies, and (7) redesign the Food Stamp Program. A good many of the proposed measures in the Finkelstein plan as well as the plans of other authors require a variety of government actions.

A Social Movement Is Also Needed

Klein and Dietz's (2010) recommendations go further than the aforementioned proposals for comprehensive government policy programs. In their view, "the breadth of policy and environmental changes necessary to address obesity require changes on the scale of a social movement" (p. 398). They believe that a social movement, characterized by the mobilization of many grassroots groups who are strongly motivated by a perception of a common threat, would be necessary for success. For example, the tobacco control social movement in the United States owes much of its success to the population's perception of a clear health threat (i.e., lung cancer). If Klein and Dietz are correct, and I believe they are, it will take much more than a handful of government efforts, however well designed and implemented, to fix the obesity problem. In particular, it will take many groups acting energetically on their clear understanding of the threat that obesity represents to the physical and mental health of

young and old people. It will take a combination of business, community, and government actions to put a stop to the obesity epidemic. As the European Commissioner for Health and Consumer Affairs stated "it will take nothing short of a behavioral revolution to stop this epidemic in its tracks" (Lang and Rayner 2005, p. 307).

If combatting obesity requires a social movement, let's consider what is involved. First, a social movement consists of people who have come together and are strongly motivated and organized to deal with the risks associated with a severe social problem. People involved in a social movement typically are organized in a variety of social movement organizations, some at the grassroots level, others involving various degrees of professionalism. A social movement's purpose is to create a powerful influence countering the cause(s) of the social problem, thereby mobilizing resources (community, government, and business) to effectively resolve or mitigate the problem. In the case of obesity, a social movement is needed because of the large scope of the problem and because the obesity-related behavior patterns and values are deeply embedded in the socioeconomy. Thus, with obesity, it is not possible to rely on any single government action, nor can we solely rely even on a comprehensive government policy program. To deal effectively with these problems will require a social movement involving social, community, and political actions at many different levels. This is because what is necessary is to create a socioeconomic environment conducive to healthy eating, exercise, and lifestyle generally.

In light of the need for an antiobesity social movement, it is useful to examine the lessons learned from earlier social movements, particularly ones related to public health. Nathanson (1999) has analyzed the tobacco control and gun control social movements in the United States to understand their nature and what has contributed to their relative success. The factors on the following list are the kinds that Nathanson has identified as being associated with social movement success:

1) The social problem involves a high, clearly perceived risk;
2) Good scientific evidence related to the causes of the problem exists;
3) Government support and favorable action are likely;
4) Clear overall goals and specific targets for the social movement can be set;
5) The goals are persuasive and motivating;
6) Existence of groups and/or individuals with authority to define and describe the danger;

7) The people adversely affected by the problem are oriented to forming organizations;
8) Existence of researchers and research organizations that are supportive;
9) Existence of businesses that are oriented to behaving in a socially responsible manner;
10) Existence of many people oriented to healthy lifestyles and learning about how to make the needed lifestyle changes;
11) Victims of the social problem, such as children, for whom there is much sympathy;
12) Some highly motivated, passionate organizer/leaders;
13) Victims who, due to the social problem, have had important rights violated;
14) Lack of a well-organized, motivated opposition to goals of the social movement;
15) Lack of strong cultural, institutional barriers to change.

The relative strength of these factors (and others) should indicate a social movements' prospects for success. It is beyond the scope of this chapter to attempt a careful assessment of the likely success of an antiobesity social movement. Suffice it to say that there are certain grounds to be optimistic about the prospects of an antiobesity movement. But antiobesity success may be more difficult to achieve than was the case for the tobacco control movement.

A number of authors who write about problems related to the food industry have commented on both the need for an antiobesity social movement and the recent beginnings of such a movement. First, writing in 2004, Brownell and Horgan (2004, p. 284) proclaimed "America needs a social movement related to diet and activity. Such a movement is beginning." They believe, however, that major antiobesity social action and policy change will not happen until the public demands it (p. 286). Second, six years later, Pollan (2010, p. 2) writes:

> One of the most interesting social movements to emerge in the last few years is the "food movement," or perhaps I should say "movements," since it is unified as yet by little more than the recognition that industrial food production is in need of reform because its social/environmental/public health/animal welfare/gastronomic costs are too high.

Pollan has identified no fewer than 16 food movements, one of which is "efforts to combat obesity and type 2 diabetes." Among the others

are: (1) school lunch reform, (2) the rise of organic and locally produced food, and (3) the campaign against genetically modified crops. According to Pollan (p. 2), there are indications that these disparate movements may be coming together. One concern common to them is the growth of chronic diseases (along with their cost), diseases that are preventable and linked to "the catastrophe of the American diet." Also of common concern is how poor diet and disease are linked to the organization of our agriculture and food industries (p. 3). Finally, Flora (2009, p. 1) refers to the Good Food movement, "which is attempting to change the socio-technical regime and transition to agrifood systems that are green, healthy, fair, affordable and local." Despite the emergence of many related food movements, the antiobesity social movement is as yet nascent. But given the great public interest in and concern with health and food, there seems to be a very high potential for it to come of age soon and have a big impact.

Governmental Antiobesity Policy

As indicated earlier, in addition to a strong social movement, the success of the overall antiobesity effort requires a well-formulated governmental antiobesity policy. Ideally, government policies will complement and provide encouragement to the various social movement organizations. The purpose of this section is not to list or explain about specific examples of desired policies; rather, the purpose here is to explain about the general approach and the principles that might guide these policies. A number of related issues are also dealt with.

Behavioral Economics and Policy Design

When it comes to governmental policy much can be learned from the experience of Singapore. Policymakers in Singapore, such as those who have developed their well-known road pricing system, have been guided by a mix of standard economics and behavioral economics (Low 2011, p. xi). Singapore's policymakers have been aware that people's decision making "departs—predictably and regularly—from the strict tenets of [economic] rationality" (p. ix). That is, they have understood that people have a variety of cognitive biases such as loss aversion, status quo bias, anchoring, framing, confirmation bias, overconfidence, saliency bias, inconsistent preferences over time, and others. They also have realized that people are bounded in their rationality, willpower, and self-interest and that people typically use rules of thumb when decision situations are not simple. Therefore, "by taking into account people's cognitive

abilities, limitations and biases, behavioral economics [has offered] . . . policymakers the prospect of improving policy design and thereby policy outcomes" (pp. 5–6). "While the [Singapore] government paid a great deal of attention to efficiency considerations, it was also attuned to what might broadly be termed 'psychological' considerations" (p. 7). Further, it should be noted that in Singapore "finding the right policy design was a process of experimentation, error and learning-by-doing" since policy makers were in many cases not able to know the right mix of standard economic or behavioral economic principles from the start (p. 7). Often the initial policy solution had to be tweaked, adjusted, or significantly reframed to obtain the desired result (p. xi). Presumably, antiobesity policy makers can benefit from this general approach.

Individual Antiobesity Measures

Advocating a comprehensive antiobesity policy and the need for a social movement certainly does not mean that one should not advocate individual antiobesity policy measures. It only means that individual measures such as taxes on sugary beverages, specific changes in incentives to eat certain foods, nudges to eat vegetables, or providing information on food nutrition, by themselves, are not sufficient to change the basic socioeconomic patterns at the heart of the obesity problem (Brownell et al. 2010, p. 381; Ubel 2009, pp. 209, 212–214). For instance, as Salazar (2011, p. 15) points out, "nudges may work for some time influencing automatic behavior, but they are not capable of sustaining long-term behavioral change as nudges do not really change individuals' knowledge, attitudes or values," therefore doing little to change the basic negative behavioral pattern (see also Selinger and Whyte 2012). On the other hand, comprehensive antiobesity programs that include many individual policy measures can be very valuable because they "enable multiple facets of the environment to be addressed simultaneously" (Mercer et al. 2003, p. 1073S) and thus have a much greater chance of success. Ideally, the different elements of a comprehensive program will have a synergistic effect, enabling broad, rapid changes in social norms (pp. 1074S, 1077S). These multifaceted programs may also do a lot to stimulate the growth of an antiobesity social movement.

Important Intermediate Goal: Changing Social Norms

Changing social norms regarding eating, exercise, and other behavior is an important intermediate goal, and therefore a key part of the needed socioeconomic change. Social norms are important because they prescribe

and influence behaviors (e.g., obesity-related behaviors) (Sassi 2010, pp. 224–225). "Once a social norm of behavior has become accepted and (as in the case of diet) once the supply industries have adapted themselves to the new pattern, then the maintenance of that situation no longer requires effort from individuals" (Sassi, p. 224 as quoted from Rose 1985). Thus, when key socioeconomic structures such as norms are changed by government policy measures, the changed socioeconomic system tends to bring about the more healthy behavior. And as Sassi (p. 235) suggests, it is likely that after many incremental changes are made, a "tipping point" might be reached, triggering widespread favorable changes in attitudes and behavior.

Financial Barriers to Change

Another significant feature of the external environment not mentioned earlier is the presence of financial barriers to change. Consider a few examples. First, "underfunded school districts make money by establishing pouring rights contracts with soft drink companies allowing them to place vending machines on school property and to sell beverages at school events" (Ebbeling et al. 2002, p. 473). As a result, schools are very reluctant to discourage students' soft drink consumption. In a similar vein, many schools derive benefits from their contracts with corporations that emphasize selling high profit, low quality foods to their students. Third, professional nutritional societies which publish nutrition and diet recommendations are known to have lucrative relations with the food industry (p. 478). And, fourth, candidates for public office, including the US Congress and Presidency, have received many political contributions from food companies, particularly those in the sugar industry. To the extent that decision makers face these kinds of financial incentives, they can be expected to be reluctant to change from current unhealthy practices. This situation would seem to call for policies that eliminate or counter these financial barriers to change.

