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## **Overcoming Vulnerability in the Life Course - Reflections on a Research Program**

Settersten, Richard ; Buchmann, Marlis ; Kohli, Martin A ; Salmela-Aro, Katariina ; Levy, René ; de Ribaupierre, Anik ; Thomson, Elizabeth

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# Withstanding Vulnerability throughout Adult Life

Dynamics of Stressors,  
Resources, and Reserves

Edited by  
**Dario Spini**  
**Eric Widmer**

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Dario Spini • Eric Widmer  
Editors

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Dynamics of Stressors, Resources, and Reserves

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*Editors*

Dario Spini  
Institute of Social Sciences  
University of Lausanne  
Lausanne, Switzerland

Eric Widmer  
Department of Sociology, Uni Mail  
University of Geneva  
Genève, Switzerland



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# CONTENTS

<b>1</b>	<b>Introduction: Inhabiting Vulnerability Throughout the Life Course</b>	<b>1</b>
	Dario Spini and Eric Widmer	
<b>Part I</b>	<b>Vulnerability as a Multidimensional Process: Spillovers Across Life Domains</b>	<b>15</b>
<b>2</b>	<b>Subjective Well-Being, Family Dynamics and Vulnerability</b>	<b>17</b>
	Jean-Marie Le Goff, Valérie-Anne Ryser, and Laura Bernardi	
<b>3</b>	<b>Positive and Negative Spillover Effects: Managing Multiple Goals in Middle Adulthood</b>	<b>31</b>
	Victoria Schüttengruber, Franciska Krings, and Alexandra M. Freund	
<b>4</b>	<b>How Personal Relationships Affect Employment Outcomes: On the Role of Social Networks and Family Obligations</b>	<b>49</b>
	Rafael Lalive, Daniel Oesch, and Michele Pellizzari	
<b>5</b>	<b>When Mobility Meets Gender in the Transnational Life-Course</b>	<b>67</b>
	Nicky Le Feuvre, Eric Davoine, and Flavia Cangia	

<b>6</b>	<b>Vulnerability and Resilience After Partner Loss Through Divorce and Bereavement: Contributions of the LIVES ‘Intimate partner loss study’</b>	<b>91</b>
	Daniela S. Jopp, Charikleia Lampraki, Davide Morselli, Hans-Jörg Znoj, Jeannette Brodbeck, Dario Spini, and Pasqualina Perrig-Chiello	
<b>7</b>	<b>Synthesis: A Multidimensional Perspective on Vulnerability and the Life Course</b>	<b>109</b>
	Laura Bernardi and Danilo Bolano	
<b>Part II</b>	<b>Vulnerability at the Articulation of Levels</b>	<b>121</b>
<b>8</b>	<b>Social Policies, Vulnerability and the Life Course: A Complex Nexus</b>	<b>123</b>
	Jean-Michel Bonvin, Jean-Pierre Tabin, Anne Perriard, Emilie Rosenstein, and Max Lovey	
<b>9</b>	<b>Vulnerabilities in Local Contexts</b>	<b>139</b>
	Felix Bühlmann, Katy Morris, Nicolas Sommet, and Leen Vandecasteele	
<b>10</b>	<b>How Family and Other Close Ties Shape Vulnerability Processes</b>	<b>153</b>
	Clémentine Rossier, Laura Bernardi, Marie Baersywil, Michel Oris, Marlène Sapin, and Eric Widmer	
<b>11</b>	<b>The Many Faces of Social Connectedness and Their Impact on Well-being</b>	<b>169</b>
	Adar Hoffman, Anahita Mehrpour, and Christian Staerklé	
<b>12</b>	<b>Vulnerability around Health Issues: Trajectories, Experiences and Meanings</b>	<b>189</b>
	Claudine Burton-Jeangros and Vanessa Fargnoli	
<b>13</b>	<b>Synthesis: Vulnerability in Context</b>	<b>205</b>
	Dario Spini and Mattia Vacchiano	



<b>Part III</b>	<b>The Unfolding of Vulnerable Life Trajectories</b>	<b>215</b>
<b>14</b>	<b>Childhood Socioeconomic Disadvantage and Health in the Second Half of Life: The Role of Gender and Welfare States in the Life Course of Europeans</b>	<b>217</b>
	Stéphane Cullati, Stefan Sieber, Bernadette Wilhelmina Antonia van der Linden, Dan Orsholits, Martina von Arx, Matthieu P. Boisgontier, and Boris Cheval	
<b>15</b>	<b>Ageing and Reserves</b>	<b>239</b>
	Andreas Ihle, Élvio R. Gouveia, Bruna R. Gouveia, Dan Orsholits, and Matthias Kliegel	
<b>16</b>	<b>Vulnerabilities and Psychological Adjustment Resources in Career Development</b>	<b>253</b>
	Jérôme Rossier, Ieva Urbanaviciute, Fabian Gander, Jenny Hofmann, Jonas Masdonati, and Willibald Ruch	
<b>17</b>	<b>On the Sociohistorical Construction of Social and Economic Reserves Across the Life Course and on Their Use in Old Age</b>	<b>269</b>
	Michel Oris, Marie Baeriswyl, Aline Duvoisin, Rainer Gabriel, Myriam Girardin, Julia Henke, Barbara Masotti, Aude Tholomier, and Eric Widmer	
<b>18</b>	<b>Life Trajectories as Products and Determinants of Social Vulnerability</b>	<b>285</b>
	Jacques-Antoine Gauthier and Gaëlle Aeby	
<b>19</b>	<b>Synthesis: Overcoming Vulnerability? The Constitution and Activation of Reserves throughout Life Trajectories</b>	<b>303</b>
	Eric D. Widmer, Marie Baeriswyl, and Olga Ganjour	
<b>Part IV</b>	<b>Combining Methods to Study Vulnerability Processes</b>	<b>317</b>
<b>20</b>	<b>Life Calendars for the Collection of Life Course Data</b>	<b>319</b>
	Davide Morselli and André Berchtold	

<b>21</b>	<b>Mixed Method Approaches for Data Collection in Hard-to-reach Populations</b>	<b>337</b>
	Marc Perrenoud, Pierre Bataille, and Guy Elcheroth	
<b>22</b>	<b>Combining Data Collection Modes in Longitudinal Studies</b>	<b>359</b>
	Caroline Roberts and Marieke Voorpostel	
<b>23</b>	<b>Combining Event History and Sequence Analysis to Study Vulnerability over the Life Course</b>	<b>375</b>
	Matthias Studer, Jacques-Antoine Gauthier, and Jean-Marie Le Goff	
<b>24</b>	<b>Joint Longitudinal and Survival Models to Study Vulnerability Processes</b>	<b>391</b>
	Emilie Joly-Burra, Sezen Cekic, and Paolo Ghisletta	
<b>25</b>	<b>Synthesis: Combining Methods for the Analysis of Vulnerability Processes Across the Life Course</b>	<b>413</b>
	André Berchtold and Paolo Ghisletta	
<b>26</b>	<b>Overcoming Vulnerability in the Life Course—Reflections on a Research Program</b>	<b>425</b>
	Richard A. Settersten Jr, Marlis Buchmann, Martin Kohli, René Levy, Anik de Ribaupierre, Katariina Salmela-Aro, and Elizabeth Thomson	
	<b>Appendix A Supplementary material: Prediction equations for the joint model</b>	<b>439</b>
	<b>Appendix B Behind the scenes: The NCCR LIVES and the Swiss LIVES Centre</b>	<b>447</b>

# LIST OF CONTRIBUTORS<sup>1</sup>

**Gaëlle Aeby** \*Faculty of Social Sciences, Institute for Sociological Research, University of Geneva, Geneva, Switzerland

**Martina von Arx** \*Centre for the Interdisciplinary Study of Gerontology and Vulnerability, University of Geneva, Geneva, Switzerland, and Citizen Sciences Group, Biology Section, Science Faculty, University of Geneva, Geneva, Switzerland

**Marie Baersiwyl** \*Centre for the Interdisciplinary Study of Gerontology and Vulnerability, University of Geneva, Geneva, Switzerland

**Pierre Bataille** \*Department of Educational Sciences, University of Grenoble Alpes, Grenoble, France

**André Berchtold** \*Faculty of Social and Political Sciences, Institute of Social Sciences, University of Lausanne, Lausanne, Switzerland

**Laura Bernardi** \*Faculty of Social and Political Sciences, Institute of Social Sciences, University of Lausanne, Lausanne, Switzerland

**Matthieu P. Boisgontier** School of Rehabilitation Sciences, Faculty of Health Sciences, University of Ottawa, Ottawa, ON, and Bruyère Research Institute, Ottawa, ON, Canada

**Danilo Bolano** \*Centro Dondena, Bocconi University, Milan, Italy

<sup>1</sup> *Members from the Swiss National Centre of Competence in Research LIVES – Overcoming vulnerability: Life course perspectives, Lausanne and Geneva, Switzerland are identified with \*.*

**Jean-Michel Bonvin** \*Faculty of Social Sciences, Institute of demography and socioeconomic, University of Geneva, Geneva, Switzerland

**Jeannette Brodbeck** \*Institute of Consulting, Coaching and Social Management, School of Social Work, University of Applied Sciences Northwestern Switzerland

**Marlis Buchmann Jr** Department of Sociology, University of Zurich, Zurich, Switzerland

**Felix Bühlmann** \*Faculty of Social and Political Sciences, Institute of Social Sciences, University of Lausanne, Lausanne, Switzerland

**Claudine Burton-Jeangros** \*Faculty of Social Sciences, Department of Sociology, University of Geneva, Geneva, Switzerland

**Flavia Cangia** \*Chair of Human Resources and Organisation, University of Fribourg, Fribourg, Switzerland

**Sezen Cekic** Faculty of Psychology and Educational Sciences, University of Geneva, Geneva, Switzerland

**Boris Cheval** \*Swiss Centre for Affective Sciences, Laboratory for the Study of Emotion Elicitation and Expression (E3Lab), University of Geneva, Geneva, Switzerland

**Stéphane Cullati** \*Population Health Laboratory (#PopHealthLab), University of Fribourg, Switzerland

Department of Readaptation and Geriatrics, University of Geneva, Geneva, Switzerland

**Eric Davoine** \*Chair of Human Resources and Organisation, University of Fribourg, Fribourg, Switzerland

**Aline Duvoisin** \*Center for the Interdisciplinary Study of Gerontology and Vulnerability, Department of Psychology, University of Geneva, Geneva, Switzerland

**Guy Elcheroth** \*Faculty of Social and Political Sciences, Institute of Psychology, University of Lausanne, Lausanne, Switzerland

**Vanessa Fargnoli** \*Faculty of Social Sciences, Department of Sociology, University of Geneva, Geneva, Switzerland

**Nicky Le Feuvre** \*Faculty of Social and Political Sciences, Institute of Social Sciences, University of Lausanne, Lausanne, Switzerland

**Rainer Gabriel** \*Institute of Diversity and Social Integration, Zurich University of Applied Sciences (ZHAW), Zurich, Switzerland

**Fabien Gander** Department of Psychology, University of Basel, Switzerland; Department of Psychology, University of Zurich, Zurich, Switzerland

**Olga Ganjour** \*Center for the Interdisciplinary Study of Gerontology and Vulnerability, University of Geneva, Geneva, Switzerland

**Jacques-Antoine Gauthier** \*Faculty of Social and Political Sciences, Institute of Social Sciences, University of Lausanne, Lausanne, Switzerland

**Paolo Ghisletta** \*Faculty of Psychology and Educational Sciences, University of Geneva, Geneva, Switzerland and Swiss Distance University Institute, Switzerland

**Myriam Girardin** \*Faculty of Social Sciences, Institute of demography and socioeconomic, University of Geneva, Geneva, Switzerland

**Jean-Marie Le Goff** \*Faculty of Social and Political Sciences, Institute of Social Sciences, University of Lausanne, Lausanne, Switzerland

**Bruna R. Gouveia** Center for the Interdisciplinary Study of Gerontology and Vulnerability, University of Geneva, Geneva, Switzerland; LARSyS, Interactive Technologies Institute, Funchal, Portugal; Health Administration Institute, Secretary of Health of the Autonomous Region of Madeira, Funchal, Portugal; and Saint Joseph of Cluny Higher School of Nursing, Funchal, Portugal

**Élvio R. Gouveia** Center for the Interdisciplinary Study of Gerontology and Vulnerability, University of Geneva, Geneva, Switzerland; Department of Physical Education and Sport, University of Madeira, Funchal, Portugal; and LARSyS, Interactive Technologies Institute, Funchal, Portugal

**Julia Henke** \*Life in Abundance, Bern, Switzerland

**Jenny Hofmann** Department of Psychology, University of Zurich, Zurich, Switzerland

**Andreas Ihle** \*Faculty of Social Sciences, Department of Psychology and Center for the Interdisciplinary Study of Gerontology and Vulnerability, University of Geneva, Geneva, Switzerland

**Emilie Joly-Burra** \*Faculty of Psychology and Educational Sciences and Centre for the Interdisciplinary Study of Gerontology and Vulnerability, University of Geneva, Geneva, Switzerland

**Daniela S. Jopp** \*Faculty of Social and Political Sciences, Institute of Psychology, University of Lausanne, Lausanne, Switzerland

**Matthias Kliegel** \*Center for the Interdisciplinary Study of Gerontology and Vulnerability, University of Geneva, Geneva, Switzerland; Faculty of Social Sciences, Department of Psychology, University of Geneva, Geneva, Switzerland

**Martin Kohli** European University Institute, Florence, Italy, and Bremen International Graduate School of Social Sciences, Bremen, Germany

**Franciska Krings** \*Faculty of Business and Economics, Department of Organizational Behavior, University of Lausanne, Lausanne, Switzerland

**Rafael Lalive** \*Faculty of Business and Economics, Department of Economics, University of Lausanne, Lausanne, Switzerland

**Charikleia Lampraki** \*Faculty of Social and Political Sciences, Institute of Psychology, University of Lausanne, Lausanne, Switzerland

**René Levy** \*Faculty of Social and Political Sciences, Institute of Social Sciences, University of Lausanne, Lausanne, Switzerland

**Max Lovey** \*Institute of demography and socioeconomic, University of Geneva, Geneva, Switzerland

**Jonas Masdonati** \*Department of Psychology, University of Lausanne, Lausanne, Switzerland

**Barbara Masotti** \*University of Applied Sciences and Arts of Southern Switzerland, Manno, Switzerland

**Anahita Mehrpour** \*Faculty of Social and Political Sciences, Institute of Psychology, University of Lausanne, Lausanne, Switzerland

**Katy Morris** \*Faculty of Social and Political Sciences, Institute of Social Sciences, University of Lausanne, Lausanne, Switzerland

**Davide Morselli** \*Faculty of Social and Political Sciences, Institute of Social Sciences, University of Lausanne, Lausanne, Switzerland

**Daniel Oesch** \*Institute of Social Sciences, University of Lausanne, Lausanne, Switzerland

**Michel Oris** \*Center for the Interdisciplinary Study of Gerontology and Vulnerability, University of Geneva, Geneva, Switzerland

**Dan Orsholits** \*Switzerland Centre for the Interdisciplinary Study of Gerontology and Vulnerability, University of Geneva, Geneva, Switzerland

**Michele Pellizarri** \*Faculty of Economics and Management, University of Geneva, Geneva, Switzerland

**Marc Perrenoud** \*Faculty of Social and Political Sciences, Institute of Social Sciences, University of Lausanne, Lausanne, Switzerland

