



Michael Breitenbach
Elisabeth Kapferer
Clemens Sedmak

Stress and Poverty

A Cross-Disciplinary
Investigation of Stress in Cells,
Individuals, and Society

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Michael Breitenbach
Department of Cell Biology
University of Salzburg
Salzburg, Austria

Elisabeth Kapferer
Centre for Ethics & Poverty Research
University of Salzburg
Salzburg, Austria

Clemens Sedmak
Keough School of Global Affairs
University of Notre Dame
Notre Dame, IN, USA

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Preface

Stress is a biological phenomenon that can be described in biological terms, even at a cellular level. Poverty is a social (and societal) challenge that can be examined using both the descriptive language of the social sciences and the normative language of moral philosophy and ethics. Poverty is experienced as stressful, and many studies discuss the link between poverty and stress.

A book about stress and poverty connects a biological phenomenon with a social and societal challenge. This book is about poverty “and” stress, not in the sense of an addition—we talk about stress, and then we talk about poverty—but in the sense of a connection in which we talk about poverty insofar as it is related to stress, and we talk about stress insofar as it is related to poverty. By exploring this link, we are exploring an intersection, the intersection between stress and poverty. How can stress research help us to reach a deeper understanding of poverty, and how can poverty research contribute to a richer discourse on stress?

The main claims of the book are threefold: Stress research and poverty research are mutually relevant conversation partners, and these cross-disciplinary interactions elevate our understanding. Even though the language may be different, the term “stress,” used in selected biological fields and in the various fields of poverty research, refers to the same series of phenomena. Finally, the intersection of stress and poverty is not only of theoretical interest but also politically relevant because of the possibility of policy interventions that are explicitly stress-research sensitive.

This book is the result of many conversations and also the reflections of a small but intense learning community, a circle of three colleagues talking to and learning from each other (a process, which also led to the glossary at the

end of the book¹). Michael Breitenbach is a biochemist working in the field of molecular genetics; Elisabeth Kapferer is a literature scholar with a special focus on social exclusion and the discourse on poverty; and Clemens Sedmak is an ethicist with a special interest in poverty research. Even though the main responsibility for the chapters of this book (and the main work on these chapters) has been carefully divided, the text of this book is designed to be one coherent piece of research and writing.

Breitenbach is the main author of Chaps. 2, 3, 4, and 5. Chapter 6 is the product of a close collaboration between Breitenbach and Kapferer. She took the lead in writing the introduction (Chap. 1), in bringing the chapters together, and in building bridges between the biological discourse, the social science discourse, and the normative deliberations. Kapferer and Sedmak authored Chaps. 8 and 9, and Sedmak is responsible for Chaps. 7, 11, and 13. Chapter 10 was in large part written by Sedmak, with some smaller parts contributed by Kapferer; Chapter 12 was also mainly written by Sedmak, with a short biological subsection authored by Breitenbach.

The structure of the book is intentional in that the biological foundations are presented first, before we move into the social science discourse. We have worked hard to bring together our disparate disciplines in a coherent book.

We are grateful to the publishing house for its assistance and flexibility, with special thanks to our editor Tanja Weyandt for her support.

In lieu of a dedication, we would like to say: In writing this book, we have kept in our minds and hearts the many people struggling with stressful lives and the consequences of social exclusion. In some small way, maybe in teaching and training settings, we hope that this book can contribute to a deeper awareness of these challenges many members of the human family face in their daily lives.

Salzburg, Austria
Salzburg, Austria
Notre Dame, IN

Michael Breitenbach
Elisabeth Kapferer
Clemens Sedmak

¹ Glossary terms are bolded at first mention in each chapter.

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Finally, we want to thank our families for their immeasurable support during the time we spent working on this book project.

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About the Authors

Michael Breitenbach is a retired full professor of genetics at the University of Salzburg in Austria. He has published 230 research and review papers and edited more than 10 books in the fields of the genetics of aging and stress response. He has received a number of national and international honors for his work in genetics, including being elected as a fellow of the AAAS. His main interest in research in the last 30 years has been the utilization of the yeast genetic system to study basic eukaryotic molecular biology, in particular the mechanism and the results of oxidative stress.