Taxing Fattening Food

A number of authors recognize that there is a negative externality associated with obesity to the extent that a person's obesity-contributing behavior imposes costs on others (e.g., Brownell and Frieden 2009; Brunello et al. 2008, Cawley and Ruhm 2011; Kim and Kawachi 2006; Sassi 2010; and Vinelli 2009). There are two main types of externalities, insurance and labor market. Insurance externalities occur when obese people incur higher lifetime health costs than non-obese people, and as a result the

cost of private or public health insurance rises for the non-obese as well as for the obese (see Cawley and Ruhm 2011, p. 91; Sassi 2010, p. 123) for some estimates related to the magnitudes involved). Labor market externalities occur when, due to their obesity, obese people's workforce productivity is lower than for the non-obese, thereby imposing costs on the non-obese (p. 124). To deal with the externality, most of the authors cited earlier, following orthodox economics, have proposed or at least considered utilizing a Pigouvian tax, a tax on the sale of the good equal to the marginal costs that use of the good imposes on others. This solution makes perfect sense if the goal is market efficiency, because the tax would "internalize" the external societal costs and force the food consumer to confront (and decide on the basis of) the true total costs to society (not just the cost to the consumer) in comparison to the societal benefits. This means, for example, that a tax on the sale of a sugary beverage such as soda is justified because of the resulting gain in economic efficiency. It should be noted that rather than a tax on fattening food, which is an indirect tax, a tax could be imposed directly on the amount of a person's body fat (Cawley and Ruhm 2011, p. 92; Kim and Kawachi 2006, p. 431; and Vinelli 2009, p. 17). This could be done by charging health insurance premiums in direct proportion to some measure of obesity (presumably BMI).

While a Pigouvian tax on fattening foods will in theory optimally improve economic efficiency in the markets for certain foods, it has little to recommend it as a sole solution to obesity (see Vinelli 2009, pp. 16–17). One issue is government competency. That is, it is doubtful that a government is capable of determining the correct amount of the tax (Vinelli 2009, p. 4). This issue relates to both the difficulty of obtaining the requisite knowledge and the difficulty involved with the political process that ultimately determines the amount of the tax (pp. 4–6). A related difficulty is determining which goods to tax (Cawley and Ruhm 2011, p. 92). It is not an easy task to figure out which goods will be categorized as the fattening ones to tax and which will not. And even if that task were done well, the causes of obesity will inevitably be more numerous than the number of goods labeled as fattening and taxable. Relatedly, there are certain causes of obesity such as sedentary behavior that would be very difficult, if not impossible, to tax (p. 93). Another unfortunate difficulty is that the incidence of taxes on fattening goods is likely to be regressive, hurting most those at the low end of the socioeconomic pole (Vinelli 2009, p. 16). Even if some of these difficulties could be overcome, it is likely that the amount of the taxes collected would be too small to have much of an effect on the crucial consumption patterns contributing to obesity (pp. 17–18). Nevertheless, taxes on

a variety of fattening foods might very well find a role in a comprehensive antiobesity policy as a way to moderately discourage purchases of unhealthy food and to help stigmatize food that is low in nutrients but high in calories. As some have observed, it would make sense to use such taxation in conjunction with subsidies for healthy, whole foods such as fresh fruits and vegetables, thereby providing an overall healthy incentive (Bittman 2011).

With regard to the previous discussion, there is a more general issue. To the extent to which poor economic incentives are thought to contribute to obesity, is it a viable antiobesity (or anti-chronic disease) strategy to devise economic schemes to counteract these economic incentives?[1] According to Ubel (2009, pp. 212–214),

> I'm doubtful that these financial interventions [e.g., taxes on snacks], on their own, would have a major impact on people's body weights, because too many powerful psychological forces are stacked up in favor of our increasing abdominal girth . . . Financial incentives, alone, won't stop the spread of obesity. But careful use of tax policy, and other financial levies, should be part of our solution to this epidemic.

Intangible Investment as a Key Element in Fixing the Obesity Problem

As indicated by the socioeconomic model of obesity, low or poor endowments of PC, HLC, and SC are important reasons why many people are vulnerable to the negative influences stemming from the infrastructure of obesity and other negative aspects of the external environment. It follows that obesity rates could be lowered if people who are relatively deficient in these types of IC were to make significant efforts (i.e., investments) to raise certain of their intangible capacities. Kessler (2009, pp. 181–225; see also chapter 7) recognizes that people must make significant efforts to bring about lasting changes in their personal qualities and situations if they are going to be successful in dealing with their obesity problem. Like other investments, these efforts incur costs at an early stage and make possible later benefits, the lower weight and greater health that derive from the changed behavior. These investments can be viewed as "radically rewiring the relationship between the stomach and the brain" (Ambinder 2010, p. 9). Although this intangible investment must be carried out by the individual involved, there are frequently important opportunities for communities, businesses, and governments to play important roles in guiding and encouraging the process.

Investment in Personal Capital

If vulnerable people are to resist the negative influences contributing to obesity, they need to invest in PC in the sense of developing more emotional intelligence and character. In particular, many could benefit from efforts to become more self-regulating or self-controlling, more able to delay gratification, better able to think clearly in stressful situations and not be swamped by emotion, and generally better able to achieve a balanced integration of emotion and thinking. Improving these qualities makes it easier for people to overcome their unhealthy food habits and compulsive hyper-eating tendencies. Of course, people's poor personal qualities may be an outcome of adverse childhood experiences, often associated with poor parenting, but there is reason to believe that many can overcome the effects of these adversities, especially with the help of appropriate counseling and the experience of a favorable community and culture. Ubel (2009, pp. 222–223) emphasizes helping kids build character and develop self-control in schools and preschools. Sassi (2010, p. 224) advocates lifestyle counseling to individuals at high risk in a primary care setting.

Investment in Health Capital

In addition to PC investment, it is important for all people, but especially vulnerable people, to make substantial investments in HLC, that is, investments in specific knowledge pertinent to their physical and mental health. People need to learn about healthy food, exercise opportunities, how to avoid unhealthy food, and how they can incorporate healthy food, exercise, and other wholesome behavior patterns into their lives. Educational institutions, governments, professional associations, and communities can help people make these HLC investments. The experience of South Korea provides an interesting example. The traditional diet of South Korea is considered to be healthy as it is low in fat and high in vegetables (Lee, Popkin, and Kim 2002). Beginning in the 1960s, South Korea began a socioeconomic process involving industrialization, rapid economic growth, internationalization, and changing lifestyles. In the 1980s, there were warning signs of a nutrition transition that might lead to increasing obesity and chronic disease. As a result, local governments, nutrition specialists, some private organizations, and others began to educate about and promote the virtues of the traditional South Korean diet. These activities included: (1) food preparation training of housewives, (2) publishing diet-related articles, (3) holding seminars, (4) supplying nutrition information on the internet, (5) holding national

nutrition campaigns, and (6) making nutrition services available at community health centers (pp. 201–202). As a consequence, South Korea has been successful in retaining the healthful elements of their traditional diet. The benefits of this effort are reflected in South Korea's low obesity rate. In 1998 only 2.4 percent of adults were considered obese (BMI greater or equal to 30) (pp. 198–199). Clearly, South Korea has made a lot of very valuable HLC investments that are already paying substantial health dividends.

Investment in Social Capital

Another type of intangible investment that can play an important role in the prevention and reduction of obesity is investment in SC. First, there is good reason for believing that people who have strong positive social relationships are less likely to be vulnerable to the enticements of unhealthy food and behavior patterns that contribute to obesity (see Tomer 2001, p. 253). It follows that improving people's access to relationship counseling and improving community social activities should help reduce obesity. Second, existing social networks can be used to help groups of people adopt the kind of behavior that prevents and reduces obesity. Hyman (see Dr. Mark Hyman's April 30, 2012 email Newsletter) has proposed a plan to help people who are members of social networks (such as religious groups) reverse unhealthy behavior and create health. His plan is to help people make positive lifestyle behavior changes by using community and the power of positive peer pressure. The first test of the plan was with the Saddleback Church in Southern California, a church that has 30,000 members meeting every week in 5000 small groups. Hyman and his collaborators "created an interactive curriculum delivered through multiple media—online education, videos, articles, recipes, webinars all done in small groups and community events." The results were impressive. The church participants lost much weight, used less medicine, spent less time in hospitals, and did not need to see their doctors as much. They "reported more energy, better sleep, better blood pressure, better mood and even better skin and a better sex drive." Hyman concluded that they had "demonstrated that a community-based solution is more effective in treating and reversing chronic disease than our modern health care system. People helped each other create health." Hyman aspires to use this plan in other places, possibly on a larger scale. This seems to demonstrate that utilizing existing investment in SC, adding enhancements to that investment, and combining that with investment in HLC is a very promising approach not only to fixing obesity, but also to reducing a variety of people's chronic ailments.

The Infrastructure of Obesity: Dealing with the Problematic Behaviors of Food Businesses

While people's IC endowments are important, the external environment, in particular the infrastructure of obesity, is at least as important a contributor to the obesity problem. At the heart of the matter is the innovative and negative opportunistic behavior of many food suppliers. Food businesses, especially in the United States, regularly take advantage of opportunities to develop new foods, develop new ways to process foods, and develop new food marketing strategies. Unfortunately, a lot of these new foods and more highly processed foods contain fewer nutrients and more calories. And these less healthy foods are being marketed more effectively, too often to the young and vulnerable segments of the population. For example, a fast-food company might develop a new product such as nuggets of chicken which, in addition to small pieces of white chicken meat and stabilizers, contains more than double the fat per ounce as a hamburger, contains substantial sugar and salt, and contains manufactured beef flavoring. The result is a great tasting product that is priced low and advertised extensively to children and young adults. It is not uncommon for products like this one to be hugely profitable and major contributors to obesity. [2] There is obviously a need for government policy to deal with this in light of the huge health costs of obesity that these companies pass along to the rest of society. But devising policies to fix the problem is complicated because obesity arises from negative patterns of consumption behavior, not from consumption of any one or a few foods. Another complication is that although many food companies manifest some variant of negative opportunism, many other companies do not, or do not to the same degree.