**Anne Perriard** \*Haute école de travail social, Geneva, Switzerland

**Pasqualina Perrig-Chiello** \*Institute of Psychology, University of Bern, Bern, Switzerland

**Anik de Ribaupierre** \*Honorary Professor, University of Geneva, President of Uni3, the Senior University Geneva, Geneva, Switzerland

**Caroline Roberts** \*Faculty of Social and Political Sciences, Institute of Social Sciences, University of Lausanne, Lausanne, Switzerland

**Emilie Rosenstein** \*Haute école de Travail Social et de la Santé, Lausanne, Lausanne, Switzerland

**Clémentine Rossier** \*Faculty of Social Sciences, Institute of demography and socioeconomic, University of Geneva, Geneva, Switzerland

**Jérôme Rossier** \*Institute of Psychology, CePCO, University of Lausanne, Lausanne, Switzerland

**Willibald Ruch** \*Department of Psychology, University of Zurich, Zurich, Switzerland

**Valérie-Anne Ryser** \*FORS, Swiss Centre of Expertise in the Social Sciences, University of Lausanne, Lausanne, Switzerland

**Katariina Salmela-Aro** \*Department of Educational Sciences, University of Helsinki, Helsinki, Finland

**Marlène Sapin** \*FORS, Swiss Centre of Expertise in the Social Sciences, University of Lausanne, Lausanne, Switzerland

**Victoria Schüttengruber** \*Department of Psychology, University of Zurich, Zurich, Switzerland

**Richard A. Settersten** \*Distinguished Professor of Human Development, Vice Provost for Faculty Affairs, and Senior International Officer at Oregon State University, Oregon, USA

**Stefan Sieber** \*Centre for the Interdisciplinary Study of Gerontology and Vulnerability, University of Geneva, Geneva, Switzerland

**Nicolas Sommet** \*Faculty of Social and Political Sciences, Institute of Social Sciences, University of Lausanne, Lausanne, Switzerland

**Dario Spini** \*Faculty of Social and Political Sciences, Institute of Social Sciences, University of Lausanne, Lausanne, Switzerland

**Christian Starklé** \*Faculty of Social and Political Sciences, Institute of Psychology, University of Lausanne, Lausanne, Switzerland

**Matthias Studer** \*Faculty of Social Sciences, Institute of demography and socioeconomic, University of Geneva, Geneva, Switzerland

**Jean-Pierre Tabin** \*Haute école de Travail Social et de la Santé, Lausanne, Lausanne, Switzerland

**Aude Tholomier** \*Institution Genevoise de Maintien à Domicile, Geneva

**Elizabeth Thompson** \*Professor Emerita of Demography, Stockholm University, Sweden and Professor of Sociology Emerita, University of Wisconsin—Madison, Wisconsin, USA

**Leva Urbanaviciute** \*Faculty of Social and Political Sciences, Institute of Psychology, University of Lausanne, Lausanne, Switzerland

**Mattia Vacchiano** \*Faculty of Social Sciences, Department of Sociology, University of Geneva, Geneva, Switzerland

**Leen Vandecasteele** \*Faculty of Social and Political Sciences, Institute of Social Sciences, University of Lausanne, Lausanne, Switzerland

**Marieke Voorpostel** \*FORS, Swiss Centre of Expertise in the Social Sciences, University of Lausanne, Lausanne, Switzerland



**Eric Widmer** \*Faculty of Social Sciences, Department of Sociology,  
University of Geneva, Geneva, Switzerland

**Bernadette Wilhelmina** \*University of Fribourg, Fribourg, Switzerland

**Antonia van der Linden** \*Centre for the Interdisciplinary Study of  
Gerontology and Vulnerability, University of Geneva, Geneva, Switzerland

**Hans-Jörg Znoj** \*Institute of Psychology, University of Bern, Bern,  
Switzerland

## LIST OF FIGURES

Fig. 4.1	Methods used by young workers (15–34) to find their current jobs	54
Fig. 9.1	Predicted median time in months to first job in the UK and Germany after leaving full-time education and training	143
Fig. 9.2	Predicted probabilities of exiting unemployment between 2011 and 2012 by neighbourhood deprivation and proportion of friends in the neighbourhood (Vandecasteele & Fasang, 2020)	145
Fig. 9.3	Effects of meso-level income inequality over the life course on psychological health as a function of monetary reserves	148
Fig. 15.1	<b>Cross-lagged model.</b> The association of leisure activity engagement in the first wave (i.e., a marker of cognitive reserve) predicting cognitive performance in the second wave was significantly stronger than the reciprocal association of initial cognitive performance predicting later activity engagement	243
Fig. 15.2	<b>Personality mediation model.</b> The association of openness to experience predicting reduced cognitive decline was mediated via leisure activities (i.e., a marker of cognitive reserve)	243
Fig. 15.3	<b>Reserves mediation model.</b> The association of midlife leisure activities (i.e., a marker of cognitive reserve) with cognitive performance was mediated via relational reserve	246
Fig. 18.1	From individual sequences of states to types of trajectory	290
Fig. 20.1	The three kinds of retrieval mechanisms. Better-remembered events are considered more recent. An event is first assigned to a time period and then compared to well-known events (e.g., a marriage)	321

Fig. 20.2	Example of a paper-and-pencil LHC (Berchtold, Wicht, & Rohrer, 2021)	323
Fig. 20.3	Pilot (top) and final (bottom) versions of the online LHC used for the ‘Sexual health and behaviour of young people in Switzerland’ study	328
Fig. 20.4	Online LHC with the possibility of indicating both punctual events (represented by icons) and time periods (represented in colours)	329
Fig. 21.1	Web and RDS diffusion trees	345
Fig. 21.2	Recruitment dynamics regarding gender and social background	347
Fig. 21.3	A filled Musicians LIVES life calendar	349
Fig. 23.1	Illustration of the sequence history analysis procedure	380
Fig. 23.2	Illustration of the competing trajectory analysis procedure applied to job loss	381
Fig. 24.1	Lineplot of individual trajectories for self-perception by participation status by the last wave. (Data source: Swiss Household Panel (SHP))	399
Fig. 24.2	Kaplan–Meier estimator of survival probabilities for men and women (Data source: Swiss Household Panel (SHP))	403

# LIST OF TABLES

Table 14.1	Summary of (A) the associations of the childhood socioeconomic disadvantage index with health, illness and behaviour outcomes in the second half of life among men and women and (B) whether the association was partially or fully attenuated by socioeconomic conditions and status in adulthood	223
Table 14.2	Summary of significant childhood socioeconomic factors associated with six health trajectories (A) before and (B) after adjustment for adulthood socioeconomic characteristics. (Cheval, Orsholits, et al., 2019c)	225
Table 24.1	Parameter estimates for longitudinal submodel M0	401
Table 24.2	Parameter estimates for the Cox proportional hazard submodel	402
Table 24.3	Parameter estimates and 95% credible intervals for the joint model using shared-random effects association	404



# Introduction: Inhabiting Vulnerability Throughout the Life Course

*Dario Spini and Eric Widmer*

*“The only choice we have as we mature is how we inhabit our  
vulnerability”*

Vulnerability by David White

This book is about vulnerability in the life course. The concept of vulnerability has been developed in the field of environmental sciences and has received growing attention in recent years in the social and psychological sciences (Forbes-Mewett, 2020; Misztal, 2012; Ranci, 2010; Schröder-Butterfill & Marianti, 2006). This success is due to various trends, such as the generalization of collective risks (including pandemics, armed conflicts and their aftermath, mass unemployment, volatility in stock markets, and

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D. Spini (✉)

Faculty of Social and Political Sciences, Institute of Social Sciences, University of Lausanne, Lausanne, Switzerland

e-mail: [dario.spini@unil.ch](mailto:dario.spini@unil.ch)

E. Widmer

Faculty of Social Sciences, Department of Sociology, University of Geneva, Geneva, Switzerland

e-mail: [eric.widmer@unige.ch](mailto:eric.widmer@unige.ch)

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issues associated with climate change), a process of individualization of life trajectories (Kohli, 2007), and societal changes from a society of acquisition to a society of risks and uncertainties concerning, notably, family and professional life (Sapin et al., 2007). Thanks to the LIVES programme, for twelve years, a large network of researchers from sociology, psychology, demography and economics have worked together in Switzerland on the issue of vulnerability, believing that joint interdisciplinary work sensitive to processes unfolding throughout life trajectories was worth consideration in research dealing with vulnerability issues. This book summarizes some of the most intriguing results of this collective scientific endeavour and, as such, constitutes an entry point to the variety of results, methods and data that have been generated by the National Centre of Competence in Research (NCCR) LIVES programme and later by the Centre LIVES (see Appendix 2 for a brief institutional history of the centre).

Before entering the various domains and issues related to vulnerability, this introduction defines what is meant by vulnerability from a life course perspective. It stresses the importance of the dynamics existing between resources and stressors. It describes three interrelated life course principles, which enable the multiple analysis of these complex dynamics: the multidimensional, the multilevel, and the multidirectional perspectives (Spini et al., 2017). Each of these dimensions is considered separately in its own part of the book (Bolano & Bernardi; Spini & Vacchiano; Widmer, Baeriswyl, this book), and the results are then summarized in a concluding chapter. The fourth part of the book presents the advances in methods to approaching vulnerability from a life course perspective. Finally, an international group of scholars (see chapter Settersten et al., this book) who were members of the LIVES International Advisory Board shares some thoughtful perspectives inspired by the LIVES vulnerability framework.

## A LIFE COURSE DEFINITION OF VULNERABILITY

We find two contrasting and complementary views on vulnerability as a central feature of the life course in the literature (Brown, 2011): Vulnerability characterizes individuals and groups or categories who need care or the support of the welfare state, and vulnerability as an ontological and inevitable feature of the human condition throughout the life course. The first approach refers to a classic and rather static view of vulnerability as a syndrome, as a lasting state of dependence or lack of autonomy related to a need for others' care to adapt (Misztal, 2012). This perspective has

been echoed by many journalists, policymakers, physicians, social workers, and local authorities. It implies a state of weakness, inability, dependency (upon others and institutions) and the need to avoid harm and achieve adequate satisfaction of legitimate claims (Tavaglione et al., 2015). Typical social categories that are labelled vulnerable in this perspective include homeless people, sex workers, asylum seekers, refugees, children and the very old, the poor and those who are chronically ill, and, more generally, all groups that are frequently stereotyped as the least competent in society (Fiske et al., 2002). Interestingly, main criticisms in the social sciences have warned that this “needy” approach risks instrumentalising vulnerability as (1) a paternalistic and oppressive idea, (2) a mechanism of widening control, and (3) a reason to exclude or stigmatize groups or individuals (Brown, 2011, p. 316).

A second approach is rooted in political and moral philosophy (Anderson & Honneth, 2005; Macintyre, 1999; Turner, 2006). In this line of thought, vulnerability lies at the heart of social citizenship and human rights and is viewed as part of the personal and contextual circumstances in which individuals find themselves at different points in their lives. Life course studies, we think, as they are interested in individuals’ trajectories across the years, stress the idea of diverse, multidirectional trajectories in which vulnerability may unfold at various times and in various ways. Gains and losses occur throughout the entire lifespan (Baltes et al., 1998). Even though individuals may exert their agency and “follow the rules”, external social constraints and critical life events may lead them towards insecurity and loss of control over their own lives (see Widmer & Spini, 2017). The empirical research presented in this book indeed considers vulnerability as a central feature of an individual’s life and proposes a definition of vulnerability that can be shared and studied in social and psychological sciences from a life course perspective. In this regard, all human beings are stressed as having a latent vulnerability, which professionals or institutions may in specific situations objectify through diagnostics and other evaluative tools (Spini, 2012). Accordingly, the LIVES research project has contributed to developing an interdisciplinary space in which vulnerability processes can be studied empirically, proposing the creation of an approach bridging psychosocioeconomic vulnerability policy traditions and the life course perspective (Spini et al., 2017).

This approach, pluri- or interdisciplinary, features different advantages over previous approaches to vulnerability. First, it enables researchers from different disciplinary horizons to work together. This is not an easy task,

as the issues considered relevant, as well as the concepts considered central and some of the empirical methods considered up to date, are not shared across the social sciences. A literature review by Hanappi et al. (2014) confirms that sociological studies for the most part focus on issues such as the impact on life trajectories of welfare states, poverty or family, whereas psychology focuses on issues related to personality, coping, stress and depression. Gerontology often focuses on frailty and issues related to health, which are much more limited in scope than vulnerability as a process that can evolve across different life domains. From this literature review, we hold that vulnerability is independent of these disciplinary focuses and a possible candidate for the integration of various phenomena across the social sciences. Indeed, a second advantage of relating the life course tradition and vulnerability as an ontological feature of the human experience is that it brings together knowledge of processes that can be generalized across lifespan psychology and life course sociology perspectives (Settersten, 2009) and topical fields such as health, family, work, and geographical mobility. Studying vulnerability from a life course perspective will not replace the precision of studies in these specialized fields, but it helps researchers develop elements of a metatheory (Overton, 2013) of vulnerability processes in the life course. Finally, we feel that the life course tradition could benefit from a framework such as that proposed in this book, not only for analysing the complexity of life trajectories but also for linking them to sociopolitical issues and seeking to increase individuals' autonomy and well-being.

From this perspective, vulnerability is defined as a process of resource loss in one or more life domains that threatens individuals in three major steps: (1) an inability to avoid individual, social or environmental stressors, (2) an inability to cope effectively with these stressors, and (3) an inability to recover from stressors or to take advantage of opportunities by a given deadline (Spini et al., 2017). Several refinements need to be stated here.

First, the basic components of vulnerability processes are related to the dynamics of resources and stressors. Resources relate in a larger sense to whatever increases the likelihood of individuals meeting social expectations (including their own) or to elements that enhance individuals' physical, mental or social functioning and health. In that regard, many individual factors, from personality traits, cognitive performance, and social or cultural capital to economic assets, can be considered resources. Notably, the concept of resources does not suggest some precise time-related process by which vulnerability can unfold or, to the contrary, be brought under



control. In that respect, the conceptual and empirical advances enabled by the reserve perspective, as first developed in the neurosciences, is relevant for the study of vulnerability processes, as we shall see in Part III of this book. Reserves are dormant resources that are not needed for immediate use but that, when accumulated to a sufficient extent, are available for recovering from life shocks and adversity, social or economic stressors, or non-normative transitory periods across the life course (Cullati et al., 2019). Conversely, the notion of reserves implies that, below a certain threshold, individuals lose their capacity to adapt to stressors. Reserves are buffers against vulnerability processes and foster resilience (Cullati et al., 2019; Spini et al., 2017). Stressors are a central dimension of life events and lifespan losses from a psychological perspective (Reese & Smyer, 1983). However, stress is not only an individual subjective appraisal issue. Following Pearlin and his associates (Pearlin, 1989; Pearlin & Skaff, 1996), stressors are unequally distributed across the social spectrum. People in disadvantaged positions encounter more risks in experiencing stressors, notably chronic or strains and sudden stressors, precisely because they lack resources. Indeed, the relationship among health problems, stressors, and social status has been well established (Aneshensel, 1992; Thoits, 2010).

Second, there is a sequential dimension of vulnerability that unfolds in three consecutive steps: before the stressor, during the exposure to the stressors (notably, acute ones), and after the stressor happened. Defining vulnerability as a process rather than a state offers the advantage of distinguishing and combining different hypotheses, notably, the hypotheses of social causation and differential vulnerability (Diderichsen et al., 2019; Kessler, 1979). The hypothesis of social causation states that distal or proximal social statuses has an effect on subsequent states in other domains (notably health) and life course trajectories. The differential vulnerability hypothesis states that individuals with lower levels of personal or social resources may experience a greater susceptibility to harm when confronted with stressors than less vulnerable individuals. As social causation may be active since the start of life and in step 1 of the processual framework that we propose (and that can be measured by the direct effects of social categories, or levels of personal resources, on risks of being exposed to stressors), vulnerability susceptibility may be more observable in relation to specific stressors at step two or three of this sequential model.