Elisabeth Kapferer holds a doctoral degree in German literature studies. She is member of the research staff at the Centre for Ethics and Poverty Research at the University of Salzburg, Austria. Her research activities, which include several (co-)authored and (co-)edited publications, focus on poverty and social exclusion in wealthy societies. Her main research interests are representations of poverty in the arts, public discourse on poverty, and poverty-related disparities in education and health. She is member of the scientific advisory board of the Austrian Health Promotion Fund (Fonds Gesundes Österreich).

Clemens Sedmak holds doctoral degrees in philosophy, theology, and social theory. He is professor of social ethics at the Keough School of Global Affairs and concurrent professor of theology at the University of Notre Dame, IN. He is also co-director of the Centre for Ethics and Poverty Research, University of Salzburg, Austria. He works at the intersection of poverty studies and ethics.

His recent publications include *The Practice of Human Development and Dignity*, co-edited with Paolo Carozza, Notre Dame: University of Notre Dame Press 2020 and *Subsidiarität: Tragendes Prinzip menschlichen Zusammenlebens*, with W. Blum, H. P. Gaisbauer, Regensburg: Friedrich Pustet 2021.

Abbreviations

ACTH	Adrenocorticotrophic hormone
Atf4	Activating transcription factor 4
ATP	Adenosine triphosphate
bp	Base pairs
CHD	Coronary heart disease
CRH	Corticotropin-releasing hormone
DMR	Differentially methylated region
EIA	Enzyme immunoassay
eIF2alpha	Eukaryotic initiation factor 2 alpha
ER	Endoplasmic reticulum
GABA	Gamma-aminobutyric acid
GAS	General Adaptation Syndrome
HNE	4-Hydroxynonenal
HPA axis	Hypothalamic–pituitary–adrenal axis
Hsf1	Heat shock transcription factor
<i>HSF1</i>	Yeast essential gene
Hsps	Heat shock proteins
IGF2	Insulin-like growth factor 2
ISR	Integrated stress response
LTD	Long-term depression
LTP	Long-term potentiation
MCP-1	Monocyte chemoattractant protein 1
MIPS	Mental Stress Ischemia Prognosis Study
MMP-9	Matrix metalloproteinase 9
NADH	Reduced nicotinamide adenine dinucleotide
NADPH	Reduced nicotinamide adenine dinucleotide phosphate
NO	Nitric oxide
PNAS	<i>Proceedings of the National Academy of Sciences</i>

xvi **Abbreviations**

PNI	Psychoneuroimmunology
PSS	Perceived Stress Scale
PTSD	Post-traumatic stress disorder
RNS	Reactive nitrogen species
RONs	Reactive oxygen and nitrogen species (ROS + RNS)
ROS	Reactive oxygen species
SES	Socioeconomic status
SH	Sulfhydryl
SOD	Superoxide dismutase
SRRS	Social Readjustment Rating Scale
SSRI	Specific serotonin reuptake drugs
TICS	Trier Inventory for the Assessment of Chronic Stress
TSST	Trier Social Stress Test
Yap1	Yeast activating protein 1
<i>YAP1</i>	Yeast gene coding for Yap1

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hunger in the later part of pregnancy rather than in the early period. In these cases, there was no significant effect on CpG methylation on the promoter of IGF2. The effect seen in part **a** leads to a lifelong increase in IGF2 expression and to a significantly higher incidence of metabolic syndrome and type II diabetes in those individuals. The green curve at the bottom of the figure shows the daily calorie intake in the Western Netherlands in 1945. Source: Heijmans et al. (2008) with permission. © (2008) National Academy of Sciences, U.S.A.