Due to these complications, there is a need for general guidelines in developing the part of antiobesity policy relating to food companies. First consider the motivation or responsibility orientation of food businesses. Although there is presumably a continuum of differences among firms in this regard, it is useful to think of such firms in three categories: (1) highly socially responsible, (2) market oriented, and (3) negatively opportunistic. Highly socially responsible companies seek out strategies and behaviors that are simultaneously good for society, all their stakeholders, and themselves, and they avoid actions imposing costs on others. Firms that are negatively opportunistic have a low ethical orientation and tend to behave not just self-interestedly but opportunistically in the sense of seeking opportunities in which they can gain at the expense of others. The market oriented category is in between the other two. While responding self-interestedly to economic incentives, these companies are

oriented to following conventional social norms, are generally unwilling to cause harm to others, but are also unwilling to go out of their way to be helpful to others. Next consider the healthiness of different foods. For the purposes of this analysis, we again simplify, classifying foods as either healthy or unhealthy. Foods are also classified as either important, if consumption of this food represents a relatively high percent of the average person's diet, or unimportant, if the diet percentage is low. Firms' responsibility orientation along with foods' healthiness and importance is arrayed in figure 8.2 which is useful for thinking about policy with respect to food businesses. The small rectangles within the larger rectangle are numbered 1 to 6. Boxes 1, 3, and 5 all relate to healthy food; so presumably these are not of great interest for antiobesity policy. Of greatest interest are the upper triangles of boxes 2, 4, and 6; these relate to the important unhealthy food. An important goal of antiobesity policy would be getting companies that produce unhealthy food to produce healthy food instead or at least food that is healthier than their present product. This goal might be achieved by exerting some kind of governmental influence on these companies. The kind of governmental influence that makes the most sense depends on the responsibility orientation of the particular business. Firms that are market oriented or oriented to negative opportunism, no doubt require conventional control-oriented policies. Whereas highly socially responsible companies would generally do best with a commitment approach type of policy (Tomer 2006). A control-oriented policy is designed to control the societal outcome (e.g., pollution, obesity) through the use of rewards and penalties to firms administered by government in order to attain a government chosen goal. Both market incentive and command and control regulation are control-oriented policies. These policies assume firms respond rationally to economic incentives but do not have the capability of taking much responsibility for the societal outcome. Also, these policies assume the companies cannot be trusted. On the other hand, highly socially responsible companies are capable of making a commitment to and taking responsibility for societal outcomes, and they can be trusted. It would not make sense to use a control-oriented policy for a firm that has acquired the capability of being fully responsible and trustworthy. The commitment approach policy would allow businesses to be self-regulating to a great degree. Of course, firms' actions would need to be integrated with high-level government goals and be informed by government provided information and technological knowledge. The commitment approach allows highly responsible companies to develop their relationships with stakeholders and society to its full potential and fosters high motivation in company personnel.[3] The commitment approach to policy is highly

desirable but it can only work with companies that have developed their organizational capabilities to a high enough level. Naturally it would be desirable if companies in the lower two categories could further develop their capabilities (making the necessary investments in IC) and ultimately move up to the socially responsible category, thereby becoming eligible to transfer from being subject to control-oriented policy to being participants in a commitment approach policy. This would be desirable not only because it would require fewer government resources, but also because the new socially responsible companies would then be working cooperatively with others who share a common commitment to reduce obesity. Thus, it can be argued that antiobesity policy should involve efforts to encourage food businesses to make investments in IC in order to raise their capability for being responsible and committed to producing very healthy food (see figure 8.2).

It is interesting to contemplate a food company that I encountered in Wellington, New Zealand during a recent vacation trip. The company Habitual Fix is a fast food restaurant. But instead of the usual fast food fare, it uses fresh vegetables delivered daily in its sandwiches, wraps, and salads (bread baked daily) along with juices squeezed and bottled onsite. Habitual Fix has clearly made a commitment to being a healthy food company, and it appears to be paying off. Because Habitual Fix does not fit the usual fast food pattern, it presumably has had to make a variety of IC investments in the process of developing its distinctive new capabilities. In any case, this example clearly indicates that fast food need not equate to unhealthy food.

In the case of companies which are not socially responsible and which may be out of compliance with food regulations and norms, lawsuits are a partial alternative to government control oriented actions. Prospects for such lawsuits appear to be rising as indicated by the increasing

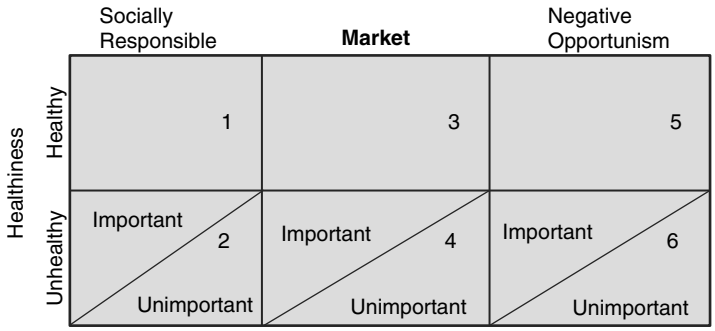

Figure 8.2 Responsibility orientation.

number of recent lawsuits filed against food companies. Interestingly, "more than a dozen lawyers who took on the tobacco companies have filed 25 lawsuits against industry players like ConAgra Foods, PepsiCo, Heinz, General Mills and Chobani . . . The suits, filed over the last four months, assert that food makers are misleading consumers and violating federal regulations by wrongly labeling products and ingredients" (NY Times August 18, 2012).

The Ultimate Solution to Obesity. The ultimate solution to obesity (and most other chronic diseases) would involve nothing less than a transformation of the socioeconomic systems of most modern, affluent countries (and many developing countries as well). It would require that knowledge of the role of poor eating and behavior patterns in obesity become widespread and that people would act on this knowledge. It would require that food businesses (suppliers and processors) accept responsibility for the role of processed/prepared food in obesity and take responsibility for improving the healthfulness of their food offerings. It would require that health practitioners fully understand the role of eating and behavior in obesity and provide good advice on this. For these things to happen would require an important societal change in values. People would have to value their health and healthful living patterns much more than in the past. Moreover, people would have to no longer accept negative opportunistic behavior on the part of food businesses.

Conclusions

Based on a socioeconomic model of obesity that focuses on the key patterns contributing to obesity, this chapter points to the kinds of efforts that would be required to resolve the obesity problem. Because the complex patterns of obesity are very much embedded in the socioeconomic system, the needed efforts constitute a socioeconomic transformation. Thus, resolving obesity not only requires a comprehensive policy program, but it also requires a social movement spearheaded by grassroots groups who understand the magnitude of the health threat and are highly motivated to take whatever actions are needed. The possibility of making progress against obesity is suggested by a recent report that the number of obese New York City schoolchildren fell by 5.5 percent over five years (Hartocollis 2011). The lower obesity rate has been in part attributed to a number of aggressive actions by the City: (1) an advertising campaign against sugary sodas, (2) adding healthier options to school lunch menus, (3) strict rules concerning the content of snacks and drinks in school vending machines, and (4) limits on bake sales. Hopefully, there will be many more positive stories on the obesity front but it will undoubtedly

take an antiobesity social movement to bring that about. If so, we can expect that people will demand many government policies to deal with our excessive and unhealthy fat. Ultimately to fix obesity, people will have to invest more in appropriate IC, that is, they will have to become more emotionally intelligent about dealing with food. And businesses will have to change their practices as they come to accept their responsibility for the obesity problem. This chapter has attempted to envision what is necessary to fix obesity. Now is the time for people to act on this vision.

Finally, it is important to note that societal efforts to deal with obesity should be part of a larger effort to help people lead more healthful and satisfying lives, which, of course, includes helping people (1) make healthful, nutritious food choices and (2) engage in a sufficient amount of appropriate exercise. No doubt such efforts will also go far to reduce the incidence of chronic ailments.

CHAPTER 9

TOWARD LASTING, SIGNIFICANT IMPROVEMENT IN OUR SOCIOECONOMIES

Introduction

The preceding chapters have made the case for a broader concept of human capital, that is, human capital (HC) integrated with human development. A number of chapters have explained how HC deficits are implicated in a number of modern societies' most vexing social problems, in particular adverse childhood experiences, obesity, and chronic disease. And chapter 8 has explained about all the specific kinds of things that would need to be done to stem the tide of obesity. What is needed is a more general context to understand these problems involving HC deficits. Is there a common approach that can be used to remedy them? What should socioeconomic policy makers be doing that would lessen the likelihood of having to deal with these kinds of problems?

To begin, let's focus on the problem of obesity. Recall the socioeconomic model of obesity (see chapters 6 and 8) in which an individual's decisions regarding diet and behavior are influenced, first, by a variety of external factors such as the markets for food and exercise and the infrastructure of obesity and, second, by a number of internal factors such as the individual's endowment of intangible kinds of HC (personal, social, and health capital). In essence, if the incentives and influences of the external factors are pushing these individuals to choose poor diets, insufficient exercise, and other unsatisfactory behavioral patterns, and if these individuals do not have the internal intangible capacities enabling them to resist these influences and make better choices, there is a great likelihood that their poor choices will lead them to become obese.

Although this model was developed to explain the causes and growth of obesity, there is good reason to believe that this model with suitable

modifications is also useful for explaining the causes and growth of other social problems. This is particularly true for the class of problems that have increased rapidly along with the changes in dietary and behavioral patterns that are closely associated with the rise of modern, industrial economies. In chapter 7, it was explained that some of the same "civilized" behavioral patterns that contribute to obesity are also contributing in slightly different ways to the incidence of many chronic ailments. Note also that although the ailments associated with adverse childhood experiences may not be explained quite as clearly by the behavioral patterns of modern society, many similar causes rooted in the spread of advanced industrial economies seem to be at work.

Toward a General Developmental Approach to Dealing with Socioeconomic Dysfunction

The purpose of this section is to provide a broad sketch of how the social problems to which important HC deficits contribute can be dealt with. Not surprisingly, a key part of this is seeking understanding of many of the external and internal socioeconomic factors contributing to the socioeconomic dysfunction at the heart of these problems. Armed with this understanding, along with pertinent health science knowledge, it should be possible to make a list of the kinds of courses of action that make sense. Presumably, some of these courses of action would be designed to counter the negative effects of the various internal and external socioeconomic factors. Other courses of action might be oriented to producing more general favorable influences on the socioeconomy as a whole. The actors include governments, businesses, community groups, health practitioners, families, and individuals. For success, the people taking these actions would need to be coordinated, highly motivated, and directed toward achieving key development outcomes that are necessary to overcome the problems. In the case of chronic ailments caused by unhealthy behavioral patterns related to food and exercise, collective remedial actions would need to be oriented toward (1) helping people let go of their negative patterns and (2) helping afflicted people adopt healthy behavioral patterns. Some needed interventions would be designed to facilitate individuals' healthy development; others would be designed to get stalled individual development going; and still others would be designed to prevent events that tend to stop or retard individual development. There may also be a need for large scale interventions (large societal investments in HC) that make possible favorable development experiences for significant classes or groups of people.