Most empirical studies related to this sequential model have focused on the negative side of vulnerability. However, as George (2003) stresses, the

inverse hypothesis that experiencing stressors may be a source of learning and increased resilience should not be hastily dismissed. It is important to consider opportunities and protective factors in each situation, not only constraints and stressors (Ferraro & Shippee, 2009). This approach suggests that vulnerability refers not only to the negative consequences of stressors or a lack of resources and reserves but also to the parallel processes of reserve constitution or reconstitution, resilience or recovery. As proposed by the relational perspective of Overton (2013), vulnerability must be placed in relation to its antonyms and should not simply be opposed to them. A difficulty of this approach, then, is to select a single antonym. The concept of invulnerability is not applicable to mortal human beings. However, there are candidates from different fields for juxtaposition with vulnerability in the literature, including autonomy (opposed to dependence in social policy or gerontology), resilience (versus chronicity, depression or vulnerability in PTSD and clinical literature), or robustness (versus frailty in gerontology). This relative fuzziness may be the subject of criticism by some, whereas others, such as Overton (2013), would probably defend the idea that concepts such as vulnerability and its antonyms should create spaces where “foundations are groundings, not bedrocks of certainty, and analysis is about creating categories, not about cutting nature as its joints” (p. 42). This is where we stand in this book.

### THREE LIFE COURSE PRINCIPLES FOR VULNERABILITY RESEARCH

Vulnerability is molded by and a major entry into life course complexity in multiple domains in interaction through time. In this regard, life course research has made major advances in recent decades (Mortimer & Shanahan, 2003; Sapin et al., 2007; Settersten, Settersten Jr, 2003). Based on the founding principles and formational studies of several key scientists active in the life course and lifespan domain, such as Glen Elder, Jr., in sociology (see Marshall & Mueller, 2003) and Baltes and colleagues in psychology (Baltes et al., 1998), three main life course principles of vulnerability have framed the contributions to this book: multidimensional, multidirectional, and multilevel (Spini et al., 2017). Let us briefly describe these three dimensions, to which we will return in the empirical chapters.

Multidimensionality informs us about the life domain(s) or life spheres—i.e., family, work, health—that interact while shaping the

individual's life chances. Vulnerable states and vulnerability dynamics can be observed in and across all these dimensions. Within domains, stressors (life events, traumas, accidents, transitions or turning points) and resources such as wealth, education, and social capital are at play, and individuals must cope with these resources when facing stressors. Maintaining focus on this multidimensionality of the life course is necessary, as considerable empirical evidence exists that life domains interact with each other, as we shall see in the first part of this book (Bernardi et al., 2019). The research of Schüttengruber and colleagues (this book) is a good example of conflicts and synergies between life domains. The interdependence among life domains and the stress that they engender throughout adulthood is strongly related to social inequality and, especially, to gender issues (see Levy & Widmer, 2013). Of major interest here is how individuals use their reserves in various life domains to cope with difficulties and to take advantage of new opportunities.

The second principle stresses that vulnerability unfolds at various levels from the micro (personality traits, individual agency, daily interactions, etc.) to the macro (social policies, institutions, shared social norms or values). Thus, Part II of this book advances our understanding of vulnerability processes at the micro, meso and macro levels. The idea that the life course is played out by individuals within social structures is a central idea that applies to vulnerability. For example, the social stress model insists upon the importance of personal coping resources, such as control beliefs, and upon the continuous structural effects on chronic stress and health (Aneshensel, 1992). At the micro level, Bernardi et al. (2019) suggest considering infra-individual programmed factors such as the genome, which may exert an enduring impact on vulnerability processes. However, in this book, we do not consider these genetic influences, instead focusing on the psychological and social roots of vulnerability at different levels, including original attention to the meso-level mechanisms of vulnerability associated with groups, social categories, neighborhoods and networks (Vacchiano & Spini, 2021). This focus on the meso level fills an important gap between the micro and macro levels and resonates with the fundamental life course principle of "linked lives" introduced by Elder (1974/, 1995). This principle is particularly important when studying vulnerability for different reasons, notably the relationship between vulnerability and the need for others' care (Misztal, 2012). Vulnerability is not simply individual, as it also impacts close ones, who amplify, share or suppress the effects of stressors and who bring or share needed resources. Social

relationships lie at the heart of vulnerability and have an ambivalent role, as relationships with family members, for example, can be both main stressors and main resources related to vulnerability (Sapin et al., 2016). In summary, vulnerability unfolds simultaneously at various interrelated levels in need of articulation (Doise, 1986).

The multidirectional principle draws attention to the temporal dimension and multiple trajectories leading to unequal levels of vulnerability. Previous research stemming from the cumulative disadvantage paradigm has stressed an increasing divergence of life chances across the life course due to micro advantages that promote those better off at each transition of the life course (Dannefer, 2003; Merton). Building on this approach, the chapters in this section stress the critical importance not only of reserves built up over time but also of reserve activation when facing critical events and transitions and of reserve reconstitution after the occurrence of such events (Cullati et al., 2019). Reserves as resources stored for later use concern a variety of domains (work and educational skills, social capital, psychological competencies, economic assets and savings) and a variety of levels (from the individual up to the social system). Therefore, the third section provides an understanding of how the mechanisms uncovered in the two previous sections of the book play out over time and helps imagine solutions by which vulnerability can be dealt with at all levels.

### VULNERABILITY: A SENSITIZING CONCEPT FOR LIFE COURSE RESEARCH AND SOCIAL POLICIES

The study of vulnerability processes throughout the life course calls for an interdisciplinary approach, for methods sensitive to processes, and for adapted policies to sustain individuals across their life course. To understand the complex dynamics of stressors and resources implied by vulnerability processes, longitudinal studies appear to be the most suited methods from a life course interdisciplinary approach (Spini et al., 2016). Methods are shared tools that different disciplines can use (Tobi & Kampen, 2018). Interestingly, despite their common interest in life course processes, sociologists, psychologists, economists and demographers often use distinct quantitative and qualitative methods. To compensate for this trend, the fourth part of this book proposes some critical methodological advances that will help researchers address vulnerability in interdisciplinary work.

We chose vulnerability throughout adulthood as a central concern, along with the related processes of resilience, robustness, autonomy, or growth. We co-constructed the vulnerability sequential model with its main elements: stressors, resources and reserves (Cullati et al., 2019; Spini et al., 2017). Such a focus was not easy to reach, but theoretical interdisciplinarity was indeed achieved through the selected cross-cutting multidimensionality, multilevel, multidirectional, and methodological principles. This book presents these achievements and is organized along these four organizing principles of our life course perspective.

This book's division into four parts is somewhat artificial. One of the main lessons emerging from these chapters is the interdependencies that exist among the multidimensional, multilevel and multidirectional principles, as also underlined by Bernardi et al. (2019). Considering these three life course principles together has not been fully achieved in our research program. However, as an apeirogon, the complexity of vulnerability during the life course is such that it is doubtful that any single course of research could fully account for it. Moreover, it is equally difficult to separate one of these principles from the others. Most chapters of this book, even though placed within a specific part, also often refer to the other principles. This is a strength of the life course framework shared throughout this book, which enables LIVES research to grasp some of the basic principles of vulnerability processes.

Finally, an important goal of research on vulnerability from a life course perspective is to achieve relevance and usefulness for civil society and decision-makers. Individual life trajectories are more uncertain with the spread of new as well as old social risks (Bonoli, 2005; Spini et al., 2017): Spillover effects of stress between work and family life, lack of resources in lone parenthood, long-term unemployment, being part of the working poor, or having insufficient social security coverage concern a growing number of individuals. The increase in contexts of collective vulnerability following COVID-19 or in relation to the climate or migration crises has huge effects on individual trajectories, notably those coming from the most vulnerable groups (see Settersten Jr. et al., 2020). It is hoped that this book will help the reader consider chains of interrelated factors that unfold in life trajectories, from personality traits to social policies. Such chains obviously need to be considered when making informed decisions about individual vulnerability in context.

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PART I

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Vulnerability as a Multidimensional  
Process: Spillovers Across Life  
Domains



## Subjective Well-Being, Family Dynamics and Vulnerability

*Jean-Marie Le Goff, Valérie-Anne Ryser,  
and Laura Bernardi*

Studies on subjective well-being (SWB) have become increasingly common from a life course perspective over the last 20 years. From that perspective, individuals' SWB is viewed as sensitive to different stressors generated by critical life course events/transitions or daily life activities, depending on the life course status under examination (Clausen, 1998; Turner & Schieman, 2008). Elder and Giele (2009) emphasized the dynamic relationship between stressors generated by changes within the life course and the consequences of such stressors on SWB, underlining that “stressors affect people’s lives while life transitions entail stressful adaptations” (Elder & Giele, 2009, p. 18).

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J.-M. Le Goff (✉) • L. Bernardi  
Institute of Social Sciences and LIVES Center, University of Lausanne,  
Lausanne, Switzerland  
e-mail: [jean-marie.legoff@unil.ch](mailto:jean-marie.legoff@unil.ch); [laura.bernardi@unil.ch](mailto:laura.bernardi@unil.ch)

V.-A. Ryser  
FORS, Swiss Centre of Expertise in the Social Sciences, University of Lausanne,  
Lausanne, Switzerland  
e-mail: [valerie-anne.ryser@fors.unil.ch](mailto:valerie-anne.ryser@fors.unil.ch)

Based on the vulnerability framework (Spini et al., 2017; Spini & Widmer, [this volume](#)), this chapter aims to review the main findings of projects at LIVES<sup>1</sup> dealing with the dynamic relationships between family life in mid-adulthood and changes in SWB. In this context, SWB is primarily considered as an outcome resulting from a combined effect of stressors and individual resources and reserves.

The first section of this chapter defines the concept of SWB used at LIVES and outlines the general vulnerability framework. The following sections review the three main research directions taken by LIVES scholars to better understand the dynamics of the relationship between resources and SWB. The second section deals with the influence of life course family events/transitions, while the third deals with relations between daily family life and chronic strains. The fourth section highlights the mediating effect of institutional context on the previous relationships.

### SUBJECTIVE WELL-BEING FROM A LIFE COURSE PERSPECTIVE AND THE VULNERABILITY PROCESS

The most frequently used conceptualization of SWB within LIVES primarily follows Ed Diener's (1984) tripartite hedonic approach, which aims to reveal what each person considers fundamental and essential in their lives. This concept has both cognitive and emotional components. The cognitive dimension of SWB refers to the individual's cognitive evaluation of life overall (i.e., global life satisfaction) as well as of specific life domains (e.g., family, leisure, health or professional life) (Luhmann et al., 2012). This evaluation is conducted by comparing things that the individual views to be an appropriate norm or standard. This general assessment of existence or a domain of existence represents life satisfaction (LS), often considered a dimension of the quality of life in a given social context or environment (Phillips, 2006). Therefore, its enhancement has become a crucial target for social policies (Carrasco-Campos et al., 2017). The two emotional dimensions of SWB are positive affects (PA), composed of emotions such as joy or enthusiasm, and negative affects (NA), composed of emotions such as anger or sadness (Diener, 1984). Many research studies have demonstrated that these three components—LS, PA and NA—are structurally distinct, although they are often related (e.g. Lucas et al., 1996).

<sup>1</sup>For a review of changes in the dynamic of SWB in the elderly, see chapter Jopp et al., [this book](#).

Within LIVES, most studies focus on one or two components of SWB, mostly LS and, to a lesser extent, PA and NA. However, a broad range of domain-specific satisfaction types, such as self-rated health, maternal marital satisfaction, satisfaction with working conditions, satisfaction with leisure activities, satisfaction with living alone or in a couple, and satisfaction with social relationships, are also considered. In the case of PA, relationship quality and affectionate behaviours towards one's partner/affectionate couple interactions are investigated. Two kinds of stressors are considered in LIVES research on SWB. The first kind is life course events or transitions, such as union formation (Ryser & Le Goff, 2018), transition to parenthood (Bernardi et al., 2017; Roeters et al., 2016; Wernli & Zella, 2018), widowhood, divorce or separation (Perrig-Chiello et al., 2015, 2016), and the transition to lone parenthood (Struffolino et al., 2016). Taking a longitudinal perspective, Wernli and Zella (2018) offer a panorama of variations in LS for both men and women, following a wide range of family events/transitions in the Swiss context in the short and long terms. For example, marriage is associated, on average, with higher LS in the short term, but this effect vanishes after a few years. Conversely, couple breakdown negatively impacts LS: women suffer in the years before and during the separation, whereas men's LS decreases at the moment of the break and continues to suffer in subsequent years.

The second kind of stressor is related to daily life activities, such as the stress engendered by childrearing for young parents, as developed by Debrot et al. (2018). Daily stressors are associated with the family life stage during the life course, such as marital status (Le Goff & Ryser, 2022, to be published), parenthood (Debrot et al., 2018; Favez et al., 2015), and lone parenthood (Recksiedler & Bernardi, 2020).

These two research directions consider exposure to a stressor related to daily or life course events/transitions as an external process, i.e., not dependent on the individual degree of SWB during the first phase of the vulnerability process (cf. Spini & Widmer, *this volume*). Individuals use some resources and/or reserves to face or to recover from this stress. These resources can be fixed, such as personality traits, or can fluctuate throughout the life course, such as financial situations (Perrig-Chiello et al., 2016). SWB and its variations are thus considered mainly an outcome of the combination of the stress process and the individual's resources or reserves.

LIVES scholars focus mainly on the second (during exposure to the stressor) and the third (postexposure) stages of the vulnerability process

sequence, but not on the first (pre-exposure) stage (Spini et al., 2017; Spini & Widmer, [this volume](#)). Two studies have taken a somewhat different approach and consider SWB as a resource. First, Cullati et al. (2014) conceptualize SWB as a resource that fluctuates during the life course and might influence an/other outcome(s). Within this perspective, the degree of LS with living alone or with a partner and/or another person affects mental health, with distinct effects between men and women. Second, Perrig-Chiello et al. (2015) investigate the impact of different resources on different indicators of SWB after a divorce and showed that LS with the relationship with the former partner does not ultimately affect SWB.

### LIFE COURSE EVENTS OR TRANSITIONS AS STRESSORS

This section investigates different mechanisms of change in SWB in relation to life course events/transitions. Individuals mobilize some resources or reserves to prepare for and adjust to an event/transition, whether it is expected or unexpected. The mobilization of resources is also required to reorganize other life course domains, as events/transitions in one life domain (e.g., family) also strongly influence others (e.g., work or leisure).

Bernardi et al. (2017) study how the transition to parenthood affects LS, domain-specific satisfaction and NA, considering personality traits as resources. Mothers experience a positive peak in LS around birth that returns to prebirth levels after three years. A decline in mothers' satisfaction with work occurs after childbirth, with only partial recovery, as they do not fully recover their decrease in SWB. Similarly, fathers' satisfaction with leisure time suffers more from losses and seems to drive a slight decline in LS after the birth of their child. In this research, resources such as personality only marginally affect how individuals maintain, recuperate, or lose their SWB in specific life domains during the years surrounding parenthood. Roeters et al. (2016) emphasize the importance of couples' lifestyle and the multidimensionality of vulnerability processes during the transition to parenthood. The authors studied the impact of the transition to parenthood on NA, focusing on the importance of pretransition leisure activities and involvement in paid work. After the transition to parenthood, high involvement in leisure activities and paid work might lead to role overlap. In that situation, parents with higher participation in leisure activities experienced a decrease in their SWB after the transition to parenthood. This research shows that involvement in several social fields is not a resource but, on the contrary, induces vulnerability due to role

overload in that context. Another resource mobilized during the transition to parenthood is the expected role of each partner as a parent (Turner-Zwinkels & Spini, 2020). Turner-Zwinkels and Spini (2020) demonstrate that identity coordination within couples, notably the domestic identity linked with the feeling of being a housewife or househusband, has longitudinal effects on couples' SWB. More significant differentiation in domestic identity was associated with greater SWB for men and a reduction in stress for women. This research emphasizes the effect of the multidimensionality of identity and its influence on the SWB dimension, although such influence may vary depending on what dimension of identity is involved.