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Stress and Poverty: An Introduction

“I wish I could press ‘pause’ at times, I wish I could have a break, relieve the pressure,” writes Undine Zimmer (2013, our translation), describing her situation as a young adult whose background is framed by poverty and poverty-related stress. She continues: “Yet that’s not possible. And will not be for the coming years either.” Undine Zimmer was born in 1979 and grew up in Berlin, Germany, the daughter of parents who had separated around the time of her birth and were both dependent on welfare payments. Undine was one of so many children, even in affluent societies, who are raised under severely deprived conditions, one of so many people living in poverty. While by the time she wrote down her memories she had managed to overcome most of the restrictions of her childhood, it becomes very clear in her recall that the circumstances in which she found herself as a child and as an adolescent have left their mark—and they still affect her considerably as an adult.

These “circumstances” are not just Undine’s individual circumstances. They are shared by people suffering poverty in different countries and societies, even in different times. They would not be sufficiently described solely in statistical terms of economic or material deprivation, such as a low household income, for instance. Rather, these circumstances also involve a particular set of experiences: to point out just a few, frustration, anxiety, fear of what might happen next, struggle and strain, and not least of all, stress.

“Everybody experiences stress, regardless of class,” concedes Scottish journalist and musical artist Darren McGarvey (2017), but there is evidence that there are considerable status-related differences in “the degree to which stress inhibits our progress, harms our health and social mobility and shapes our

social attitudes and values.” In a nutshell, such poverty-linked stress is what this book is about.

Stress is universally experienced. Stress can even be described as not only unavoidable but a vital ingredient of human life. In this sense, stress and relaxation are two poles between which life can develop and thrive, physically, mentally, and emotionally. Poverty thwarts the chance for relaxation. Poverty causes “suffering in body, mind and heart” (Bray et al. 2019). Even times of idleness do not allow for a real pause. William T. Vollmann, in his substantial collection of stories and experiences of “Poor People” (2008), points out that even though people living in poverty and deprivation might live “through hours of nothing to do, their idleness never equal[s] leisure.” Among other common dimensions of experiencing poverty, this holds true, no matter where in the world, as a recent international participatory research project led by the international movement ATD Fourth World¹ and the University of Oxford has been able to show (Bray et al. 2019). There is no “pause” key, like the one Undine Zimmer longed for (Zimmer 2013). Or to put it another way: “For those living in poor social conditions ... stress is all-consuming; it’s the soup everyone is swimming in all the time. Stress is the lens through which all of life is viewed” (McGarvey 2017).

Joining Perspectives on Stress and Poverty

It is our intention in this book to bring together and into conversation different academic perspectives on the linked phenomena of stress and poverty. A deeper understanding of these perspectives is unfurled in the following chapters, which consequently are organized along two lines of reasoning about stress and poverty.² Chapters 2–6 are grounded in stress research as developed in a broad array of natural sciences. Chapters 8–12 enter this conversation from the more sociological direction of poverty studies and ethics. Both perspectives contribute important insights to a better understanding of the experience of stress and poverty—and, in particular, of poverty-related stress. These different viewpoints lead to societal and political questions that are at the core of our “cross-disciplinary investigation of stress in cells, individuals, and society” (thus the subtitle of our book). First insights into concepts, definitions, and processes guiding this investigation will be outlined here in the three sections below, *Approaching poverty*, *Introducing biological stress*

¹ The acronym “ATD” in the NGO’s name ATD Fourth World stands for “All Together in Dignity.”

² For a more detailed overview of the book, see below for the section, *The Structure of the Book*.

research, and *Good stress, bad stress, and poverty*. While some of the details presented are complex, they are crucial to the main aim of our book: to advance an interdisciplinary dialogue on the value of the connections between stress and poverty in both academic and policy spheres.

It is necessary for the success of our endeavor, to also investigate and describe the concept of stress as it is used today in the various sciences and in everyday language—this “bridge” in our book is established in Chap. 7 in rich detail. It is an essential question, whether there is a meaningful commonality shared between all those diverse instances where we speak of “stress,” ranging from physical/environmental stress, such as **oxidative stress**³ in single-celled organisms, to chemical stress found in the hormone system and in the neurons of the brains of higher organisms, and finally to the experience of psychological stress, which in our case is the pivotal experience of chronic stress caused by poverty.