Helping Leaders Develop Plans for Dealing with Social Problems

To help government and community leaders and other responsible individuals think about what needs doing and develop plans for dealing with particular social problems, I have developed an illustrative list of questions. In essence, these questions constitute a template, a kind of guide for assessing the character or quality of the socioeconomic dysfunction and for thinking about the type and scope of needed remedial efforts. The checklist questions below have been subsumed into five categories. The first category is the severity of the problem (S). The second category relates to the possible causes of the problem (CP). The third deals with important characteristics of the problem (Ch). The fourth deals with the relationship of the problem to the functioning of the socioeconomy (SE). The fifth relates to fixing the problem (FP). The list of questions is intended to be illustrative, not exhaustive. Many more questions could be added to this list.

Checklist questions:

1) How severe is the problem, that is, how bad are its health and other effects on people? (S)
2) How widespread is the occurrence of the problem? (S)
3) How fast is the problem growing? (S)
4) Does the problem stem from poor behavioral patterns involving food, exercise, use of drugs, and so on? (CP)
5) Does the problem stem from a lack of knowledge? Whose lack of knowledge? (CP)
6) Does the problem stem from deficient noncognitive development, maturity, and so on? (CP)
7) Do health practitioners have a lack of good understanding of the causes of the problem and of what constitutes good healthy advice? (CP)
8) Are the negative opportunistic attitudes of many business people contributing to the problem? (CP)
9) Is excessive and inappropriate processing of food causing the problem? Is excessive food processing removing nutrition? Are food additives reducing the nutritious quality of food or adding toxins? (CP)
10) Are schools playing a negative role by not encouraging healthy eating? Are schools either catering to children's poor choices or are they not providing healthful, good tasting eating opportunities? (CP)

11) Are food businesses making efforts that cause their customers to experience quasi addictions or conditional hypereating of foods lacking nutrition and healthful quality? (CP)
12) Do the community's or society's cultural norms encourage unhealthy eating, exercise, and other unhealthy behavioral patterns? Are the cultural norms in a segment of the population conducive to poor health (but not so in other population segments)? (CP)
13) Are any government programs (e.g., Food Stamps) playing a negative role insofar as they encourage poor behavioral patterns? (CP)
14) Are advertising and other business marketing efforts playing a negative role in that they encourage poor food or other choices, especially in the case of children? (CP)
15) Does the problem involve strong habitual or addictive behavior? (Ch)
16) Is the problem long lasting and resisting efforts to resolve it? (Ch)
17) Is the afflicted group's suffering compounded by low income and low resources? (Ch)
18) Is the problem endemic to and deeply embedded in the socioeconomic system or largely independent of the system? (SE)
19) Is the problem strongly related to typical economic development patterns? (SE)
20) Is the problem caused to some degree by adverse economic incentives? (SE)
21) Are certain types of technological change contributing to the problem? (SE)
22) To what extent can the problem be dealt with using a preventative approach? (FP)
23) Are preventative activities very expensive? Or otherwise difficult? (FP)
24) What should the goal of the remedial efforts be? (FP)
25) Are there an insufficient number of people in businesses, governments, and communities who are socially responsible and sufficiently oriented and capable of leading people toward better behavior patterns? (FP)
26) Are there a lack of social groups that can be enlisted to encourage healthy behavioral patterns? (FP)
27) Are traditional healthy diets losing out to modern commercial processed food? Can people's diets be improved by encouraging them to eat modified version of traditional healthy diets (as South Korea has done)? (CP, FP)

Toward a More General Approach to Understanding Socioeconomic Dysfunction

The purpose of this section is to explain about two types of causes of the socioeconomic dysfunctions often at the root of certain types of social problems. The first type of cause derives from specific, relatively observable economic and technological factors. The second type of cause derives from underlying core human factors.

Businesses' and People's Adaptation to Economic and Technological Development

The first causal type typically arises when new economic and technological developments occur, thereby changing the external socioeconomic environment of businesses and people. Typically, businesses adapt to these developments, attempting to make changes in their mode of operations that will allow them to make more profits or avoid loss. Similarly, many people, outside of businesses, try to make changes, adapting their life patterns to significant socioeconomic developments. As a result of these various adaptations, the overall socioeconomic patterns change, and certain of these changes contribute to socioeconomic dysfunction.

Let's first consider the example of obesity and some of the ways that businesses, particularly food suppliers, have adapted and, thereby, have contributed to socioeconomic dysfunction. All too commonly, these food businesses have adapted to socioeconomic change by producing and selling more unhealthy foods. Typically, these unhealthy foods have attributes that have been modified to make them more appealing to consumers. More specifically, food suppliers have learned how to sell foods that are cheaper, more convenient, delivered more quickly, more attractively packaged, more tasty, marketed more extensively and attractively, more mass-produced, prepared more quickly, available in more areas of the country, available in larger portions, easier to eat with less chewing required, more stimulating in order to prompt more eating, more light and refined, more uniform quality, more habit forming, greater tendency to override the body's satiety signals, more calorie dense, and containing added chemical flavors (Kessler 2009, pp. 115–119; Schlosser 2001, Chapter 5). Businesses' adaptive actions to sell more foods with these attributes have entailed considerable innovative effort. Unfortunately, these efforts are not the kind of innovation that have improved people's health. Note also that businesses' adaptive innovations have included

aggressive advertising and marketing strategies, especially ones targeted at children.

Businesses' food innovations have also included using newly invented technologies in food production. Typically, these food technological changes have been cost reducing and have led to lower prices for processed foods, not to mention changes in food quality. Among the important technological advances in food processing in recent decades are new methods for preserving and cooking foods such as the use of vacuum packing, improved preservatives, deep freezing, stretch-wrap films, irradiation, and hydrogen peroxide sterilization (Finkelstein and Zuckerman 2008, pp. 22–23).

Consider another business example (unrelated to obesity), that of companies making products and apparel for children. There is evidence that all too often in recent decades these businesses have used harmful ingredients such as benzene, lead, mercury, antimony, arsenic, cadmium, and cobalt in their toys, clothing, and other products, ingredients that pose substantial health risks to the children using these products (*Troy Record*, January 9, 2015). Presumably these businesses made the decisions to produce and sell these hazardous products to children as an adaptive response to market realities.

A related cause of socioeconomic dysfunction (but not a business one) is that people in their roles as consumers, and home-makers have been adopting new behavioral patterns as they adapt to external socioeconomic change. Many people have been taking advantage of new home related technology and have been increasingly conforming to changing norms related to women's labor force participation. More specifically, people have adopted more labor saving devices such as dish washers in the home, and women have chosen to spend more time working outside the home. Not surprisingly, this has given people an incentive to spend less time in food preparation and to eat more meals in restaurants, especially fast food establishments. People, moreover, have increasingly bought more convenient, fast cooking foods, more preprepared processed foods, foods often heated in microwave ovens, more uncooked snacks, and so on. For these and related reasons, many people's diets have become less healthy. And businesses seem to have accommodated to and taken advantage of these patterns. In other words, a variety of changing socioeconomic patterns in workplaces and homes have led to serious socioeconomic dysfunctions which are at the heart of the increasing prevalence of social problems such as obesity and quite a few chronic ailments.

The Core Underlying Human Factors Involved in Socioeconomic Dysfunction

There is, however, more to the story. While the earlier analysis of the causes of socioeconomic dysfunction is useful for understanding the important patterns involved, it does not come to terms with the core underlying human factors involved in socioeconomic dysfunction. What the previous explanation leaves out are the two core human motivations, self-interest and other interest and how they are related.

The starting point for understanding these two motivations is Paul MacLean's (1990) research on brain physiology. He conceived of the human brain as having three interconnected modular levels. The first part of the brain, the earliest in evolutionary terms, is the innermost core of the brain, the reptilian complex, which governs fundamental physiological operations and is concerned with self-preservation (Tomer 2012, p. 78). It is associated with self-interest motivation. The second brain module, the paleomammalian brain, is located on top of the reptilian brain. It provides for the distinctively mammalian features of humans such as maternal care, parental responsibility, family life, and social bonding. This part of the brain is associated with caring, other interest, and empathic motivation. The third brain is the neo-mammalian brain or neocortex which envelops the other two brains. This brain provides the human capacities for problem solving, learning, memory, language, thinking, and related functions. According to MacLean, the neocortex is involved in determining how the two strong core motivations, empathy deriving from the paleomammalian brain and self-interest deriving from the reptilian brain, are interrelated and expressed. This dual human motivation view deriving from MacLean's research is in sharp contrast to mainstream economics' view of humans as motivated solely by self-interest.

Based on the brain physiology research of MacLean, Gerald Cory (1999) developed a model explaining how the two core human motivations tend to be balanced. In his view, it is the executive functioning of the brain's neocortex that attempts to bring about a balance between the self-interest and empathy motivations which frequently are in conflict with each other (Tomer 2012, pp. 78–79). Cory's brain model involves a homeostatic process that tends to reduce the tension and stress associated with imbalance and tends to bring about a favorable balance between the two motivations, a balance associated with reciprocity, cooperation, fairness, and morality.

The dual motive theory (DMT) of MacLean/Cory has important implications for the model of the human brain's functioning used in economics. Obviously, it implies that people have two dominant motivations, ego or self-interest and empathy or other-interest.[1] Further, it implies that the meaning of rationality in DMT is different from its meaning in the mainstream economic model (Tomer 2012, p. 80). Rationality in the DMT model does not involve simply maximizing the self's utility. Rationality a la DMT involves attempting to do well for oneself as well as attempting to do well by others. In the DMTs broad conception of rationality, the essence of rational behavior is attempting to live a well-balanced life in which one's own interests are integrated with others.

Tomer (2012) has proposed a revised DMT model that incorporates recent insights from brain science. In the revised model, an individual's empathic capacity is determined not just by genetics but also by brain changes that happen as a consequence of the individual's life experience. The latter phenomenon is known as brain plasticity; it is the ability of the brain to change structurally and functionally as a result of input from the environment (p. 81). Although every human has basically the same brain physiology, a particular person's brain functioning is shaped as well by that individual's unique path through life. That is, an individual's capacities such as his/her empathic capacity is shaped by every sustained activity of the person, that is, all the person's physical activities, sensory activities, cultural activities, learning, thinking, imagining, and so on (Doidge 2007, pp. 287–291). In the revised DMT model of the human brain's functioning, people still have two dominant motivations (ego and empathy), but the strength and character of an individual's empathic motivation depends very much on the individual's life experience and whether the individual has made efforts to develop his/her empathic capacity.