Unexpected events such as the loss of a partner in middle adulthood, an unanticipated birth or a sudden union breakdown theoretically impact SWB. Individuals are less prepared for such events or transitions and the associated changes following them (Bernardi et al., 2019). Such changes are expected to weaken considerably both individual resources and reserves and the individual's ability to cope, at least in the short or medium term. For example, Perrig-Chiello et al. (2016) show that time after separation plays a role in the level of SWB, with the period soon after separation being related to a deterioration of different dimensions of SWB. Despite a gradual improvement in SWB dimensions over time for separated or divorced persons, their SWB remains lower than that of married people, especially for women, who seem more affected by depression and lower LS. Personality traits such as neuroticism, extraversion, conscientiousness and resilience are psychological resources that improve SWB after a divorce. However, SWB after a divorce also depends on other resources, such as individuals' financial situation or level of education. In their study on the effects of the transition to lone parenthood on mental health, Struffolino et al. (2016) distinguish two kinds of resources that moderate the impact of the stressful event on SWB: first, the level of education related to past trajectory; second, employment conditions associated with the individual's situation at the time of the separation. Authors find that lone mothers in short, part-time employment and with an average level of education mention lower self-rated health than mothers living in couples (Struffolino et al., 2016).

An innovative approach (Comolli et al., 2020, 2021) focuses on the combined effect of events in different trajectories and event concentrations, i.e., events occurring in close temporal proximity. The authors investigate the existence of nonlinearities or thresholds in the association

between event concentration and LS. Their investigations are based on the definition of critical events, whether positive or negative, as occurrences that force a readjustment of people's lives through their habits, behaviours or social roles (Park, 2010). In the same vein as studies challenging the view that some events are intrinsically stressful or negative (e.g., Kettlewell et al., 2020), they test whether transitions that are usually benign may become stressful and, consequently, reduce SWB if they take place in close temporal proximity with multiple other transitions. Additionally, they test whether there are gender differences in the relationship between event concentration and LS. They conclude that the concentration of critical events is negatively related to LS, with a slightly more significant effect for women than men. Moreover, the authors show that the sequence of events also impacts SWB, perhaps indicating that the trajectory contains some information on the kind of stresses, (cumulative) resources and capital that produce an SWB outcome (Comolli et al., 2020).

In conclusion, according to LIVES scholars, the relation between life course events or transitions and SWB is mediated by several types of resources or reserves. These resources are psychological and economic and are related to education. Moreover, they may be fixed throughout the life course or linked to a process of accumulation or even fluctuation. The intensity of their impact on SWB also depends on the concentration of different events at one moment of the life course, with spillover effects between life domains. Paradoxically, some scholars have also shown that a life event per se is not necessarily the source of differentiated SWB but can, rather, reveal preexisting differences in resources (Ryser & Le Goff, 2018; Perrig-Chiello et al., 2016).

### DAILY LIFE STRESSORS/CHRONIC STRAINS

A general model of relations between daily stressors and SWB within a life course perspective posits that an individual's position or stage in the life course gives rise to specific stresses that can impact SWB (Almeida & Wong, 2009). An example is parenting, especially during early parenthood. Many stressors are related to the care of the child, work-family balance, partners' interaction, and the share of tasks related to the family organization (Favez et al., 2015). In the same vein, living with a partner is susceptible to producing daily stress that can impact SWB (Ryser & Le Goff, 2018). The main findings of the effects of daily stressors on SWB emphasize that these stressors shape vulnerability in multiple domains that



interact over time such as family, work, or health (Bernardi et al., 2017; Cullati, 2014; Cullati et al., 2014; Debrot et al., 2018; Roeters et al., 2016; Sauvain-Dugerdil, 2018).

LIVES scholars have taken a primarily comparative approach to investigate the relations between daily stressors and SWB. The first compares SWB in different social groups at the same life course stage. Based on Pearlin's (2010) social stratification perspective on SWB, Cullati (2014) investigates individuals' socioeconomic position, which is considered an individual resource mobilized against the stress engendered by work-family conflict on a self-rated health trajectory. His results show that self-rated health slowly declines over time and is significantly correlated with exhaustion after work. However, this decline is slower for more-educated than for less-educated people. In addition to the importance of the socioeconomic position, Favez et al. (2015) highlight the role of the family structure in the vulnerability process during parenthood by contrasting two groups of women: women living in stepfamilies and those living in first-marriage families. Favez and colleagues investigate how parenting and coparenting modify SWB by changing parents' daily experience. Their results indicate that mothers promote family integrity in stepfamilies either with the partner or the father but not with both. They also demonstrate that in first-marriage families, maternal marital satisfaction is associated with all dimensions of coparenting with the father, whereas in stepfamilies, maternal marital satisfaction is only linked with disparagement against the partner and conflict with him. The promotion of cohesiveness decreases as the child becomes older and more autonomous.

The second type of comparison contrasts people in different life stages (Debrot et al., 2018; Favez et al., 2015; Ryser & Le Goff, 2018; Sauvain-Dugerdil, 2018). Debrot et al. (2018) consider the daily stress of partners generated when young children or preschool children are present in the household. The authors focus on how partners detach from work, how they interact, and the consequences to the individual and their interrelation with SWB. The results emphasize that detachment from work affects not only the individual but also their close partner's perception of their interactions. Work detachment then plays a crucial mediating role in the stress spillover and crossover process. This research highlights that vulnerability is not just an individual matter but also impacts close connections.

These two strategies of comparison, between social groups and at different life stages, are combined by Sauvain-Dugerdil (2018), who compares parents and childless adults at two moments of the life course, young

adulthood and the end of middle life. The author shows that while the SWB of parents and childless individuals did not differ significantly, childlessness is related to less social integration for older people which has an impact on individuals' SWB.

In conclusion, everyday life at a family life course stage generates specific stresses that individuals have to face. LIVES scholars show that these stresses are related to difficulties in reconciling life domains, especially family and work. They also show that these stresses are generated by interacting with others (e.g., children, partner). People face these stresses by using resources belonging to different registers (psychological, economic, etc.).

### THE MEDIATING ROLE OF THE INSTITUTIONAL CONTEXT

Both the institutional context, composed of welfare policies and laws (Recksiedler & Bernardi, 2018), and/or the cultural and normative context, constituted by informal norms and attitudes (Le Goff & Ryser, 2022, to be published), act as potential mediators of the relationships among resources, life events/transitions or daily life stressors and SWB. Based on the vulnerability framework, welfare states are expected to act differently in acquiring and redistributing resources, thereby allowing men and women to cope with daily stressors or stressful life events. Welfare state organizations are considered a kind of collective set of resources (or lack of resources) that play a role in the average level of SWB in a society (Fioretta & Rossier, 2018). Similarly, socionormative climates that are more or less tolerant of given lifestyles influence how individual resources or reserves can be used according to their "degree of permissiveness" (Le Goff & Ryser, 2022, to be published).

A first approach compares the vulnerability process of people situated in the same phase of the life course or experiencing the same life course event but living in different countries. According to Fioretta and Rossier (2018), parents living in Switzerland who are both full-time workers report more difficulties reconciling work and family than more traditional couples. Conversely, in Belgium, France, Germany or Sweden, dual-earner couples show fewer work-family conflicts and better self-rated health and economic well-being than other couples. This research highlights the vulnerability engendered by the structural difficulty of combining work and family life in Switzerland, which reflects the structural gender inequalities between men and women. In a similar vein, Recksiedler and Bernardi

(2018) investigate the SWB of lone mothers according to welfare type, considering the union trajectories after the transition to lone parenthood (whether and how often women experience repartnering). The authors highlight the vulnerability caused by different welfare states, finding that frequent repartnering was more negatively associated with LS in countries characterized by liberal policies than in conservative countries or countries with high levels of social protection (Recksiedler & Bernardi, 2018).

A second approach investigates the effect of a change in social policy on SWB. Family law and its changes are important contextual factors insofar as they modify opportunities for family behaviour and the perception of what is (and is not) normative, legitimate, and expectable. Recksiedler and Bernardi (2020) compare cross-sectional data collected before and after a change in Swiss family law that facilitated parents' access to shared physical custody arrangements for children of separation and divorce. They found that parents' mental and physical health in shared physical custody arrangements was higher after the law's implementation. However, they could not disentangle between the causation effect (i.e., the legal change increases SWB) and the selection effect (i.e., the legal change allows new social groups to pursue shared custody arrangements). This research shows how changes and variations in Swiss family law are associated with parents' mental health and how these changes decrease parents' vulnerability to shared physical custody arrangements.

## CONCLUSION: A LIFE COURSE VULNERABILITY PERSPECTIVE ON SWB

This chapter aims to review the main findings of research dealing with the dynamic relationships between family life in mid-adulthood and changes in SWB within the LIVES vulnerability framework (Spini & Widmer, [this volume](#)). SWB is primarily envisaged as an outcome related to exposure to stress. The set of resources at an individual's disposal mediates the degree or force of stress. In this way, the occurrence of the stress and the change in SWB correspond to the second and third steps of the vulnerability process elaborated within LIVES.

LIVES scholars investigate two kinds of stressors: first, life course events or transitions and, second, daily circumstances related to a specific phase of the life course. Many people experience these stressors during their life course. Thus, LIVES scholars have focused on fine-grained exploration of the complexity of the relations between a wide variety of life course events and transitions and daily stressors and SWB. This exploration differs from

other perspectives on vulnerability in which stressors are rare events, such as an incident or an illness or even a collective catastrophe.

People mobilize many resources to face stress. Resources investigated by life scholars belong to different registers (physical, temporal, cognitive, emotional, economic, relational or collective). These resources are constant or time-varying. They are eventually reserves rather than resources per se if they result from cumulative processes during the life course (Cullati, Kliegel, & Widmer, 2018). These resources are unequally distributed among individuals or within societies. Some individuals are therefore more vulnerable, i.e., will experience a greater decrease in their SWB.

Several discussions emerge from investigations about the role of stressors in the stress process. First, several scholars doubt that stressors exert an impact per se on SWB. Stressors instead reveal differences in mobilized resources or reserves. Stressors illuminate resource inequalities (Perrig-Chiello et al., 2016; Ryser & Le Goff, 2018). Second, other authors have investigated the concentration of events in multiple life domains during specific life course phases (Comolli et al., 2020). A dense period of sudden life course events engages much more of the individual resources and/or reserves than if the same events occurred across a longer period. Consequently, event concentration challenges the individual's ability to cope. These results raise the question of people's resilience (Bonanno, 2004) in facing different stressors during their life course.

Several LIVES scholars propose an alternative to the primary approach of SWB as an outcome (Cullati et al., 2014; Perrig-Chiello et al., 2015). In this approach, SWB is a resource for facing stressors. SWB could exert an impact on the occurrence or degree of life course stressors. In this case, SWB depends on the first phase of the LIVES vulnerability process. This approach opens a promising avenue of research in which SWB is a resource that allows for life-course stressors and an outcome resulting from the occurrence and degree of stress.

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# Positive and Negative Spillover Effects: Managing Multiple Goals in Middle Adulthood

*Victoria Schüttengruber, Franciska Krings,  
and Alexandra M. Freund*

Both in the scientific literature and in popular media, the topic of “work-life balance” has received much attention, particularly for the age group of middle-aged adults. The term “work-life balance” expresses a metaphor revolving around an “optimal” ratio or relationship between life domains when having to juggle the simultaneous demands and tasks of work, family, and leisure (Edwards & Rothbard, 2000; Guest, 2002). The scientific literature approaches the topic of “work-life balance” from different angles under the umbrella term of spillover effects across life domains. The perspective on vulnerabilities of the Swiss National Centre of Competence in

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V. Schüttengruber (✉) • A. M. Freund  
Department of Psychology, University of Zurich, Zurich, Switzerland  
e-mail: [schuettengruber@psychologie.uzh.ch](mailto:schuettengruber@psychologie.uzh.ch); [freund@psychologie.uzh.ch](mailto:freund@psychologie.uzh.ch)

F. Krings  
Faculty of Business and Economics, Department of Organizational Behavior,  
University of Lausanne, Lausanne, Switzerland  
e-mail: [Franciska.Krings@unil.ch](mailto:Franciska.Krings@unil.ch)

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Research LIVES—Overcoming vulnerability: Life course perspectives (NCCR LIVES; see Chap. 2) addresses central characteristics of spillover effects in its multidimensional view of life domains. The vulnerability process includes resource dynamics that address the successful allocation of one’s resources when experiencing and dealing with spillover effects across life domains. A key route to well-being and goal attainment lies in the availability of limited resources (e.g., money, time) and the efficient use of these resources (Freund & Riediger, 2001).

This chapter starts with the developmental phase of middle adulthood as the “rush hour of life.” Based on this lifespan perspective, we provide a brief theoretical and empirical overview of different perspectives on spillover effects. We outline the literature on interdomain relationships, multiple goal pursuit, boundary management, and models of spillover effects on well-being and health. After that, we focus on spillover and crossover effects in the work-family interface in couples. To provide empirical evidence, we draw mainly on studies conducted within the NCCR LIVES research program. Finally, this chapter presents promising routes for future research on spillover effects in middle adulthood.

### LIFESPAN PERSPECTIVE ON MIDDLE ADULTHOOD

Middle adulthood, loosely defined as the age between 30 and 60 years, is characterized as the phase during which adults have to manage multiple demands related to responsibilities in work, family, and leisure. Many middle-aged adults aim to foster their careers but must also engage in household chores, care for the younger (e.g., childcare) and older generations (e.g., parents), and pursue leisure activities. The term “rush hour of life” (Bittman & Wajcman, 2000; Freund et al., 2009) portrays the simultaneity of the resource demands from work and family, in line multidimensional and process-oriented vulnerability framework of NCCR LIVES (Spini et al., 2017; Chap. 3).

In many Western societies, the “crunch” of family- and work-related demands in middle adulthood results from the prolonged period of education and exploration of available lifestyle options (e.g., partnerships, housing) during young adulthood. Age-related social and biological constraints in opportunity structures set limits on the postponement of work- and family-related goals (Freund et al., 2009). Consequently, work and family compete for the same resources, which, if one has children, leads to pressure on work and family in a person’s 30s and 40s (Mehta et al., 2020). To

fulfil the demands of work and family, middle-aged adults tend to sacrifice the less obligatory leisure and social goals, intending to pursue these goals in the postretirement period (“bucket list effect,” Freund, 2020). However, contrary to public and medial notions of a normative (i.e., inevitable) midlife crisis, middle adulthood is a peak time in several regards (e.g., career path, earnings, self-confidence). Middle-aged adults experience high and stable levels of well-being. If anything, crises are attributed to events (e.g., divorce) rather than to specific age groups (Infurna et al., 2020; Lachman, 2015).