This commonality, to anticipate one of our important general findings, is to be found in the biochemical makeup of stressed cells, in the response of those cells to external and internal stresses, and, most importantly, in the regulation of **responses to stress**. This commonality is documented in an overwhelming number of scientific publications, in fields ranging from the genetics and biochemistry of microorganisms to the genetics and biochemistry of the neuroendocrine system of humans and other mammals (in particular the mouse), including psychology, psychiatry, and sociology. As the phenomenon of oxidative stress turns out to be particularly relevant in investigating both physical and psychological stress, first insights into this probable unifying concept are presented here in the introduction (see section “Oxidative Stress as a Unifying Concept” below).

As we will see, there is a growing literature of human stress research that takes into account the idea that there is a relevant interplay between stress and stress responses on the one hand and the **socioeconomic status** of the people experiencing stress on the other. There is also a growing body of literature from multidisciplinary poverty research studying adverse experiences related to poverty, such as stress, and the resulting outcomes for health, especially cardiac and mental health.

³Glossary terms are bolded at first mention in each chapter.

Approaching Poverty

Poverty is a phenomenon prevalent in almost all countries of the world, a global issue by no means restricted to developing countries. Poverty is prevalent also in developed and highly developed countries, despite enormous technological development and rise in average incomes (Lister 2021; Jefferson 2018). Poverty can be addressed academically from various starting points, from different perspectives, with different assumptions, and with quite heterogeneous objectives in mind. There is a huge body of literature on poverty dating back well into earlier centuries; probably the first broad systematic investigation was initiated by Charles Booth in 1880s London (Spicker 1990; Lepenies 2017). This not only suggests that poverty has been recognized as a “problem” for a long time, but in its diversity also gives evidence that poverty is a phenomenon full of complexity and differing, sometimes even contradictory, aspects and dimensions—as are the lives of human beings.

For the purposes of this book, we will not go into detail about academic discussions. In fact, in this introduction, we will only comment briefly on definitions and measures as well as their societal and political implications. We will instead outline our approach to poverty, which is guided by a genuine interest in the reality of lives lived under conditions of, or at risk of, poverty and on “inner perspectives” of poverty, social marginalization, and **social exclusion**.

As mentioned, there is a long-standing debate about how poverty is best described and measured. Academically, there are different approaches to defining poverty, in terms of absolute or relative poverty, for instance, as well as different ways of measuring poverty, focusing on different tangible or intangible “goods,” such as income, assets (and access to assets), and living conditions, but also basic needs, rights, opportunities, and capabilities, to name just a few, and admittedly very diverse, possible starting points. One reason the approaches differ is because poverty occurs in specific contexts, and these contexts may vary depending on time, place, and surroundings; i.e., from biological and geographical conditions as well as from historical, cultural, and societal backgrounds. Regarding definitions and measures, there is as yet no definite and final answer to the question of what poverty is and how it can best be assessed (Walker 2019). Accordingly, this issue continues to be extensively debated, with the aim of addressing and answering these questions more adequately (for a comprehensive overview see Wisor 2012; see also O’Connor 2016; Smeeding 2016; Jefferson 2018; as well as the collections of essays edited by Gaisbauer et al. 2019a or Beck et al. 2020). What we can say,

however, is that some definitions and measures may be more context-dependent than others—lack of income, for example, or material deprivation may be the approaches to assessing poor living conditions that are particularly useful in consumption-oriented societies, but these are not so applicable elsewhere. A focus on capabilities (and capability deprivation) on the other hand, i.e., what a person can actually achieve with her available resources (including, yet not restricted to, income), what a person *can do and be* as well as can *choose with good reasons and value to do and be*, offers a far more universal approach (Sen 1980, 1999; Hick and Burchardt 2016).