According to Lynne et al. (2015), the true relationship between the self-interest and empathy motivations is somewhat different from the relationship the DMT model articulates. According to Lynne et al., while the two motivations could be directly in conflict, generally the self-interest motive is primal, and a person's empathic capacity plays a restraining or conditioning role with respect to self-interest. This is particularly so when human self-interest is excessive. Excessive self-interest may manifest as egoistic, selfish, hedonistic, or greedy behavior. When this excess is present, humans are arguably in need of greater self-control. That is, it would be desirable if they would temper, restrain, or condition their self-interest motivation. Otherwise, the economy will not be sustainable because the economy will be dominated by the actions of individuals who do not consider the harm they impose on the public as a whole ("tragedy of the commons" situations) (Lynne et al. 2015). In a "good capitalism,"

humans' empathy along with other human virtues play a very positive role, ideally leading humans to more balanced behavior that involves an integration of one's self-interest with the interests of others (McCloskey 2006). Interestingly as Lynne et al. (2015, pp. 1–3) notes, taken together Adam Smith's two books, *Wealth of Nations* (1776) and *The Theory of Moral Sentiments* (1759/1790), articulate the essence of this view.

Socioeconomic Dysfunction, Social Problems, and the Underlying Dual Motivations

How, you might ask, is the earlier analysis of the underlying human factors, self-interest and empathy, related to the socioeconomic dysfunction associated with social problems? Let's again consider the problem of obesity. At the heart of this problem is excessive, uninformed self-interest. First, too many food businesses have behaved in an opportunistic, unscrupulous, and greedy manner. These are businesses who are more than willing to take unfair advantage of their customers by selling them unhealthy foods, and who are unwilling to inquire into whether their practices are harmful to the consumers of their products. Second, many food consumers have also behaved opportunistically and ignorantly in the sense that they have sought to take advantage of foods that are appealing and low cost but which are unhealthy and harmful in the long run. Unfortunately, neither of these excessively self-interested behaviors have been tempered, restrained, or conditioned to any extent by empathy and other virtues. Further, positive community and societal norms have apparently been too weak to restrain the forces of excessive business self-interest. And too many food consumers have been too preoccupied with their own self-interests to counter the unscrupulous food business behavior. If it were not for these underlying human factors, it seems very likely that early food experiences with increasing obesity and rising health problems might have been recognized and reversed. But because excessive unrestrained self-interest, involving a lack of empathy and other virtues, are at the heart of the problem, the obesity problem has continued with great force despite increasing knowledge of its patterns and the health science related to it.

There seems to be quite a few other situations where the underlying core human factors are the key culprit in the socioeconomic dysfunction at the heart of social problems. Certainly this is true for the chronic ailments that have causes very similar to those for obesity. But let's examine an example outside the health field, an example associated with the financial crisis of 2008, that is, the example of excessive mortgage lending. It is no secret that unscrupulous lenders made far too many subprime mortgage loans, especially to people who had little or no ability to repay

these loans. These lenders then quickly sold these loans to securitizers (Blinder 2013, pp. 68–72). One example of this lending was the $720,000 mortgage loan to a pair of Mexican American strawberry pickers whose annual incomes were around $14,000. The loan enabled them to buy a $720,000 house (p. 69). During this time, many mortgage lenders were making "low-doc" mortgage loans with little documentation, "no-doc" mortgages with no documentation, "liar loans" with false documentation, and even some "NINJA" loans to people with no income, no jobs, and no assets (p. 70). These mortgage lenders were "making loans 'designed to default' to financially unsophisticated borrowers who likely did not know what they were getting themselves into . . . [This] violates every principle of sound banking—not to mention human decency" (p. 71). Clearly, with respect to the lenders, these were examples of excessive self-interest run amok. It also does not reflect well on the recipients of these loans. It seems fairly obvious that this kind of situation could have been largely avoided if the lenders' self-interests had been tempered, restrained, and conditioned by other-regarding motivations, not to mention governmental and societal norms and regulation.

It should be noted that the mortgage lending situation was far from the only type of financial failure in the period during and leading up to the financial crisis. The other financial fiascos also generally had their roots in excessive and unrestrained self-interest motivation. The result of these events was that the US financial system

> experienced a perfect storm during the years 2007–2009 . . . When America's financial structure crumbled, the damage proved to be not only deep but wide. Ruin spread to every part of the bloated financial sector. Few institutions or markets were spared, and the worst-affected ones either perished . . . or went on life support . . . We came perilously close to what Federal Reserve Chairman Ben Bernanke called 'a global financial meltdown.' (Blinder 2013, p. 5)

While nonfinancial social problems such as the growth in obesity and chronic health ailments are unlikely to cause a dramatic crash like the financial crisis of 2008, one suspects that their long-term negative effects, if they are not dealt with, could be every bit as severe as that of the recent dysfunction in the financial and economic sectors.

Investment in Human Capital to Improve the Underlying Human Factors and Counter Socioeconomic Dysfunction

As the previous sections have argued, the core underlying human factors are at the heart of the socioeconomic dysfunction causing quite a few

social problems. In thinking about a solution to these problems, it makes sense to consider these underlying human factors to be a kind of human capital. If these core human qualities are a type of HC that is often deficient, then presumably the remedy for the socioeconomic dysfunction would be to make more investments and more appropriate investments in HC.

Developing Empathy and Restraining Excessive Self-Interest

Recall that MacLean's research on brain physiology makes clear that both self-interest and empathy are inherent human motivations deriving from two different brain modules (and two different stages in brain evolution). But as more recent brain research has discovered, brain functioning is changeable or plastic. It follows that empathic capacity as well as how empathic capacity interacts with self-interest are subject to change for better or worse. What needs changing is the human tendency to be very selfish, opportunistic, unscrupulous, and greedy, the underlying cause of more than a few social problems. Fortunately, it is possible for humans to develop their dual motivations in a much more balanced and integrated way, achieving a more desirable mix of these two core motivations, a mix with much more empathy and a mix in which self-interest is restrained by other-regarding interest. Therefore, it makes a lot of sense for a society to make the kinds of investment in HC that lessen humans' excessive self-interest, thereby reducing socioeconomic dysfunctions and remedying the corresponding social problems.

The Payoff to Improving the Dual Motivation

Actually measuring a society's payoff to improving humans' dual motivation via HC investments would be extremely difficult and is beyond the scope of this research. However, one can get some idea about the nature and rough magnitude of the payoff using reason and social science knowledge. So let's try a thought experiment. Suppose for the moment that societies could learn how to be highly successful in making the kind of investments in the underlying human factors suggested earlier. The question is: what is the likely payoff to a society from making these investments that would drastically lower socioeconomic dysfunctions and dramatically reduce social problems. First, from the analyses in the earlier sections, we can confidently conclude that investments that are designed to improve a society's dual motivation would prevent financial crises, would prevent most obesity, and would largely prevent most chronic diseases. This means, among other things, greater health for citizens, lower costs of healthcare, and less need for health insurance. Further,

if these investments resulted in a relative absence of severe opportunistic and unscrupulous behavior, another payoff would be the elimination of a great deal of financial and economic regulation. With a lot fewer resources being used for regulation and health care, many more resources would be available for other desired purposes. Arguably, as a result of such investments, people would be happier because they would be less selfish, that is, less focused on the things they want, and more focused on serving others. It might very well create a more moral, less stressful environment in the workplace enabling greater worker satisfaction. As a result, people would be more self-controlled and more self-directed, and consequently, less tolerant of traditional forms of external, hierarchical control. Arguably, such a society would be more creative both at home and at work. Of course, it should be mentioned that the investment necessary to improve the underlying human factors would use up some resources which would have to be considered in tallying the investment's net payoff. Alas, this was only a thought experiment, but arguably a beneficial one. I believe it is useful because it is important to consider the full array of benefits that might result from making successful investments in improving the underlying human factors. This is so even if achieving such success would be very difficult to achieve. Note also that the impact of such successful HC investments could entail a dramatic move away from the traditional functioning of capitalism. The traditional capitalist system is generally thought to be a highly productive system in which moral standards in many respects are low. Successful investment in the underlying human factors would arguably create a capitalism that is not only highly productive, but also highly moral.

What Is Needed Is a Caring Economy

The Essence of Caring and a Caring Economy

The previous section has argued for making HC investments that would balance and integrate humans' dual motives, lessening the human tendency to excessive self-interest. Another way of thinking about what needs doing is that we need to make the kind of investments necessary to create a more caring economy. In a number of her writings, Riane Eisler has articulated what this means. She defines caring work as "actions based on empathy, responsibility, and concern for human welfare and optimal human development" (Eisler 2007, p. 17). What she advocates is the creation of a caring economy in which economic activities are undertaken with a caring orientation whenever possible. Caring does not simply refer to caring for children, the sick, or the elderly. Caring activities include

caring for employees, customers, and other business stakeholders as well as building healthy communities, developing social justice in employer-employee relations, working to preserve a healthy natural environment, and so on (p. 17). Work with "a caring orientation is . . . distinguished by a long time horizon" (p. 17). Moreover, work done with a caring orientation is not work done by people motivated by excessive self-interest. Caring activities are ones performed by people who exercise self-control and who are motivated to work in the interests of others (as well as themselves). In a caring economy, these caring activities are supported by an ethos of caring and by caring values (p. 21).

Creating a truly caring economy would require the development of a human infrastructure that supports caring activity in all six sectors of the economy (Eisler 2007, p. 79). These sectors include the three generally recognized by mainstream economics (market economy, government economy, and illegal economy) and three others (household economy, natural economy, and unpaid community economy) (Eisler 2012, pp. 60–63). Developing such a human infrastructure would no doubt be a complex endeavor requiring new economic models, government policies, rules, business practices, inclusive social and economic indicators, structures, institutions, and inventions all guided by caring values. One example is government policies and programs that support the caring activities of the household and unpaid community parts of the economy. Another government example is policies that protect nature from reckless exploitation and pollution (Eisler 2007, p. 14). Two other needed parts of the caring infrastructure are institutions that protect civil liberties and important political rights and the development of "social wealth" indicators (Eisler 2012, pp. 73, 81).