### CONCEPTUALIZATIONS OF POSITIVE AND NEGATIVE SPILLOVER ACROSS LIFE DOMAINS

Across the lifespan, and particularly in middle adulthood, adults have to juggle the demands of multiple life domains, such as work, family, and leisure. These life domains interact in complex ways, such as carrying the good mood from a work-related success home or feeling stressed because work demands seep into family time. These cross-domain interactions are often labeled spillover effects. In this chapter, we outline different perspectives on spillover effects that built the foundation for the NCCR LIVES studies. Spillover exemplifies the multidimensional and resource/stressor-oriented NCCR LIVES vulnerability framework.

#### *Conflict and Facilitation*

When people manage the demands of multiple life domains in their everyday lives, they experience and deal with the effects of positive and negative spillover (e.g., Edwards & Rothbard, 2000). The prototypical instances of spillover refer to interdomain conflict, indicating negative spillover, and to interdomain facilitation, indicating positive spillover. Early research on spillover focused mainly on interdomain conflicts, resulting in a biased and incomplete picture of spillover effects that overlooked facilitation (Wiese et al., 2010). The NCCR LIVES studies on spillover have contributed to a more differentiated view on both positive and negative spillover.

Interdomain *conflict* emerges when the pursuit of tasks, goals, and demands in one life domain interferes with those in another. In other words, engagement in one life domain hampers engagement in another (e.g., caring for a sick child interferes with one’s work schedule). According

to Greenhaus and Beutell (1985), conflict results from incompatibilities among life domains. The authors distinguish between time-, strain-, and behavior-based conflicts. Sources of conflict arise when there is insufficient time to meet the demands of all life domains, strain (e.g., fatigue) that carries over from one life domain to another, and behaviors in one life domain that are incompatible with those in another (e.g., being assertive in the workplace but agreeable with family). Carlson and Frone (2003) introduce the distinction between internally and externally generated conflicts. Negative spillover results from psychological (i.e., internal conflicts) or behavioral involvement (i.e., external conflicts) in one life domain that interferes with engagement in another life domain.

*Facilitation* among life domains emerges when pursuing tasks, goals, and demands in one life domain is beneficial to engagement in another life domain. In other words, people benefit from the enriching influences among life domains (e.g., positive mood during a family outing after a successful workday). According to Greenhaus and Powell (2006), people experience facilitation when being engaged in one life domain enhances performance or positive mood in another life domain. Addressing facilitation, Wiese et al. (2010) distinguish between positive transfer and compensation. Positive transfer denotes either positive mood or competencies that carry over from the supporting to the receiving life domain. Compensation represents a response that helps people deal with deficits in one life domain. Positive experiences in the supporting life domain “buffer” the effect of negative experiences in the receiving life domain.

Conflict and facilitation also apply to the pursuit of multiple goals. These goals can conflict due to time or resource constraints, or they can facilitate each other when one goal is instrumental for another (Freund & Riediger, 2006). Goals direct people’s behavior across time and situations, as “cognitive representations of personally desired (or dreaded) states to be approached (or avoided) ... through action” (Freund et al., 2019, p. 286). Goals consist of the link between goal-relevant means and desired outcomes of goal pursuit. Overall, a “good goal system” consists of many and strong facilitative relations and few and weak conflicting relations among goals (Tomasik et al., 2017).

One way to promote successful goal pursuit in work and private life is to employ the life-management strategies of selection, optimization, and compensation (SOC; Freund & Baltes, 2002). *Selection* refers to the development of and commitment to goals. By selecting a subset of goals from a range of potential alternatives (i.e., elective selection), people give

direction to their development and focus their resources. *Optimization* denotes the process of acquiring and investing resources as goal-relevant means to achieve the selected goals. *Compensation* is the process of counteracting losses by substituting lost goal-relevant means (e.g., asking for support), thereby maintaining a given level of functioning. An alternative way to manage losses is to adjust existing or select different goals (i.e., *loss-based selection*). The use of SOC strategies is associated with higher well-being (Freund & Baltes, 2002), higher job satisfaction (Wiese et al., 2002) and lower work-life conflict (Baltes & Heydens-Gahir, 2003).

In a 20-day measurement burst study, Knecht and Freund (2017) examined the role of the momentary use of SOC strategies when pursuing multiple goals in work, family, and leisure. Higher momentary goal conflict was associated with higher subsequent use of optimization and compensation. Higher momentary goal facilitation was related to lower subsequent use of loss-based selection and compensation. Thus, by using SOC strategies, people adaptively responded to momentary challenges that threatened their successful pursuit of multiple goals. This NCCR LIVES study extended previous studies on the habitual use of SOC strategies by targeting their momentary use in a longitudinal design.

In general, positive and negative spillovers are bidirectional concepts, as they can occur in both directions (e.g., friends offer support in dealing with work-related problems, working overtime decreases time spent with friends). Each life domain can function as the source of conflict or facilitation, and the relationship between two life domains can encompass both conflicting and facilitating aspects (e.g., Edwards & Rothbard, 2000).

Research on spillover has largely centered on the work-family interface but has neglected the role of leisure (Kuykendall et al., 2015). Complementing prior research, Knecht et al. (2016) investigated the interdomain relationships among work, family, and leisure in another NCCR LIVES study. Work was the highest and leisure the lowest source of conflict. Family was the strongest and work the weakest source of facilitation. Owing to the high demands of work and family, leisure was the highest recipient of conflict and the lowest recipient of facilitation. In a longitudinal study over six years, Bernardi et al. (2017) adopted the NCCR LIVES vulnerability framework to investigate subjective well-being in the context of the transition to parenthood not only in work and family but also in leisure.

Empirical evidence supports the impact of conflict and facilitation on indicators of well-being and health, highlighting the negative impact of

conflict (e.g., Amstad et al., 2011; Nohe et al., 2015; Shockley & Singla, 2011) and the positive impact of facilitation (e.g., McNall et al., 2010; Shockley & Singla, 2011; Wiese et al., 2010). Similarly, self-reported goal relations indicate that facilitation is associated with higher levels of engagement in goal pursuit, successful goal attainment, and well-being. By comparison, goal conflict primarily decreases well-being (Boudreaux & Ozer, 2013; Gray et al., 2017; Riediger & Freund, 2004). Contrary to public and medial portrayals, there is no consistent evidence for gender differences regarding conflict (Allen et al., 2012; Nohe et al., 2015) or facilitation (Grzywacz et al., 2002; Lapierre et al., 2018; Shockley et al., 2017; Wiese et al., 2010). However, where present, gender differences reveal that women tend to suffer more from conflict and benefit less from facilitation. The results obtained within the NCCR LIVES research program also support these tendential gender differences (e.g., Freund et al., 2014).

### *Boundary Drawing Around Life Domains*

Another perspective on spillover effects addresses the boundaries that people draw around life domains, which is in line with the multidimensional view of the NCCR LIVES vulnerability framework. According to border theory (Clark, 2000), boundary theory (Ashforth et al., 2000), and boundary management styles (Kossek et al., 2012), boundaries influence how people manage their activities in different life domains. Boundaries are “lines of demarcation between domains, defining the point at which domain-relevant behavior begins or ends” (Clark, 2000, p. 756). These metaphoric “fences” can be physical, temporal, emotional, cognitive, and relational. In their daily lives, people negotiate boundaries on a continuum ranging from segmentation (i.e., separation) to integration (i.e., blurring, complete overlap). Boundaries differ in their flexibility and permeability. Flexibility indicates the degree of pliability of physical and temporal boundaries (e.g., whether one can work at different places at various times). Permeability denotes to what degree the physical location of one life domain can differ from the psychological and behavioral involvement in another life domain (e.g., whether one can investigate one’s next holiday destination at work). Inflexible and impermeable boundaries result in the segmentation of life domains, whereas flexible and permeable boundaries lead to their integration (Ashforth et al., 2000).

To date, research has not resolved the question of whether people benefit more from segmented or blurred boundaries (Schüttengruber &

Freund, 2022). Both research on boundary management in general and the studies conducted within the NCCR LIVES research program highlight that there is evidence supporting the benefits of both segmentation and integration. For example, blurred boundaries facilitate switching between life domains, whereas segmented boundaries decrease detrimental intrusions from one life domain into another (Allen et al., 2014; Knecht & Freund, 2016). For example, the usage of information technologies and flexible work arrangements (e.g., remote work) can potentially both enhance and impair well-being and productivity (Allen et al., 2015).

Research on psychological detachment (Sonnentag, 2018) has shown that people can profit from segmentation. Detachment denotes “switching off” from work-related activities, thoughts, and locations during non-work time. Experiencing detachment functions as the central recovery process, reducing work-related exhaustion, and increasing well-being. For example, participants perceived less spillover of a negative mood from work to the next morning when they reported higher detachment in the evening after work (Sonntag & Binnewies, 2013). Our research on emotion regulation supports these empirical findings. When bank employees adopted strategies that hindered “switching off,” they experienced more intrusive work-related thoughts during nonwork time (Wiese et al., 2017).

Some research on boundary management proposes that people differ in their preference to segment or integrate life domains. The benefits of segmentation and integration may depend on the fit between the desired and actual boundaries (Kreiner, 2006). More recent analyses of different profiles of boundary management point to the beneficial impact of being able to establish the desired boundaries (Kossek et al., 2012).

According to research on boundary violations (Hunter et al., 2017), the cognitive and affective reactions to boundary violations determine whether such violations result in perceived conflict or facilitation. Boundary violations occur when events in one life domain interrupt ongoing activities in another. The repeated appraisal of boundary violations as obstructing or facilitating goal pursuit (e.g., a friend’s phone call at work reduces time invested in a work goal versus serves a leisure goal) and the associated negative (in case of conflict) or positive (in case of facilitation) affective reactions contribute to the general experience of conflict or facilitation. These links demonstrate how people’s ways of dealing with the boundaries between life domains shape spillover effects across life domains.

Boundary management influences the pursuit of multiple goals; integration can be beneficial, and intrusions can be harmful. In a 20-day measurement burst study conducted within the NCCR LIVES program, Knecht and Freund (2016) investigate the relationship of boundaries with well-being and goal relations in people's "real" lives by targeting incongruity and integration as two instances of boundaries. Incongruity refers to a mismatch of the location and content of an activity or thought, such as thinking about work during the family dinner or chatting with friends while at work. Integration describes the association of one activity with more than one life domain, such as working with a friend on a new business idea. Participants reported lower goal facilitation and lower well-being in situations of incongruity. Integration pertains to situations in which activities and thoughts belong to more than one life domain (e.g., doing household chores while thinking about a work project). When they combined multiple life domains in this way, participants reported higher well-being, higher goal facilitation, and lower goal conflict.

### *Models of Spillover on Well-being and Health*

Models of spillover conceptualize the links between an interdomain relationship (i.e., both directions of conflict and facilitation) and the domain-specific (e.g., work satisfaction) and domain-unspecific (e.g., health, well-being) consequences of the given interdomain relationship. Overall, there are two competing perspectives that propose different links between the interdomain relationship and the primarily affected domain (i.e., outcomes of the interdomain relationship in the originating or receiving domain). According to the perspective of domain specificity or cross-domain relations (Frone et al., 1992), the consequences of conflict or facilitation primarily concern outcomes in the receiving (rather than the originating) domain (Hunter et al., 2017). Applied to conflict, work interfering with family mainly impairs indicators of well-being in the family domain, whereas family interfering with work mainly hinges on indicators of well-being in the work domain. When one life domain conflicts with another, people experience struggles with fulfilling the demands in the receiving domain, which also impairs well-being in the receiving domain.

According to the perspective of source attribution or matching domain relations (Amstad et al., 2011; Shockley & Singla, 2011), the consequences of conflict or facilitation primarily concern outcomes in the originating (rather than the receiving) domain. Applied to conflict, work

interfering with family primarily exerts a negative impact on indicators of well-being in the work domain. Family interfering with work primarily decreases indicators of well-being in the family domain. People attribute the struggles in the receiving domain (e.g., lack of family time) to the originating domain (e.g., high work stress). They negatively appraise the originating domain, which reduces well-being within this domain.

Although the crossover perspective has been more prominent in the literature, meta-analytic evidence favors the more recent source attribution perspective (Amstad et al., 2011; Nohe et al., 2015; Shockley & Singla, 2011; Zhang et al., 2018). In other words, there is more support for within-domain than cross-domain consequences, as people primarily experience the outcomes of conflict and facilitation in the originating domain (e.g., a stronger relationship of work-to-family facilitation with work satisfaction than with family satisfaction). Both perspectives highlight that the outcomes in the primarily affected life domain impact outcomes in the other life domain and domain-general outcomes. However, the empirical evidence mostly builds on cross-sectional data. Meta-analytic evidence from longitudinal studies on work-life conflict cautions against the overinterpretation of the unidirectional impact of conflict on strain, as the relationship between conflict and strain is bidirectional (Nohe et al., 2015). Moreover, both perspectives have only addressed the work-family interface and have largely focused on conflict rather than facilitation (Shockley & Singla, 2011). NCCR LIVES research pursues the goal of advancing research on the largely neglected aspects in the spillover literature by focusing on facilitation (in addition to conflict) and leisure (in addition to work and family) as well as implementing more longitudinal research studies (in addition to cross-sectional studies).

### *Spillover at the Work-family Interface in Couples*

Building on the different perspectives on spillover effects, we focus on spill- and crossover effects in the work-family interface in couples. Boundary management also depends on people's social environment, such as the life partner or children living in the same household. For parents, in particular, when both partners work, work and family domains are highly intertwined and require frequent coordination between the partners regarding daily activities as well as long-term goals.

Couples form a highly interconnected system that is characterized by extraordinary levels of closeness (Hoppmann et al., 2011). The



interdependence of couples and parents in various life domains has been emphasized by theoretical notions such as “linked lives” (Elder, 1994) or in Bronfenbrenner’s ecological systems theory (1986). From this perspective, a full understanding of spillover requires the consideration of crossover, i.e., that experiences cross over between closely related persons. The spillover-crossover model (Bakker & Demerouti, 2013) posits that one partner’s experiences first spill over from one life domain (e.g., work stress) to another (e.g., marital distress) and then cross over to the other partner and affect partner experiences (e.g., decreased psychological well-being) through personal interactions. Crossover can also occur more directly through identification with the partner and empathetic concern (Westman & Vinokur, 1998). For spillover, crossover encompasses the transmission of negative and positive experiences. Experiencing positive emotions at work (e.g., pride after accomplishing an important task) may spill over and contribute to a good mood at home, which may then cross over to the other partner through positive marital interactions and increase the partner’s feeling of happiness at home (cross-domain crossover) and/or at work (same-domain crossover).

There is ample empirical evidence for spillover between work and family (and leisure), as outlined in the preceding paragraphs of this chapter. Moreover, there is a growing literature establishing negative and positive crossover effects and their underlying mechanisms in couples and parents (see Steiner & Krings, 2016). Several studies have demonstrated how one partner’s negative work experiences (e.g., high workload, time pressure) cross over and affect the other partner’s family functioning and well-being (e.g., marital satisfaction) (e.g., Bass et al., 2009; Shimazu et al., 2009). Although positive crossover has received somewhat less attention in research, the existing evidence also establishes how positive experiences at work (e.g., work enjoyment, feeling supported by one’s supervisor) affect well-being or family functioning (e.g., psychological well-being, positive parenting behaviors (e.g., Costigan et al., 2003; Sanz-Vergel & Rodriguez Munoz, 2013) and the partner’s job satisfaction (e.g., Liu & Cheung, 2015).