Nevertheless, poverty always occurs in specific societal contexts. Poverty is not something *unavoidable* by any society but is a *social problem* (Sedmak 2005). As such, poverty is perceived as a situation calling for action and, hence, for informed decisions. Thus, we have to consider that academic discussions of poverty definitions and measures are not just “academic” debates or debates in the often-quoted “ivory tower,” but are highly sensitive political issues: for outcomes and conclusions may inform (social) policymakers and have an influence on (social) policy decisions and measures, to name just one area of action (Marlier and Atkinson 2010; Gaisbauer and Sedmak 2014; Gaisbauer and Kapferer 2016; O’Connor 2016; Gaisbauer et al. 2019b; Alkire 2016). As an example, we may think here about agreements on poverty lines that may themselves inform agreements on thresholds of eligibility for social welfare measures. Not least, the issues addressed may also be influential in forming public opinions on “poverty” and “the poor.” At the same time, both policy decision-making and public opinion can have an immense impact on the experience of poverty for people actually living in poverty conditions.

The pivotal term here is “experience.” Experiencing poverty means experiencing adversity, regardless of the definition or measure applied. Poverty, as we understand it in the context of this book, is an experience forced on people. Poverty in our understanding does not mean the voluntary, deliberate individual choice to abstain from certain goods or activities, but situations and living conditions that induce, in the face of lack of fundamental resources, certain experiences of exclusion and deprivation. Hence, poverty is not merely an abstract issue of interest for research, but an actual daily reality encountered by actual people. The realities of poverty may vary depending on context (and so do definitions and measures, as we have already stated), yet they involve a range of experiences that are shared, regardless of time and place. Not all dimensions of experiencing poverty are obvious; some are “hidden” (Bray et al. 2019), in the sense that they are anxiously concealed, for instance, pointing to the nexus of poverty and shame. Poverty, or social exclusion, “makes it difficult for a person, in Adam Smith’s classic words, ‘to go about

without shame” (cited in Sedmak 2016; see also Chap. 9). The experience of poverty-related shame, as well as shaming by others, has repeatedly been shown to be “prevalent in both the Global North and South” (Walker 2019; see also Walker 2014). Coping with and making efforts to avoid poverty-related shame and shaming is often also closely linked to the experience of poverty-related stress, as so many firsthand accounts make clear. A focus on such painful experiences seems essential, not least because, as Robert Walker emphasizes, it is “likely to refocus debates away from mere numbers to what really matters, namely people, their experiences and their feelings” (Walker 2019).

Experiences shape identities. Experiences of poverty can have detrimental effects on the development of identities. Poverty not only implies a lack of assets but also a lack of important **life-world** spaces, exclusion from standardized cultural activities, exclusion from access to institutions and systems (including, for instance, education, health care, or the economy) as well as deprivation of capabilities—taken together, a deprivation of **identity resources**. Such resources that allow a person’s identity to grow and to flourish include a sense of belonging (being part of an identifiable group); recognition and acknowledgment of one’s self received from others; a coherent narration of one’s own unique and single life story (with no need to leave things out); and reliable structures of care and concern, together with stable and supportive relationships (Sedmak 2013, 2016). Also, assets and access to assets—“things” as Miller (2008) says—contribute to identity. Poverty disrupts all of the above (Sedmak 2016).

Poverty imposes a challenging and painful experience and a reality that constrains and damages the lives of millions of people worldwide (Lister 2021), raising the question of what kind of poverty knowledge and whose expertise is considered important. As Ruth Lister emphasizes, it is crucial to “acknowledge that, in addition to traditional forms of expertise associated with those who theorize and research poverty, there is a different form of expertise *borne of experience*” (Lister 2021, emphasis added). We will integrate this kind of expertise of poverty knowledge throughout our book in order to learn about poverty as a stressful experience, and as a potential chronic **stressor** (see especially Chap. 9, and subsequent chapters). Insights *from within* and firsthand reports and testimonies are tremendously important sources for our understanding of the experience of poverty.

Certain aspects of poverty-related experiences are part of the life reality we all share to a certain extent as human beings, even if we are not “poor.” Such experiences for instance include “**vulnerability**, experience of limited resources [be they material or immaterial, tangible or intangible, we would