Research supports the view that humans handicapped by poor early experience may with the benefit of better experience be able to learn better, more caring behavior (Eisler and Levine 2002, p. 39). In other words, a person whose empathic capacity has declined because of being the recipient of uncaring, antisocial behavior may with sufficient social support be able to reverse the decline (pp. 18–19, 40). Consistent with this, societies may make substantial efforts or investments to foster and grow their citizens' empathic, caring capacities (Begley 2007, p. 9) and become more caring societies.

The High Costs of an Uncaring Economy

The absence of caring behavior in a socioeconomy has tremendously high costs due to the economic, social, environmental, and personal problems incurred. In Eisler's (2007, pp. 14–15) view, an absence of caring in the

economy contributes to (1) exploitation of humans rather than their nurturing, (2) destruction of natural habitats rather than their conservation, (3) inhibition of humans' caring and creative behaviors rather than their encouragement and support, (4) systematic devaluation of activities that contribute most to human welfare and development rather than valuing them, and (5) the production of massive economic inequities and dysfunctions rather than their resolution. It follows that the creation of a caring economy that undoes the consequences of uncaring behavior would certainly have a great benefit.

Needed: An End to Domination and the Creation of More Partnership

In Eisler's view, a nation's economy is embedded in a cultural system that can be represented on a continuum, one end relating to domination, the other end relating to partnership. The cultural values associated with domination are authoritarian and inequitable. Domination is characterized by top-down relationships, especially subordination of women and femininity to men and masculinity, and a high degree of abuse and violence (Eisler 2012, p. 60). Partnership's values are democratic and equitable including equality between men and women and between masculinity and femininity as well as mutual respect among all humans. It is also associated with a low degree of abuse and violence. Partnership is highly consonant with empathic and caring behavior. On the other hand, caring is thwarted by domination, and its authoritarian cultural values are more consonant with opportunistic, unscrupulous behavior of high-ranking people toward lower-ranking people. Obviously, there is much to be gained when the cultural values of a socioeconomy move toward partnership and away from domination. Similar themes can be found in Jasper Juul's (2011) book that deals with parent-child relationships. Juul has come to understand that the "old parental paradigm" involving hierarchical and authoritarian values is giving way to parenting in line with more democratic, nondogmatic values. According to Juul, every family member should be treated as having equal dignity. His understanding is that children develop most healthily when they are treated not as objects on the low end of the power structure but as full humans (p. 6). When this happens, Juul observes, children become increasingly independent and self-reliant as they grow up (p. 7). Moreover, it is likely that such children will become more empathic and less self-centered. Accordingly, there is much reason to believe that the payoff to the variety of HC investments necessary to create a caring economy will be great. If these investments are successful in creating within the economy a human infrastructure whose cultural values are the partnership values, the benefits will come as

more and more children grow up and readily assume adult caring responsibilities in all sectors of the economy.

As evidence that investments in caring infrastructure make sense, Eisler cites the experience of three Nordic countries, Norway, Sweden, and Finland. These are the countries that have done the most to bring their cultural values in accord with the partnership end of the continuum. Accordingly, in these three countries,

> we find more democracy and equality in both the family and the state; a higher status for women (approximately 40 percent of their national legislators are female); and concerted efforts to leave behind traditions of abuse and violence (they pioneered the first peace studies and the first laws prohibiting physical discipline of children in families, and have a strong men's movement to disentangle "masculinity" from its equation with domination and violence) . . . They pioneered economic policies that combine positive elements of socialism and capitalism—but go beyond both by adopting economic inventions that give priority to caring for people and nature. These countries have government supported child care, universal health care, stipends to help families care for children, elder care with dignity, and generous paid parental leave. (Eisler 2012, p. 67)

Similarly, Juul (2011, p. xvi) favorably cites the Nordic countries with respect to the transformation occurring in the way adults act toward children. He writes, "For the first time in the modern age, adults are seriously considering the inalienable right of the individual [child] to personal growth from a nondogmatic and nonauthoritarian standpoint" (p. xvi). He calls this a "quantum leap in human development." And he suggests that in this regard the "Nordic countries might serve as a model for other countries" (p. xvi).

Conclusions

In a variety of different ways, this chapter develops insights that help to understand the causes and cures of the dysfunctional human development associated with social problems. In the social problems analyzed, human behavior either individually or collectively is failing in some respect. To remedy these failures, this chapter argues that investment in appropriate types of HC is needed to help restore or repair the functioning of the socioeconomy. One way of understanding these socioeconomic dysfunctions is that they are caused by harmful behavioral patterns that arise as people and businesses adapt to new technologies and economic events. A second way of understanding these dysfunctions is to examine the underlying core human factors at the heart of the dysfunction. Almost

inevitably, underlying the particular problematic patterns is excessive self-interested motivation that is not tempered, restrained, or conditioned by empathy or other-regarding interest. When this is the case, the remedy involves making the kinds of HC investment that helps people balance and integrate the two main motives, self-interest and empathy. In Riane Eisler's view, the solution in essence is to develop a caring economy. There is good reason to believe that societies can become more caring and in the process make much progress toward overcoming their social problems. However, creating a caring economy is a much more challenging endeavor than making an investment in a large, complicated capital good (machine or structure) or even keeping the economy on a viable growth path. To develop a caring economy requires us to gain understanding of the human developmental aspects of our socioeconomies and to gain the will to fix the dysfunctions. Unless this happens, it is likely that the dysfunctions will grow and socioeconomic performance will continue to decline. Hopefully, as we gain more understanding of how socioeconomic functioning depends on human development, we will be able to make wise investments in HC that repair and build all our essential human capacities, thereby fulfilling the promise of our economies.

PART V

CONCLUSION

CHAPTER 10

REALIZING A SOCIETY'S FULL POTENTIAL REQUIRES INVESTMENTS IN HUMAN CAPITAL THAT ENABLE HUMAN DEVELOPMENT

There is no doubt that the standard HC concept developed by Gary Becker, Jacob Mincer, T. W. Schultz, and others has been extremely important. There is a very impressive body of mainstream HC research to point to. However, this standard version of HC used by mainstream economists has severe limitations. That is why I have argued in this book that economists and other social scientists ought to use a much broader concept of HC, one that fully reflects important realities of humans' lives that the standard concept does not consider. Doing so would be tremendously beneficial for HC research in that it would help us understand many facets of human development not previously studied by economists.

Before returning to the book's main conclusions, let's take a little detour related to technological change, productivity, and some relatively unrecognized aspects of human behavior. First, let's consider the path of future technological change, particularly the part related to computers. With respect to technological change overall, there are both optimistic and pessimistic views concerning whether important, impactful technological change will continue at a pace comparable to the last 50 or 60 years. The pessimists argue that new technologies will not have nearly the same impact on the economies of the future as was the case in the past (*The Economist* 2013). For example, Robert Gordon argues that "there will be more innovation—but it will not change the way the world works in the way electricity, internal-combustion engines, plumbing, petrochemicals and the telephone have" (p. 3). Similarly, Tyler Cowen thinks "there are no more low-hanging fruit." These pessimists are aware that there are now more people working in research and development, but they point to evidence that the contribution of people in research is much less than it used to be (p. 3). In many areas

of the economy, there seems to be a kind of diminishing returns to new technological change. On the other hand, optimists point out that the time it takes to fully exploit new technology can be long and variable and that the full impact of recent technological advances, especially those in information innovation, may still be largely in the future (p. 5). Optimists also argue that in some cases (e.g., driverless cars) there will be an acceleration in the effect they are having (p. 5). Optimists also point to changing economic incentives related, for example, to cheaper computer processing power and cheaper energy that are likely to spur innovative activities (p. 6). Suffice it to say that there are many other cogent arguments on both sides of the issue.

My impression is that there will continue to be a strong stream of computing innovation, but that neither I nor more knowledgeable others are likely to be able to make creditable judgments about the future productivity impact of that innovation. There is no doubt that future computing devices will enable us to do more, do faster, and do easier, but how much of a productivity impact these technologies will enable is anybody's guess. This means that my potential productivity as a word-processor of my professional writing (not to mention the other computer functions that I use such as storing, retrieving, and communicating information and knowledge) will surely rise. That's the good news. I am, however, very concerned about my actual productivity and the possible gap between my potential and actual productivity. The bad news is that my actual productivity is increasingly suffering due to external events impacting my computer, leaving the prospect of an ever widening gap between my actual and potential productivity. The most significant of these negative external events is what happens when my computer operations are severely disrupted by "viruses" (some of which computer specialists call malware, spyware, adware, etc.) that are increasingly having a detrimental impact on my computing activity. Apparently, my computer is increasingly vulnerable to viruses that antivirus programs seem relatively powerless to prevent. Consider the losses one experiences due to a virus infection. They include: (1) the loss of my word-processed writing, (2) the opportunity cost of the time lost in dealing with the virus problem (assessing the damage, figuring out how to deal with it, and determining who to hire to fix the problem), (3) the loss of money and/or resources (what one has to pay the computer repair specialist), (4) the cost of adding software with an even higher degree of antivirus protection, (5) the lost time involved in devising and learning safer computing procedures, and (6) the mental cost associated with the vulnerability and victimization involved when a virus wipes out one's precious work. All these losses amount to a lowering of productivity, thereby explaining

why my actual computer productivity is on an alarming dive relative to my potential productivity.

For completeness, it is important to note a number of other external events that can negatively impact one's actual computer productivity. These include: (1) being a victim of computer hacking, (2) being a recipient of spam, (3) receiving phishing messages, (4) receiving false or misleading product offers or advertisements, and (5) receiving tempting but unethical and/or unwholesome offers. Being a victim of a malicious computer hacker who gains access to one's computer system in order to cause extensive damage obviously causes much loss and lowered productivity. In other cases such as those involving spam, phishing, and unwanted offers, experienced computer users may experience almost no loss of productivity. Nevertheless, even seasoned computer users may occasionally get tricked into costly responses as the undesired messages over time become more sophisticated, and therefore, it takes more time to evaluate and judge the merit of these possibly bogus messages.

The upshot of the analysis of computer productivity is that (1) computers can be great tools that enable users like me to realize their high and growing productivity potential, but that (2) due to negative external human factors, users' actual productivity may be much lower than potential. The amount by which actual productivity is lowered is presumably related to the degree of maliciousness (and perhaps the computer skills) of the hackers, phishers, and others who attempt to take advantage of ordinary computer users in order to achieve their self-interested goals. In other words, it is human factors in the socioeconomic system that prevent the realization of high productivity and make the computing experience unpleasant for too many people. That conclusion has a resemblance to some of the situations analyzed earlier in this book. It also suggests an interesting possibility.