Recent evidence suggests that one partner’s attitudes toward family and work (i.e., their beliefs in the ideal behaviors of men and women in society; Eagly, 1987) can also cross over and affect the partner, particularly for dual-career parents. The partner’s beliefs in the traditional division of gender roles are particularly important because they comprise the belief that men are best suited for assuming the work role and women are best suited for assuming the family role (Eagly, 1987; Freund et al., 2013). Indeed,

Steiner et al. (2019) have shown that among dual-earner parents, men's stronger traditional gender role attitudes increased their spouse's experience of work-family conflict. Men who hold traditional gender role attitudes may frequently express their discontent with their female partner's engagement at work or withhold support for her performance in her work role, which may ultimately increase their partner's level of work-family conflict.

### OUTLOOK ON FUTURE RESEARCH ON SPILLOVER EFFECTS

In their daily lives, people navigate multiple life domains and face the challenge of simultaneously managing the goals, tasks, and demands in the life domains of work, family, and leisure. The effects of spillover and, in couples, crossover are challenging, and their management in everyday life is highly demanding. This chapter underscores the importance of considering resource dynamics, especially the availability of limited resources (e.g., money, time) and their efficient use (Freund & Riediger, 2001), in understanding well-being and goal attainment from the perspective of spillover effects. Empirical support for the source attribution perspective (Amstad et al., 2011; Shockley & Singla, 2011) suggests that experiencing work-to-family conflict primarily decreases well-being in the work domain (i.e., the originating domain), and family-to-work conflict primarily affects the family domain. In addition, we can infer promising ways to foster successful goal pursuit and well-being in different life domains from research on interdomain relationships (especially different types of conflict and facilitation), multiple goal pursuit, boundary management, and models of spillover effects. For example, NCCR LIVES studies suggest that people benefit from employing the life-management strategies of selection, optimization, and compensation when they pursue multiple goals in different life domains at the same time. Research regarding the best way to draw boundaries between goals, tasks, and life domains is inconclusive. To achieve a more fine-grained picture of spillover effects, future research should emphasize the role of leisure and friends in addition to work and family, interdomain facilitation in addition to interdomain conflict, and crossover in addition to spillover. Moreover, cross-sectional studies (Nohe et al., 2015) dominate this research area, and more longitudinal studies are urgently needed to assess the long-term effects of boundary management, spillover, and crossover. One particularly promising avenue for studying the management of multiple life domains and goals in everyday

life is offered by the experience sampling methodology, which captures more accurate insights into the psychological processes of “real” life compared to one-shot assessments of aggregate evaluations of life management strategies. Moreover, we advocate the use of experimentally manipulating boundary management strategies to arrive at causal inferences (Schüttengruber & Freund, 2022). On a stronger empirical basis, interventions can be developed at the individual and organizational levels to increase positive spillover and reduce negative spillover during the resource-demanding phase of middle adulthood. Given these future endeavors, we are convinced that the empirical evidence gathered within the NCCR LIVES research program has already substantially contributed to filling conceptual and empirical gaps in research on spillover. NCCR LIVES studies draw attention to facilitation, the life domain of leisure, and longitudinal research designs. By embedding studies within the NCCR LIVES vulnerability framework, we set the stage for pursuing an interdisciplinary and resource-oriented approach in research on spillover effects across the lifespan.

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## CHAPTER 4

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# How Personal Relationships Affect Employment Outcomes: On the Role of Social Networks and Family Obligations

*Rafael Lalive, Daniel Oesch, and Michele Pellizzari*

### INTRODUCTION

Few human institutions lend themselves to the study of the interdependencies between the social sphere and the economic sphere as well as the labour market. The issue of how one social domain spills over into another is particularly relevant for the link between personal relationships and employment outcomes. In this chapter, the focus is on two instances of interdependencies between sociability and employment.

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R. Lalive (✉)

Faculty of Business and Economics, Department of Economics, University of  
Lausanne, Lausanne, Switzerland  
e-mail: [rafael.lalive@unil.ch](mailto:rafael.lalive@unil.ch)

D. Oesch

Institute of Social Sciences, University of Lausanne, Lausanne, Switzerland  
e-mail: [daniel.oesch@unil.ch](mailto:daniel.oesch@unil.ch)

M. Pellizzari

Centre LIVES, University of Geneva, Geneva, Switzerland  
e-mail: [Michele.Pellizzari@unige.ch](mailto:Michele.Pellizzari@unige.ch)

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On the one hand, we will show that individuals' trajectories in personal networks and the labour market are closely intertwined. A person's network facilitates access to jobs in different ways. As people create relationships and accumulate social contacts, they obtain more information about job opportunities, benefit from acquaintances who vouch for them and thus may embark on more rewarding careers (Granovetter, 1974). However, social contacts must be nourished, or they can become obsolete (Calvo-Armengol & Jackson, 2004). In this view, personal connections can be seen as a form of relational *reserve* for achieving a successful labour market career over the life course (Cullati et al., 2018). While the lack of social contacts negatively affects employability, the extent to which personal networks influence individuals' job trajectories depends on both the nature of connections and the characteristics of the labour market.

On the other hand, personal relationships may also hamper employment prospects. If employers expect the obligations accruing from individuals' social lives to impair their commitment to the firm and reduce their productivity at work, employers will not hire these individuals or may discount their wages. This is notably the case for obligations linked to family and childcare. Crucially, the extent to which these social relations hamper careers depends on gender. While a large literature in sociology and economics points to a motherhood wage penalty for women (Gangl & Ziefle, 2009; Kleven, Landais, Posch, et al., 2019), there is little evidence on a fatherhood wage penalty—if anything, men's earnings tend to increase when they have children (Glauber, 2018).

This chapter aims to shed light on the interdependencies between sociability and employment by discussing two spill-over effects: the effect of personal contacts on employment and the effects of family obligations and, notably, children on wages. For each of these two interdependencies, we first discuss the theory and then present recent empirical findings both from a broader international literature and from our own research over the last decade within the LIVES programme.

### *How Social Contacts Affect Employment Outcomes*

The connection between one's social sphere and the labour market has long been acknowledged in many disciplines. With some approximation, one may date the first set of solid empirical evidence and theoretical frames to the work of Mark Granovetter (1973, 1974), a sociologist who investigated the incidence of jobs found through personal contacts in the United

States. Much of Granovetter's work was organised around the idea that *weak ties*, that is, personal contacts and acquaintances outside the restricted circle of family and close friends (the *strong ties*), were crucial for obtaining information about vacant jobs. The key insight of this argument is simple: Weak ties generate much more extensive networks than the limited set of strong ties, thereby allowing people to be connected more extensively and to access a broader set of potential sources of information about job opportunities.

Despite the appeal of Granovetter's argument, empirical evidence suggests that both strong and weak ties are important. Individuals with large, extended networks of weak ties do appear to be more frequently employed. At the same time, there is a substantial degree of continuity between parents and children in terms of the occupation—and even the detailed job—chosen. Two recent studies in Sweden show that children are likely to end up working with the exact same employers as their parents (Corak & Piraino, 2011; Kramarz & Skans, 2014). Moreover, we also know that closed elite circles of friends, often those coming from the same elite schools, are crucial for success in the labour market (Forsé, 2001; Lerner & Malmendier, 2013).

A large body of theoretical work rationalises the role of these two types of social connections, i.e., strong and weak ties. Many of these contributions are rooted in the branch of the economic discipline commonly referred to as the economics of information (Akerlof, 1970; Spence, 1973; Stiglitz & Shapiro, 1984). The discussion can be usefully organised around two broad types of information problems. First, neither employers looking for job candidates nor workers looking for jobs know exactly where to find each other. When jobseekers start looking for a new job, they often need to spend time and effort determining which employers are hiring for what kind of jobs. Public employment services, job advertisements and, more recently, job-finding websites and applications can all be viewed as tools that have been developed to alleviate this information deficit.

The second information problem is related to the characteristics of the job and the worker. Once the jobseeker and the employer with a vacant job have found each other, they need to invest yet more time and effort to figure out whether they can be good partners (Akerlof, 1970). Employers spend a substantial budget to screen and interview jobseekers in attempts to acquire information about whether these candidates would be able to carry out the required job tasks and whether, more broadly, they would fit well in their organisation's work environment. Similarly, jobseekers also

need to determine whether the advertised job is appropriate for their tastes and abilities and whether the employer is solid and will pay wages regularly.

Strong and weak ties may alleviate both types of informational problems, but they do so differently. Weak ties are more powerful at facilitating access to information about jobs and candidates. Several theoretical models (among others by Calvo-Armengol & Jackson, 2004; Zenou, 2015) postulate a mechanism in which information about job vacancies flows at a given rate to individuals, who can then decide to use this information for themselves or pass it on to their social contacts. Employed individuals are more likely to pass on the information than unemployed individuals, unless the former want to change their current job. Hence, people with more extended networks, even if such networks consist mostly of weak ties, are more likely to find new jobs, especially when they become unemployed and especially if many of their contacts are employed.

Regarding the second information problem, Montgomery (1991) proposes a theory of social contacts and workers' screening that rests on the idea of social homophily: the notion that social ties, especially strong ties, are more likely to be established between individuals with similar characteristics. Employers internalise this information when they assess the profiles of job candidates who have been referred to them by someone they already know, typically one of their current employees. In such situations, the employer makes inferences on job candidates' difficult-to-observe characteristics by considering the same characteristics of the referee, whom they already know.

The empirical predictions of this theory are supported by evidence. For example, employers, especially those employing highly skilled workers who are difficult to find and screen, value the information offered by recommenders so highly that they often require such recommendations as part of the application package.<sup>1</sup> Moreover, in tight labour markets, it is not unusual for employers to offer monetary rewards for their employees who recommend new hires.<sup>2</sup> The theory also predicts that jobseekers who access jobs via strong ties should find substantially better jobs compared to

<sup>1</sup> Among others, professors are kept busy by the writing of recommendation letters.

<sup>2</sup> An example for Switzerland 2019 is the Swiss Federal Railways paying their employees 2500 CHF (2000 €) for helping find new hires. See Basler Zeitung, "SBB suchen Personal—und zahlen 2500 Franken für Tipps", 18. 7. 2019, <https://www.bazonline.ch/sbb-suchen-personal-und-zahlen-2500-franken-fuer-tipps-82685436323>.

those found via weak ties, even holding the overall size of the extended network fixed.

Of course, the two mechanisms described here do not exhaust the wealth of theoretical work in this area, but they are representative of the fruitful cross-pollination taking place at the intersection of sociology and economics (see Granovetter, 2005 for a review). For example, the role of social networks in schools has been the subject of research both in economics (De Giorgi et al., 2010; De Giorgi & Pellizzari, 2014) and sociology (Frank et al., 2013; Gamoran et al., 2016) in a process of mutual cross-discipline learning.

An interesting further development concerns the potential trade-off between the two mechanisms. Notably, young jobseekers may have networks connecting them to occupations that are not necessarily those they prefer or are most skilled for. In such situations, they may face the difficult decision between continuing their job search or accepting a job they do not enjoy much or in which their skills are not the most valued, possibly following in their parents' footsteps (Bentolila et al., 2010).

## SOCIAL CONTACTS AND EMPLOYMENT OUTCOMES IN EUROPE

Evidence on the importance of social contacts in the labour market is abundant, especially for European countries. Recent evidence comes from the 2016 European Labour Force Survey (EU-LFS) produced by Eurostat, which asked all young, employed workers how they had found their jobs (as part of an ad hoc module on youth employment, this question was addressed only to respondents aged 15 to 34).

Figure 4.1 shows that personal contacts such as relatives, friends or acquaintances are among the most commonly used and successful methods. On average, in the European Union, over one-third of employed young workers declare that they found their job through personal contacts. This proportion ranges from 55 percent in Latvia to 23 percent in Norway. Only direct applications, such as sending an application directly to an employer or being contacted directly by an employer, rival personal contacts in importance. Comparative information for the entire population in Europe is only available up to the early 2000s but strongly suggests that the relevance of social contacts in the labour market is as great for the entire active labour force as it is for young workers (Pellizzari, 2010).

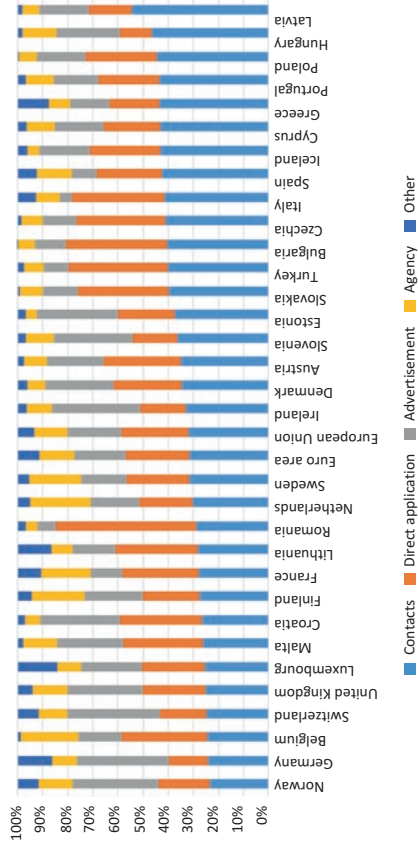


Fig. 4.1 Methods used by young workers (15–34) to find their current jobs

Of course, it is difficult to know exactly how personal contacts helped in finding the job, whether the person simply informed the young worker about the existence of a vacancy or if there was a more direct and influential intervention with a given employer. Nevertheless, it is remarkable that social contacts matter so much even in labour markets with effective formal channels—public employment services and job-finding websites—to help people find jobs.

### THE ROLE OF SOCIAL CONTACTS FOR THE UNEMPLOYED

Of particular policy interest is the question of how social contacts help *unemployed jobseekers* return to a job, as the results from studies on employed workers may not easily generalise to unemployed jobseekers (Bonoli, 2014). The reason is that these studies include many *nonsearchers*: employed individuals who changed jobs only because they had received unsolicited information from personal contacts.<sup>3</sup> Accordingly, these studies may lead us to overestimate the importance of social ties for unemployed jobseekers.

Useful evidence stems from a large sample of unemployed jobseekers in Switzerland who were surveyed twice, at entry into and exit from the public unemployment system, and whose survey responses were matched with information from the unemployment insurance register (von Ow, 2016). These data show that over 40 percent of unemployed workers found a job through their social networks (Oesch & von Ow, 2017).

Interestingly, among unemployed individuals, those individuals with less social capital tend to rely more heavily on their social network to find a job than more advantaged social categories. Almost half of unemployed jobseekers in working-class occupations had found a job thanks to a personal contact, compared to only one-third of jobseekers in upper-middle class occupations. Therefore, it may not be merely the quantity and quality of social ties that determine whether a jobseeker uses personal contacts to secure employment. Rather, personal contacts and, notably, family, friends and acquaintances may be used by jobseekers who have fewer formal credentials to offer (Chua, 2011; Bonoli & Turtschi, 2015; Oesch & von Ow, 2017).

<sup>3</sup>Note that almost 30 percent of individuals in Granovetter's (1974) classic study, all of whom had recently changed jobs, denied having actively searched for new employment.

This analysis of unemployed jobseekers suggests that the decisive distinction may not necessarily be between weak and strong ties but rather between work-related and communal ties. Communal ties such as family, friends, neighbours and acquaintances primarily help more vulnerable jobseekers find a job, such as individuals without upper-secondary education, the low-skilled working class and jobseekers dismissed for noneconomic reasons. For these groups, family, friends and acquaintances step in and compensate for the difficulty of finding a job through other channels. Jobs found through communal contacts are then associated with lower wages and longer unemployment duration than jobs obtained via work-related contacts. In contrast, jobseekers with higher education disproportionately find their jobs through work-related contacts such as former colleagues and other work acquaintances (Oesch & von Ow, 2017).

Given the importance of social contacts in the labour market, it seems plausible that providing unemployed workers with extra information on how to use them effectively in job searches may shorten unemployment duration (Bonoli, 2014). A randomised intervention in Switzerland that provided such additional in-person advice to one half of jobseekers newly entering unemployment, but not to the other half, did not produce any overall effect. The intervention improved job finding only for women but not for men (Arni et al., 2020).

Two hypotheses possibly explain this gender difference. The labour market value of social contacts may be more regularly tapped by men than women, and men therefore do not need to be further nudged to use it—or, alternatively, social contacts are simply a more effective job search channel for unemployed women than unemployed men.

### *How Parenthood Status Affects Employment Outcomes*

Another example of how one life domain spills over into another—how social relations affect labour market outcomes—is a worker's family status. A large literature in sociology and economics points to a motherhood wage penalty for women that is often mirrored by a fatherhood wage premium for men. Again, a simple model helps to clarify the interdependency between sociability and employment.

Employers recruit from either a pool of applicants if they publicly announced the job or a set of personal suggestions provided by their social contacts. Employers look for new hires whose productivity—their output during working hours—exceeds the labour costs. While productivity is a



central concept and sharply defined in theory, it is vague empirically. Productivity refers to the contribution made by workers to the firm's production of goods and services during their working hours. Employers, when assessing productivity, will focus on an applicant's commitment to the firm, her or his motivation to perform well, and his or her likely career prospects in the firm.

When a single individual without children applies to a position, productivity, commitment and motivation may be inferred from standard indicators such as education, experience, and recommendations from previous employers. Motivation and commitment are likely to be high if the match between the employer and the new hire is good. However, all this may change when an applicant indicates that he or she has children. In the employer's eyes, children are a demand on a worker's time and energy that may potentially compete with the time and energy devoted to work. Such competition is particularly likely if the new hire is the primary carer for the child because, in this case, his or her commitment may be first and foremost to the child and not the new employer. Employers may therefore discount the value of a new hire with a child compared to a new hire without children at equal levels of education, experience, and recommendation quality because, looking ahead, they expect that the new hire will contribute less to the firm.<sup>4</sup>

Naturally, there are also differences on the side of the applicants. People who are looking for a job with a child may also be less likely to apply to the most demanding positions, anticipating the difficulty of reconciling work and family life. Instead, they may exchange lower wages for a family-friendly job that is compatible with childcare.

Whether mothers or fathers are affected by children depends on who becomes the primary carer for children. To the extent that women are still the primary carers in most couples across Europe, employers may discount applications from mothers even in couples with an egalitarian division of labour. Therefore, the birth of a child may drive a wedge between the careers of mothers and fathers of young children.

<sup>4</sup>Young women may already be discriminated against even before giving birth to a child because of employers' anticipation of future family commitments. Identifying this "ex ante" discrimination is a challenge. Gruber (1994) analyses the introduction of mandates to firms to introduce benefits for mothers of young children, e.g., maternity leave. Maternity leave mandates have no effect on employment, but they reduce wages paid to young women compared to young men.

## MOTHERHOOD AND WAGES

Empirical evidence consistently shows that women with children tend to earn lower wages than women without children across Europe and Northern America (Kleven, Landais, Posch, et al., 2019). This result is even found in Denmark, one of the world's most gender-egalitarian countries (Kleven et al., 2019). Longitudinal data from panel surveys and administrative registers makes it possible to measure the motherhood wage gap by accounting for individuals' predispositions and abilities that are constant over time (using the fixed-effects estimator). For Europe, longitudinal analyses using this design show a motherhood wage gap that is particularly large in Austria and Germany, intermediate in the UK and comparatively small in the Scandinavian countries of Denmark, Finland, and Sweden (Gangl & Ziefle, 2009; Kleven, Landais, Posch, et al., 2019). While differences in work experience and job characteristics account for part of this disparity, basically all these studies report an unexplained wage gap between mothers and non-mothers, which raises the question of discrimination and forces researchers to look beyond market mechanisms. To the extent that social relationships affect economic outcomes, it is illusory to consider wages to be solely determined by workers' productivity (that is, their contribution to a firm's output or added value)—all the more so because productivity is notoriously difficult to measure (Sauermann, 2016). The importance of wage bargaining suggests that social factors such as power resources, cultural beliefs and social norms are likely to also affect workers' earnings (Lalive & Stutzer, 2010) and thus leave space for discrimination.

A first possibility is statistical discrimination. In this scenario, employers expect one group of workers (for instance, women with children) to be less dedicated to a job and hence less productive than another group (such as women without small children). Since measuring the work productivity of each individual is costly, employers simply decide to pay higher wages to workers from the group considered to be more productive, that is, women without children (Correll et al., 2007).

Another possibility is that the motherhood wage gap is driven by social norms. In this view, employers consciously or unconsciously favour one social group over another based not on the group's expected work productivity but on their own cultural norms. The dominant social norm across much of the Western world considers mothers' main role to be at home with their children, whereas their paid jobs appear of secondary

importance (Alesina et al., 2013; Krüger & Levy, 2001). The opposite norm applies to fathers, whose main role is seen as being the family's breadwinner, not the caretaker at home. Motherhood may thus be a status characteristic that yields lower social expectations about adequate wages (Auspurg et al., 2017).

## EXPERIMENTAL EVIDENCE ON THE MOTHERHOOD WAGE GAP

It is a major challenge to empirically disentangle the influence of productivity from that of discrimination. Although panel surveys ask individuals detailed questions about their training, tenure and occupation, they do not measure all dimensions of work productivity, making it difficult to distinguish the influence of (unobserved) productivity from the influence of employer discrimination. For this reason, researchers have used experimental methods to test the hypothesis of discriminatory practices (Auspurg et al., 2017; Neumark, 2018).

Experimental evidence on the origins of the motherhood wage gap is scarce. An American study combines an experiment among students with an audit study among employers and shows that women without children are rated significantly higher than women with children in terms of competence, work commitment and promotion prospects—and also receive higher recommendations for hire. This difference is remarkable because their CVs are strictly the same in terms of productivity-related characteristics and differ only in respect to motherhood status (Correll et al., 2007). When asked to recommend a starting wage to fictitious applicants, the participants in the experiment offered women with children 7% less than women without children. Likewise, an additional audit study found that prospective employers called mothers back only half as often as childless women, whereas fathers were not disadvantaged at any stage of the hiring process (Correll et al., 2007).

More recent empirical evidence for the motherhood wage gap stems from a factorial survey experiment in Switzerland (Oesch et al., 2017). Factorial surveys, also known as vignette studies, simulate the hiring process by presenting the résumés of fictitious job candidates to respondents and asking them for ratings. Randomly combining sensitive attributes such as age, gender, nationality or motherhood, these studies are less subject to desirability bias than conventional surveys. Moreover, the

experimental setup makes it possible to eliminate unobserved heterogeneity (McDonald, 2020).

This factorial survey experiment obtained ratings from over 500 HR managers and thus specifically targeted individuals whose job was to recruit workers (Fossati et al., 2020). The results show that HR managers assign wages that are 2 to 3 percent lower to female applicants if they have children than to female applicants without children—the two groups being otherwise strictly identical. The wage penalty is larger for younger mothers and amounts to 6 percent for those aged 40 and under, suggesting that HR managers are wary of hiring mothers of small—and thus care-intensive—children (Oesch et al., 2017). This experiment not only confirms the findings by Correll et al. (2007) that employers offer lower wages to mothers than non-mothers, it is also consistent with the results of two national panel studies for Switzerland analysing how women's wages evolve before and after the birth of children, showing a net wage penalty of between 4 and 8 percent per child (Oesch et al., 2017). These unexplained wage residuals are comparable to those found for Germany (Gangl & Ziefle, 2009) but clearly exceed those reported for the United States (England et al., 2016).

## COUNTRY DIFFERENCES IN SOCIAL POLICY

These country differences in the motherhood wage penalty have been attributed to differences in gender norms and government policies, such as taxes and transfers on the one hand and parental leave and public childcare on the other. These institutions crucially affect mothers' options and incentives to take on paid employment (Kleven, Landais, Posch, et al., 2019).

Of particular interest is the institution of maternity leave. Governments may address the motherhood penalty on the labour market by offering care for young children through different forms of parental leave. Leave policies offer both parents time to care for the young child until the child is old enough for institutional childcare. In practice, it is overwhelmingly mothers who take parental leave, and only recently have Nordic countries seen some fathers following suit. As a result, mothers often remain the primary carers of their children, and employers continue to discount applications by mothers of young children.

Switzerland provides an ideal case for analysing the effect of leave policies, as it introduced mandatory federal maternity leave as late as 2005,

making it one of the last member countries of the OECD to do so. It is possible to analyse the effects of this institutional change by contrasting women who gave birth in regions that already had cantonal leave policies in place and were thus not affected by the federal mandate with women living in regions that were affected by the federal leave policy. These analyses show some gains in terms of employment and earnings among mothers two to three years after maternity leave was introduced and a substantial increase in fertility (Girsberger et al., 2021).

Parental leave, which is taken after maternity leave, was substantially expanded in the 1990s in Austria. This expansion makes it possible to study how the length of leave affects the labour market outcomes of women who were eligible for either 12, 18, or 24 months of leave. The results suggest that there is no effect (Lalive et al., 2014). The same institutional setting also makes it possible to analyse how parental leave payments and/or the promise to keep the prebirth job affect leave taking. The results show that both features—parental leave payments and job promise—are needed for strong leave utilisation and swift reentry into the labour market (Lalive et al., 2014).

Childcare is important for a series of outcomes. A recent study in Germany examined the effects of a reform that massively expanded the availability of childcare places and found that those children who accessed care thanks to this reform strongly benefitted from it. Effects on socio-emotional skills were strongly positive for those children who were able to be in care once their offer was expanded. Childcare notably helped children of immigrant parents as well as those with less educated mothers catch up with other children (Felfe & Lalive, 2018). Childcare thus seems to offer the greatest benefits to socioeconomically less advantaged families.

## CONCLUSION

This chapter's objective is to show how personal ties with family and friends crucially affect labour market outcomes, such as employment and wages. The importance of social relationships reminds us that markets are not self-contained systems populated by unattached and interchangeable individuals but social institutions that are embedded in local communities and shaped by noneconomic influences such as social norms and power relations.

Social connections may improve people's ability to find and keep jobs. In this sense, social connections can certainly be seen as reserves (see

Cullati et al., 2018). In fact, activating one's personal connections has been advocated as a policy instrument in the presence of stressors such as job loss (Bonoli, 2014). However, the use of social networks in job searches can also have detrimental side effects in terms of both equity and efficiency. Equity is affected if better-connected individuals have easier access to better job opportunities and, more worryingly, if social connections become a precondition for access to certain positions, transforming the labour market into a nepotist regime. Efficiency may also be reduced if individuals with contacts in certain sectors and talents in others prefer easier job searches and choose jobs for which they do not provide an optimal match.

Crucially, the spillover effects between the social and economic life domains travel in both directions. Labour market behaviour is not only shaped by personal relationships but also, in turn, crucially affects these relationships. A prime example is how job loss affects the stability of partnerships. A large body of evidence shows that recessions reduce the divorce rate at the aggregate level: When material resources become scarce, the relative cost of separation increases and enhances couple stability (Amato & Beattie, 2011; Kalmijn, 2007). However, while divorce rates fall during recessions among couples who worry about the economy, those individuals who do lose their jobs are more likely to see their couples break up. In Germany and the United Kingdom, separation rates nearly double among couples in which one of the two partners experiences an unemployment period (Di Nallo et al., 2021). The social and economic spheres are intimately interconnected and understanding both is necessary to develop a complete picture of how employment outcomes affect relationships with family and friends, notably in terms of partnership stability and fertility.

Communal and work-related resources support and enable employment through the provision of information and emotional support, while employment and a stable economic outlook for the individual improve the stability of marital relations. The life domains of family and friends are thus linked with the life domains of employment and the labour market. Policy needs to take these links into account in order to improve the effectiveness of interventions.

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# When Mobility Meets Gender in the Transnational Life-Course

*Nicky Le Feuvre, Eric Davoine, and Flavia Cangià*

## INTRODUCTION

This chapter explores the spillover effects of transnational mobility on professional and private life spheres, paying particular attention to the gender dynamics of vulnerability. From an interdisciplinary perspective, our aim is to explore the vulnerabilities associated with various forms of geographical mobility in societies (see Forbes-Mewett, 2020) characterised by increasing levels of spatial displacement (Cresswell, 2006; Kaufmann, 2020) and by uneven shifts in gender norms across countries and among social groups (Bornatici et al., 2021; Daly, 2020; Esping-Andersen, 2009). We define transnational mobility as a physical displacement across borders that is imbued with a wide array of meanings, imaginaries and practices (Frello, 2008; Salazar & Smart, 2011). As a complex human experience, mobility

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N. Le Feuvre (✉)

Faculty of Social and Political Sciences, Institute of Social Sciences, University of Lausanne, Lausanne, Switzerland

e-mail: [nicky.lefeuvre@unil.ch](mailto:nicky.lefeuvre@unil.ch)

E. Davoine • F. Cangià

University of Fribourg, Fribourg, Switzerland

e-mail: [eric.davoine@unifr.ch](mailto:eric.davoine@unifr.ch); [flavia.cangia@unifr.ch](mailto:flavia.cangia@unifr.ch)

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is always entangled with other aspects of the life course (Cangià, 2021). Here, we are particularly interested in the interplay between the experience of transnational mobility, including different forms of short- or long-term cross-border relocation, and the gender configurations of professional and family life. Our empirical studies cover a diverse selection of geographically mobile and immobile people, including those who are commonly associated with privileged forms of transnational movement (Amit, 2011) and those who are often perceived as more constrained movers.

In line with the analytical framework developed in this book, we define vulnerability as a time-sensitive process related to critical events, resources and reserves that arises when individuals have to manage challenges to their existing behaviour and beliefs. Vulnerability is thus a latent feature of contemporary life (Spini et al., 2017). It is most easily observed when critical events disturb social routines and prevent alignment with normative expectations. In the face of such challenges or ‘stressors’, individuals mobilise a range of economic, social, cognitive and emotional resources to meet the immediate challenge and to avoid the risk of encountering similar threats in the future. However, according to the analytical perspective developed here, vulnerability can also provide the opportunity for innovative behaviour and enable adjustments to existing value systems, including gender norms and stereotypes. It would, therefore, be a mistake to consider vulnerability as a state that individuals seek to avoid at all costs.

Research has shown that the ability to deal with critical events is not dependent only on the quantity and nature of the resources an individual can access at the time of the event. The reserves that a person has been able to accumulate over time may also prove vital for managing life-course transitions (e.g., the birth of a child, graduation, being made redundant, a divorce, a debilitating road accident, a promotion) and mitigating their long-term consequences (Cullati et al., 2018). However, little is known about the transferability of the reserves accumulated in one geographical location to their effective use in another context, which is an issue we wanted to explore further.

In this chapter, we consider various types of spillover among different life domains. On the one hand, these can be related to the impact of an event located in a particular domain on a given individual’s other life spheres, for instance, if an overseas assignment for work leads to the dissolution of a meaningful relationship or if emotional commitment to a nonmobile partner leads to the offer of an overseas assignment being turned down. On the other hand, spillover effects may be located beyond

the individual at the level of ‘linked lives’ (Elder, 1998). For example, the career path of a female law graduate in the Global South may be determined by legal restrictions on the international mobility of her mother, who is the main provider of childcare. Finally, spillover effects may be mediated through broader social norms and expectations, beyond the individual or the household, notably when macro-level normative expectations or regulations have practical implications for the configuration of several life domains. For example, the fact that female South American migrants to Switzerland are often assigned to jobs with unsocial hours makes it difficult for migrant couples to maintain their previous (and potentially preferred) ‘traditional’ pattern of division of domestic labour. This is especially true when the male partner fails to secure stable employment in the host country. Thus, due to the gendered labour market opportunities available to different migrant groups, some South American couples come to depend heavily on men’s contribution to housework and childcare, leading them to adapt their previous domestic arrangements and to act in partial contradiction to the normative expectations of the South American and Swiss gender regimes (Seminario, 2011).