If certain human factors are what is causing users' computer productivity to be substantially below potential, is it possible that this problem could be improved by certain investments in HC? In other words, there might be viable investments that are largely unrelated to computer technology per se (the physical workings of the computing machinery) that could improve users' computing productivity. These are also investments not designed to improve the technical competence of computer users. The purpose of the investments would be to reduce the number of malicious, antisocial human actions that cause harm to computer users and lower their actual productivity. What kind of investments in HC could have this favorable effect? To answer this question would require some research into what it is that influences certain people to become malicious and antisocial in the computer sphere. Assuming such research could help understand this issue, it should then become clear what kinds of investment in HC would lead to significant lessening of these harmful

actions. Perhaps there is something in the education or other developmental experiences of some people that leads them to become the kind of people who want to harm others' computer experiences. Armed with such knowledge, it might be possible to design investments in HC that would lessen this behavior. In other words, it might be due to deficits in human development and the corresponding lack of certain types of HC investment that computer users' productivity is not what it could be. This is reminiscent of conclusions reached in earlier chapters. To try to be clear about this, let's reconsider a number of the social problems and other situations that were analyzed previously.

Chapter 5 explained about the situation of many children who experience adverse childhood experiences (ACEs), typically involving stress and/or trauma in their early years. Frequently, these children come from low-income families who have low time and money available for childcare and for enriching, stimulating child activity. Some of these children suffer from ACEs on account of the lack of nurturing, committed, attuned, consistent, loving parenting. Due to such circumstances, these children's development, particularly their brain development, is likely to be adversely affected. Moreover, if these children experienced a relatively high degree of adversity, they are likely to have more behavioral and learning difficulties in their early years as well as be likely to incur more physical and mental health problems as adults. In general, the more adverse experiences these children have had, the more likely is their development to be derailed by events beyond their control. If it were not for their ACEs, there is little reason to believe that these children's development would have become stuck. These developmental failures, however, can generally be remedied by a variety of appropriate interventions involving investment in HC. Many of these investments can help individuals get back on the developmental track, and thereby, live full, productive, and rewarding lives. The needed investments in HC can be individual oriented such as when traumatized children benefit from psychotherapeutic interventions. On the other hand, when ACEs related problems are to a considerable extent part of a larger socioeconomic pattern, remedial HC investments need to be more collective in orientation and directed at counteracting the overall socioeconomic dysfunction. To sum up, people with children can be good, wise, nurturing, fully committed parents who help their children have many valuable experiences, overcome bad experiences, and avoid traumatic experiences. But all too frequently, for any number of reasons, things do not go so well. As a result, many children's high human development potential does not get realized.

As the socioeconomic model of obesity developed in chapter 6 makes clear, people in modern developed economies are very much at risk for

becoming obese. This is due to a combination of important external and internal factors that influence people's choice of diet and behavior. The first external factor relates to the influences deriving from the infrastructure of obesity (the many behaviors of food industry businesses). Due to the infrastructure's influence, people living in modern economies typically have too few healthy food choices, and they are bombarded with many persuasive messages influencing them to eat foods that are relatively unhealthy. The second important external factor relates to technological change in food processing businesses and agriculture. As a consequence of this technological change, the prices for processed foods and for many industrial farm produced foods have been decreasing relative to prices for more healthy foods.

The most important internal factor influencing individuals' diet and behavior choices is that too many people lack the personal capacities (personal capital, social capital, and health capital) to resist both the unhealthy influences of the infrastructure of obesity and the incentives to eat unhealthily due to relative price change. Of course, individuals could by themselves learn to eat healthily and change their habits, thereby overcoming their tendencies to become obese. But, as the socioeconomic model indicates, obesity is a social problem deeply embedded in the socioeconomic patterns of the society. People cannot easily extricate themselves from these socioeconomic patterns. Therefore, to remedy the obesity problem, it is not sufficient to rely on individual oriented investments in HC. A full obesity solution must also involve collective efforts to transform the unhealthy socioeconomic patterns at the heart of the problem. To sum up, people no doubt can choose to eat and behave wisely and consequently become fully healthy individuals without weight problems. But in modern economies, too many people are succumbing to the strong influences leading them to become unhealthily overweight. Therefore, all too frequently, people's potential for high health and optimal weight does not get realized.

Although each of the chronic diseases is different, the main elements of the socioeconomic model (chapter 7) explaining their causes is essentially the same as the socioeconomic model of obesity. Recall the main external and internal factors causing these ailments. Chronic ailments, sometimes known as the diseases of civilization, only became prevalent with the emergence of western (or "civilized") lifestyles and dietary practices. As countries became more economically developed and their citizens began to eat processed foods such as white flour and sugar, chronic diseases such as diabetes and cancer began to show up in increasing numbers. Similar to obesity, these chronic ailments are to a great extent caused by habitual behaviors that are deeply embedded in the socioeconomic patterns of

society. There is much evidence that large numbers of people are stuck in these dysfunctional eating and lifestyle patterns. As is true for obesity, individual oriented HC investments are for the most part not a sufficient remedy. To greatly reduce the incidence of chronic ailments will require large preventive investments in order to transform the unhealthy socioeconomic patterns at the heart of the problem. To sum up, people with healthy eating and lifestyle patterns can live long healthy lives largely free of chronic ailments. But in most modern, "civilized" socioeconomies, too many people have adopted the lifestyle patterns associated with a high incidence of chronic disease. Thus, all too frequently, people's potential for a long, disease free life does not get realized.

There are a fair number of other ways in which people fail to realize their potential. People, for example, may fail to realize their potential in decision making. As chapter 3 explains, people typically make many kinds of cognitive errors in their decision making, thus failing to realize their potential as rational decision makers. Some of these errors are due to individuals' use of heuristics when making decisions in an intuitive manner. Other errors occur when people make decisions while under the influence of strong negative emotions. People's decision making may also fail to be rational if individuals make decisions based on what they desire (actual preferences) rather than on the basis of what is truly in their best interests (true preferences).

People may fail to realize their potential on account of not successfully completing important developmental tasks during certain stages of adult life (see chapter 4). For example, an adult could fail to develop the kind of viable, motivating life structure that is necessary for him/her to realize his/her dreams and values and to make an important contribution to society. If such development goes poorly and the person's developmental tasks are not accomplished during a particular adult stage, the individual is likely to experience decline, loss of vitality, imbalance, and stagnation (Levinson 1978, pp. 321–322).

Also, as explained in chapter 4, humans are capable of developing important virtues such as prudence, love of knowledge, courage, firmness, generosity, temperance, and justice. Such virtues are acquired capabilities that enable the persons making such HC investments to contribute with a high degree of excellence to challenging and important activities. But although many people develop these virtues, many more fail to develop them, and thus fail to realize their virtuous capabilities. Further, it should be noted that only a relatively small number of people who develop a high degree of virtue can be said to have acquired genuine wisdom that is reflected in their thinking and decision making.

Societies of different kinds (capitalist, socialist, etc.) need citizens with sufficient amounts of characteristic types of virtue in order to function well. Although the most important virtue for a capitalist society is said to be the practical virtue, prudence, there is good reason to believe that capitalism needs other virtues such as love, faith, hope, courage, temperance, and justice in order to constrain and balance prudence (McCloskey 2006). Otherwise capitalism's functioning is likely to become unbalanced, unstable, and possibly disastrous. It follows that a capitalist society, not just its individual citizens, could fail to realize its human potential.

The upshot of the preceding paragraphs is that there are many reasons why humans individually and/or collectively fail to realize their potential. The preceding has explained how this is true with respect to (1) computer productivity, (2) children's early development, (3) the socioeconomic patterns related to obesity, (4) the socioeconomic patterns related to chronic disease, (5) people's decision-making performance, 6) adults' developmental progression from one life stage to the next, (7) people's development of important virtues and wisdom, and (8) the importance of human virtues to the functioning of a capitalist society. In all of these, humans' various capacities (or lack thereof) are a key to understanding why humans may not be realizing their potential. This is important to note because of what it indicates about the standard conception of HC. The latter does little or nothing to help us understand the human dimensions of why people often fail to realize their potential in these kinds of situations. To understand this and what can remedy these situations requires that we utilize a much broader conception of HC. Moreover, it is important to understand the many types of nonstandard investments in HC that can help us resolve important social problems and improve the functioning of our societies. To a great extent, the needed investments are not individual or cognitive in nature; they are collective and noncognitive ones. Hopefully, this book will provide an important impetus to economists to do the research work necessary to bring into wider use within economics a much broader conception of HC, a HC concept fully integrated with the concept of human development. It is further hoped that this and subsequent research work will help to make economics a more human discipline.

NOTES

1 Why a Broad Conception of Human Capital Is Needed

1. Unlike with physical capital, human capital cannot be separated (or alienated) from its owner.

2 Integrating Human Capital with Human Development: Toward a Broader and More Human Conception of Human Capital

1. The HD concept used here is related to but distinctly different from the HD concept pioneered by Amartya Sen, Martha Nussbaum, and others. The latter concept which has been much used by international agencies (e.g., World Bank, United Nations) concerned with economic development emphasizes a great number and variety of human functionings and capabilities. This HD concept is very useful for thinking about national and world economic development and how its progress can be measured. A good overview of this concept and its uses can be found in Alkire (2010).
2. These children's hypothalamic-pituitary-adrenal axis is not functioning well (Tough 2012, p. 182).
3. One interesting recent development involves a systematic approach to improving parenting (Triple P—Positive Parenting Program) which was originally developed in Australia and is now being tested in South Carolina with funding from the Centers for Disease Control and Prevention. The early results suggest that parenting improvements due to Triple P dramatically reduce the negative consequence of poor parenting (Bornstein 2013).
4. Cells are "surrounded by a semipermeable cell membrane. Cell receptors are located in this membrane, where they are available to bind with various ligands suspended in the extracellular fluid that bathes all cells and serves to transport the various nutrients, waste products, and informational substances" (Pert 1997, p. 348).
5. Daniel Goleman, "Perfect Practice Makes Perfect," posted on LinkedIn, December 20, 2013.

6. There is clearly considerable rethinking going on about the nature of and appropriate naming of these different human noncognitive capabilities. This is reflected in the latest research of Heckman and Kautz (2013).
7. For example, child development specialists at Harvard University's Center on the Developing Child (Working Paper 5, February 2008) recognize that the timing and quality of early childhood experiences along with an environment free of toxins and with adequate nutrients combine to shape brain architecture and that it is very important for the young child to have appropriate experiences at the right stages of development (p. 1).
8. According to Engle et al. (2007, p. 229), "child development refers to the ordered emergence of interdependent skills of sensori-motor, cognitive-language, and social-emotional functioning."
9. According to Wilber (2001, p. 17), moving from lower to higher stages of development involves a "successive decrease in egocentrism" as the person's consciousness grows and becomes more aware of self and others. It is also true that "each stage of development brings not only new capacities but the possibility of new disasters; not just novel potentials but novel pathologies; new strengths, new diseases" (p. 22). Further, a person who gets "stuck," unable to negotiate the transition to the next higher stage, will remain more egocentric then if the transition had been successful (p. 22).
10. According to the Harvard University Center on the Developing Child's website on the Science of Early Childhood, efforts to overcome the damage done by unresponsive childcare pay off by (1) creating a healthy next generation, (2) raising economic productivity, (3) improving citizenship, and (4) improving the parenting of the next generation. These are important reasons for establishing a developmentally oriented HC strategy that not only supports early childhood development efforts, but also supports noncognitive development occurring in later years.

3 Investments in Human Capital to Remedy Decision-Making Errors

1. Decision-making error connotes an absence of the perfect rationality that conventional economics assumes (Ariely 2004). These errors are not random or senseless; they are systematic and predictable.
2. This chapter's obesity analysis, which focuses only on food decision making, is not intended to be a complete analysis of the causes of obesity. For a more complete analysis, see Tomer (2011).
3. There is no denying that the structure of the human brain is related to important human motivations. This chapter, however, is not primarily concerned with that.
4. Although Kessler (2009, pp. 181–225) does not explicitly use the language of intangible capital, his discussion of how to deal with the obesity problem recognizes that people would need to make significant efforts to bring about lasting qualitative changes in their behaviors.

5. German city population data are for 1993.
6. It is also conceivable that one's true preferences are not only revealed or discovered during one's life but that true preferences may change over the life course.
7. "The behavioural economics perspective developed by Tversky and Kahneman, Thaler and Sunstein, and others is often characterized as presenting humans as essentially flawed, less-than-rational creatures whose cognitive biases lead us into sub-optimal behavior, and therefore need to be 'fixed'" (Lockton 2012, pp. 11, 13).
8. Some intangible human capital investments designed to overcome habitual hypereating of unhealthy foods involve education and otherwise helping people overcome their biased, poor decision making. In other cases, where the hypereating habit stems from deep rooted mental difficulties, which possibly derive from adverse childhood experiences, the prescription presumably would be for psychotherapy. Dealing with the latter type of problem is certainly important, but it is strictly beyond the scope of this chapter. For research and advocacy related to overcoming behavioral deficits stemming from poor parenting in the early childhood years, see James Heckman's writings (e.g., Knudsen et al. 2006).
9. See Tomer (2012) for use of the brain plasticity concept with respect to economic motivation.

4 Smart Persons and Human Development: The Missing Ingredient in Behavioral Economics

1. The language used by PE researchers further implies that the cognitive errors they identify are universalistic, applying to all humans, not just particular groups of people (Etzioni 2014, pp. 394–395). There is, however, some evidence supporting the view that some groups of people do not behave in a predictably irrational manner.
2. Gerd Gigerenzer has explained in his research how human decision makers with limited computational ability and knowledge in the face of limited time and resources may make reasonably good decisions using heuristics, especially when they have had an opportunity for learning how to use them (see, e.g., Gigerenzer and Goldstein (1996).
3. See, for example, the important empirical research of Anda et al. (2006) and Felitti et al. (1998).
4. Levinson's research builds to some degree on the research of Carl Yung and Erik Erikson (Levinson 1978, pp. 4–5).
5. See also Levinson's (1997) research on the adult developmental patterns of women.
6. It should be noted that there are certain types of human capabilities (athletic, mathematic, music, etc.) for which peak performance typically occurs prior to early middle age. For example, there is evidence that mathematicians generally make their greatest contributions prior to age 40.

7. Note that any society will have many characteristic developmental patterns, which include the typical developmental challenges faced and the typical levels of development reached by their citizens. In a particular society, the term SP presumably would refer to a person whose development outcome is somewhat typical for the society. Of course, in any society, there is considerable inequality in developmental outcomes. Thus, it can be useful to distinguish among groups with broadly different levels of development and competence. Recognizing this inequality may help us think more clearly about the kind of HC strategy that would be best to achieve a country's HD goals as well as its economic inequality goals.

5 Adverse Childhood Experiences, Poverty, and Inequality

1. The initial version of this figure appeared in Felitti et al. (1998, p. 256). The current revised version was obtained from workshop handouts (April 2013) prepared by Heather Larkin of the School of Social Welfare, State University of New York, Albany.
2. Tomer generally uses the term personal capital to refer to the developed personal qualities that reflect important aspects of an individual's functioning. Heckman, on the other hand, seems to prefer the term, noncognitive human capital. "The difference between the two is that Heckman's category is largely defined by what it is not, that is, it is not cognitive. Whereas personal capital, although largely noncognitive is defined in a more positive way, that is, personal capital is defined in terms of the specific human qualities or categories of qualities that it contains" (Tomer 2008, pp. 20–1).
3. The new upper class is the upper segment of the upper-middle class.
4. Strictly, it is hypothesized that higher-income families either have relatively low rates of ACEs or that if their ACE scores are similar to lower-income families, they do much more to remedy their children's resulting psychological and social deficits arising from these experiences.
5. An alternative to the therapy Perry writes about is a treatment called child-parent psychotherapy in which parents can work with therapists to improve parent-infant attachment relationships and attempt to overcome the effects of trauma. A scientific evaluation of this type of therapy found it to be successful in a high percentage of cases (Tough 2012, p. 38).
6. For a more practical and comprehensive treatment of the subject, prevention of child maltreatment, see World Health Organization (2006, pp. 32–49).

6 What Causes Obesity? And Why Has It Grown So Much?

1. Note that while Hyman and Taubes have extensively studied the theories and findings in the health science literature, they are not health scientists in the strict sense that they do the kind of research that typically gets

published in scientific journals. Because of this, some in the health science field would no doubt be inclined to discount their writings and theorizing despite the logic and careful thinking that has gone into their work. In other words, their positions on the health science related to obesity and their criticisms of mainstream health science are vulnerable to the charge that their work lacks scientific legitimacy. While the legitimacy issue is understandable, it is unfortunate if this blocks health science progress. The problem is that if the existing scientific literature is biased and narrow in some respects, it may be difficult for researchers who are critical of the mainstream and are professing an alternative view to publish their research in the field's established scientific outlets. As a result, writings developing an alternative health science view are likely to find first expression outside the mainstream scientific literature, for example, in books, notably books written for an audience broader than the strict scientific community. Thus, it is not entirely uncommon for important new perspectives to arise outside the legitimate scientific literature and only later, as many scientists catch up, to acquire full scientific sanction. This seems to be the present situation in the health science of obesity. Therefore, it is very important to pay attention to and utilize the work of authors such as Hyman and Taubes despite their lack of certain mainstream scientific credentials.

2. Currie et al. (2010) find that proximity to a fast food restaurant has a significant effect on the risk of obesity. More specifically, their empirical analysis found that 1) when a fast food restaurant is very close to a school, it raises the obesity rate for young teens and 2) when a fast food restaurant is relatively close to the residence of a pregnant woman, it raises the probability that she will gain a significant amount of weight during her pregnancy.
3. After listening to my presentation concerning the factors contributing to obesity, especially the infrastructure of obesity, one of my students, Flavia, whose home is in Bolivia, remarked on the contrast between Bolivia and the United States. In Bolivia, she said, there are very few fast food restaurants and little processed food is sold. Bolivian people rarely buy these foods partly because their prices are higher than the fresh, whole foods which are the regular fare in their markets. She also noted that she does not recall seeing any obese people in Bolivia. I found this to be an interesting bit of anecdotal evidence supporting the alternative health science on which this chapter is based.
4. There is also evidence that women with greater food "price-sensitivity," a measure of how important price is when buying food, have higher obesity rates than women with lower price-sensitivity, controlling for income and other relevant factors (Gandal and Shabelansky 2010).
5. When people, especially women, who are hyper sensitive about being slim and too little concerned about being healthy, acting in accord with mainstream cultural values, follow calorie restricted diets recommended by health practitioners, the results are frequently counterproductive in the long-term. While the dieter may lose weight in the short-term, the lost

weight is likely to be both muscle and fat. The problem almost inevitably occurs when the individual goes off the restricted diet and gains the weight back. Typically, more weight is gained back and the weight gain is mostly fat. Thus, the individual winds up being more overweight (or obese) than before the dieting began (Hyman 2006, pp. 13–7).

7 Intangible Capital, Chronic Ailments, and Other Persistent Socioeconomic Problems

1. Quite a few well-known economists, including Adam Smith, Walras, and Irving Fisher, have recognized the capital nature of people skills (Kiker 1966, p. 481). More recently, in addition to Becker, the research contributions of T. W. Schultz and Jacob Mincer have been important.
2. Among the important contributions to the social capital literature are Bourdieu (1986), Coleman (1988, 1990), Putnam (1993), Fukuyama (1995), and Ostrom (2000).

8 Stemming the Tide of Obesity

1. According to Gintis, Bowles, and Boyd (2006, p. 17), economists tend to overemphasize policies involving material incentives inducing self-interested buyers to change their behavior in the public interest. The authors point out that in many cases it would be better to use laws and regulations in order to stigmatize harmful behavior, thereby changing people's attitudes and values and corresponding behavior.
2. See Schlosser (2001, pp. 139–142) for the story of Chicken McNuggets.
3. In the view of Melo, Studdert, and Brennan (2006, p. 2606), "the success of government regulation of the food industry will probably fall short of what industry could accomplish alone if it were strongly motivated to do so. Efforts to encourage self-regulation and corporate responsibility could go far toward improving the healthfulness of foods sold."

9 Toward Lasting, Significant Improvement in Our Socioeconomies

1. The human motivation deriving from the paleomammalian brain is empathy, other-interest, or other regarding. These three terms are used in a roughly synonymous way.

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