In the next sections, we first outline the importance of using an integrated vulnerability perspective to explore experiences of transnational mobility. After briefly presenting our research methods, we focus on the dynamics of vulnerability associated with transnational mobility, the accumulation and conversion of resources across borders, and the potential reconfiguration of gendered norms in the context of spatial displacement and relocation.

### AN INTEGRATED VULNERABILITY-MOBILITY PERSPECTIVE

The combined notions of vulnerability and mobility provide a useful analytical lens for studying the spillover effects among life domains experienced by different social groups. First, transnational mobility is dependent on multilevel regulation processes (e.g., national immigration laws, occupational recruitment practices and career patterns, normative expectations about moving away or remaining sedentary), which may influence individuals’ ability to manage the interfacing of work and personal life spheres effectively. Second, mobility is a potential source of normative dissonance since individuals may pass through national, local, professional, or conjugal environments in which expectations differ somewhat from those they were initially socialised to ‘accept as normal’ in a previous context. Within

a complex ‘configuration of dispositions to act and dispositions to believe’ (Lahire, 2002, p. 336), mobile individuals have to navigate a succession of normative environments and manage the uncertainties associated with a plurality of gender norms (Ackers, 2004; Levy & Widmer, 2013). Third, mobility raises questions regarding the accumulation or depletion of resources over time and individuals’ ability to conserve or convert these resources across national and cultural boundaries. Analysing work and life trajectories that include limited or extended periods of spatial mobility enables us to understand the reconfiguration of resources and reserves at the micro-, meso- and macrosocial levels. Spatial displacement may therefore produce specific forms of spillover that may, in turn, be associated with particular configurations of vulnerability. Likewise, mobility may also open up opportunities for innovative social practices and normative adjustments that may exacerbate or protect against vulnerability processes in different life domains.

Historically, different types of spatial mobility have been treated in largely separate studies and have been associated with differential risks of vulnerability. Expatriation has often been represented as temporary and reversible, while migration has been viewed as durable and unidirectional (Al Ariss & Crowley-Henry, 2013). The transnational mobility of ‘highly qualified’ or ‘highly skilled migrants’ is often associated with the accumulation of economic, social and symbolic resources and capital and individuals with more pronounced ‘cosmopolitan’ dispositions (Bühlmann et al., 2013). In sharp contrast to the ‘hypermobile cosmopolitans’, who are supposed to move voluntarily to advance their careers or self-development, the literature is rife with stereotypical representations of the ‘vulnerable’ migrant, who is forced to move and to experience the resulting depletion of socioeconomic and cultural resources.

The analytical pertinence of this distinction among different types of spatial mobility is being increasingly questioned (Hercog & Sandoz, 2018). The emergence of hybrid mobility practices, such as ‘self-initiated expatriation’ (Doherty et al., 2013) or ‘circulatory migration’ (Hugo, 2013), has led to the blurring of the analytical distinctions among different types of mobility and between ‘mobile’ or ‘sedentary’ individuals or groups (Anderson, 2019). Since transnational mobility has become a normative requirement in many professional occupations (Montulet & Mincke, 2019), it can no longer be interpreted solely as a voluntary, individual career strategy (Cangià, 2019; Sautier, 2021). It thus follows that the challenges posed by the geographical relocation of those

commonly considered to be moving under ‘privileged’ circumstances can be addressed in similar terms to those that previously prevailed in the broad field of migration studies (Ravasi et al., 2015). Likewise, analysis of the material and symbolic resources accumulated over time by geographically mobile individuals in their host and home countries (Repetti et al., 2021; Seminario & Le Feuvre, 2021b) provides a clearer understanding of the circulation of risks, resources and protections, across national borders and between generations, over the entire life course. The cultural challenges posed by return migration practices can be apprehended with the analytical tools initially developed to study the cumulative dis/advantages associated with corporate expatriation (Davoine et al., 2018).

The burgeoning literature on transnational careers (Joy et al., 2020), transnational families (Baldassar & Merla, 2013), transnational social networks for specific social groups (Cousin & Chauvin, 2014; Chimienti et al., 2018) and global care chains (Hochschild, 2014) reflects the increasingly integrated approach to mobility as a social practice that has inspired our LIVES research program. We focused on mobile people with varied levels of skills and qualifications, including assigned and self-initiated expatriates, artists, diplomats, foreign graduates, early career stage academics, onward migrants and highly skilled refugees. In line with the analytical framework developed by LIVES (see Spini & Widmer, in this volume), we avoided considering certain types of mobility as a particular source of vulnerability or certain mobile individuals as being necessarily more vulnerable than others. Instead, we examined the challenges associated with any form of geographical displacement and sought to understand how different categories of mobile (and sedentary) people deal with particular critical events. Our research was inspired by an intersectional perspective and sought to understand how different dimensions of social stratification (e.g., gender, sexual orientation, class and ethnicity) facilitate or hinder such responses and influence their consequences over time.

## RESEARCH METHODS

The research presented in this chapter incorporated a mixed methods design, combining quantitative and qualitative data collection tools. All of the studies used biographical interviews in conjunction with a series of complementary data collection tools, including face-to-face or online surveys, adapted versions of the LIVES life-event calendars (see Berchtold

& Morselli in this volume; Morselli et al., 2016), dyadic couple interviews, focus groups, ego-centred network analysis, occupational case studies or ethnographic observations. Beyond their specific research questions, all studies aimed to understand the interplay among transnational mobility, national and occupation-level gender regimes (Boni-Le Goff & Le Feuvre, 2017) and gender arrangements at different stages of the life course. The studies highlighted the differentiated effects of transnational mobility on gendered vulnerabilities and sought to shed light on the complexity of spillover effects both among life domains and among individuals whose mobile lives are ‘linked’ in some way.

This chapter builds on this analytical framework to address three distinct research questions, which all explore a spillover effect of some kind. In the first section, we consider the role of spatial mobility in the requirement that individuals navigate a range of potentially divergent normative gender regimes in the course of their mobile life course. In a second section, we address the accumulation or depletion of material and symbolic resources as individuals move among a range of geographical locations over time. Finally, we provide empirical evidence of the impact of spatial mobility on the ability of individuals and households to deal with critical events and to recover from these in the course of their successive relocations.

## NAVIGATING NORMATIVE GENDER REGIMES ACROSS TIME AND SPACE

Transnationally mobile individuals have to navigate different normative environments that may hold a variety of implications, both for the spillover effects among different life domains and for the influence of critical events that affect one individual on the vulnerability of other household members, particularly an intimate partner or spouse. Our research focused particularly on the potentially divergent gender norms associated with the different contexts that our mobile respondents navigate in the course of their adult lives. This issue is framed through the notion of a ‘gender regime’ (Connell, 1987), defined as the normative environments that shape gendered aspirations, expectations and representations in a given historical and societal context (Le Feuvre, 2010). This definition implies that in different national contexts, particular gender arrangements are preferred over others, and that people are actively encouraged to conform to these



norms through a variety of material and symbolic mechanisms (e.g., taxation systems, availability of childcare facilities, shop opening hours, working time arrangements, cultural representations of motherhood) that tend to reinforce dominant value systems and stereotypes. Conformity to these arrangements is associated with a series of rewards, and aspirations for an alternative lifestyle may be difficult to enact (Bühlmann et al., 2010) or may come at great material, symbolic or emotional cost to the individuals concerned (Le Feuvre, 1999).

Previous research has acknowledged the diversity of these normative gender arrangements, which are usually defined with the help of typologies, each designed to highlight a particular aspect of the gender differentiation process (e.g., welfare regimes, care regimes, family regimes). Previous studies have demonstrated the forceful character of national-level gender contracts (Connell, 1987) and gender cultures (Pfau-Effinger, 1998), which are usually characterised according to the legitimacy given to women's labour market participation, particularly in the presence of young children. Western gender regimes typically range from a 'dual earner/dual carer' model, promoted in some Nordic countries, to a 'male breadwinner/female carer' model, characteristic of Western European countries with a historically strong manufacturing base (e.g., Germany, Austria, Switzerland). The Nordic gender regime is based on a universal, 'adult worker' model of social integration, with limited reciprocal influence of the life chances of men and women, even when they live together and share parenthood. This relative autonomy is guaranteed by the widespread provision of publicly funded services to support individuals in the management of their 'work-life interface', with the explicit aim of reducing social inequalities. By contrast, the 'male breadwinner/female carer' model of gender relations, based on highly differentiated social roles or 'master status', (Krüger & Levy, 2001) for men and women, depends more on the married couple as a basic unit of social integration and regulation and implies a greater degree of interdependence and mutual influence of the life paths of those individuals who enter into intimate relationships, adopt common living arrangements and share parental responsibilities. Such is also the case for the 'modified male breadwinner' model that has emerged in some European countries, based on women's large-scale integration into employment but on a part-time and/or discontinuous basis across the life course (Crompton, 1999), thereby leading to particular risks of vulnerability for women in later life (Le Feuvre et al., 2015). Fourth, the so-called 'Mediterranean' gender regime

(Sanchez-Mira & O'Reilly, 2019) extends the perimeter of mutual dependence beyond the conjugal unit to impose reciprocal duties or care and subsistence within the extended family network, with only limited support provided by the state. Finally, the so-called 'Liberal' model of social protection, prevalent in the US and the UK, combines the individualistic rationale of the Nordic model with an assurance-based provision of social services, thereby leading to greater diversity in the ability of individuals to reduce their dependence on their spouse and close family members for support and higher levels of social inequality (Scott et al., 2010; Daly, 2020).

Other regions are obviously characterised by even more diverse normative gender regimes, and these regimes have considerable consequences for the conditions under which individuals experience spatial displacement, particularly at 'critical' moments in the life course, such as the transition to parenthood (Le Goff & Levy, 2016), divorce, widowhood or retirement (Oesch, 2008; Repetti et al., 2021). Navigating diverse normative environments is a clear challenge for transnationally mobile individuals and constitutes a potential source of uncertainty and vulnerability for individuals, couples and families (Tissot, 2020).

Furthermore, recent research has stressed that, within a given national context, different occupations may selectively integrate and adapt elements of these societal-level 'gender regimes' into their specific recruitment, remuneration and promotion practices, thus creating meso-level variation in the normative expectations placed on male and female workers (Le Feuvre, 2010; Boni-Le Goff & Le Feuvre, 2017). For example, research has shown that multinational companies located in Switzerland have developed a range of measures to support expatriate dual-career couples (Salamin & Davoine, 2015). These measures are generally appreciated by the internationally mobile staff of these companies, who are able to escape many of the constraints placed on the parents of young children in the Swiss context, where the majority of mothers still exit the labour market or drastically reduce their working hours (Bühlmann et al., 2010). Nonetheless, the adoption of specifically 'expat' gender arrangements may significantly damage the ability of these mobile individuals to establish links with the local population and to adapt to the normative environment of the host country (Ravasi et al., 2015). In turn, this lack of integration may make it difficult for the members of these expatriate dual-career couples to overcome certain critical events (e.g., the illness of a spouse or

child, divorce, redundancy), thereby leading to an exacerbated form of vulnerability through nonconformity to the local gender regime.

Exploring the ways in which mobile individuals navigate and negotiate the potentially convergent or divergent normative environments through which they pass is central to the research programme developed here. While some colleagues in LIVES have used the notion of ‘misleading norms’ (Widmer & Spini, 2017) to capture the long-term (negative) consequences of conformity to specific gender norms, our intention has been, rather, to understand how people adapt to the different normative environments through which they may pass in the course of their mobile lives (Carlson & Schneickert, 2021; Mozetič, 2018; Eastmond, 2011). We are interested not only in the long-term vulnerabilities associated with adherence to the dominant norms in a specific time and place but also in the challenges and stressors associated with the potential mismatch between the gender norms to which people were expected to conform in one particular context (country, occupation, company) at a particular point in their life course and those that prevail in the other spaces to or through which they subsequently move (Nedelcu, 2012).

These adjustment processes are often mediated through macro-level social structures. A study conducted with highly qualified Syrian refugees in Switzerland (Cangià et al., 2021) illustrated the effect of their legal status on their experiences of gender norms and family life in the host country. It is well documented that refugees face the risk of downwards mobility and status loss as a result of forced migration. These changes in their professional life are often accompanied by their encounter with quite different gender arrangements than those experienced in their home country (Kirk, 2010). Contrary to popular belief, the gender norms that regulate women’s access to the labour market in the Swiss context are not necessarily more progressive than those experienced before migration (Bermudez, 2013). Refugees from middle-class backgrounds who had a stable professional life before their departure from Syria are sometimes confronted with more conservative gender expectations in their host country (Jansen, 2008). Thus, male Syrian refugees to Switzerland frequently report having lost financial independence, something that was closely associated with their social status and gender identity before migration. The experiences of female Syrian refugees are more ambivalent. Most of our respondents had an independent and successful professional career before forced migration. Their discovery of the Swiss gender regime is unexpected and challenging. On the one hand, these women recognise

that, in certain life domains (e.g., marital arrangements, contraception, parenthood), they have potentially more freedom in Switzerland than in Syria. On the other hand, they are often confronted with restrictions to their professional careers due to gender stereotyping that is aggravated by their refugee status. Women who were formerly lawyers, medical doctors, engineers or civil servants in Syria are often encouraged by Swiss social workers to lower their professional ambitions and to accept the kinds of jobs to which migrant women are usually assigned, specifically in the care and hospitality sectors (Seminario, 2011, 2018a). This revision of their career expectations has obvious implications for their domestic arrangements, especially when the delegation of daily household duties to paid domestic staff or extended family members is no longer a viable option.

### THE CONVERSION OF RESOURCES ACROSS NATIONAL BORDERS

The transnational mobility of highly skilled migrants—especially for those coming from the Global North—is often seen as a positive experience leading to the accumulation of resources and skills and thus the constitution of long-term reserves (Cullati et al., 2018). It is often assumed that certain forms of transnational mobility can buffer against stressors and thus reduce vulnerability processes. Successive experiences of migration or travel, transnational social (i.e., family and friendship) networks, foreign-language skills, and internationally recognised educational qualifications may all constitute ‘resources’ that can be mobilised in numerous contexts and that may constitute ‘cosmopolitan predispositions’ that favour future mobility.

However, not all forms of mobility are associated with the accumulation of material and symbolic resources (Amit, 2011; Salazar & Smart, 2011). There is increasing recognition of the multiple vulnerabilities associated with geographical displacement, even for the most privileged members of society. One of the major challenges encountered by geographically mobile individuals is the recognition of their previous qualifications and experiences in the country of settlement (Iredale, 2001; Joy et al., 2020). Thus, highly qualified corporate expatriates do not always benefit from the subsequent recognition of the skills acquired during their missions abroad, even when they remain within the same company (Davoine et al., 2018). The mismatch between previously acquired resources and the requirements of the new environment is a challenge faced by many geographically

mobile individuals and often reduces their ability to mobilise their previously accumulated cultural, social and economic resources to mitigate stressors and overcome critical events. Several empirical studies have enabled us to identify a potential barrier to the constitution of reserves on the part of geographically mobile individuals. Even within the same company, language skills or professional networks are not easy to transfer from one subsidiary to another. The development of informal transnational professional networks within companies can facilitate these transfers (Davoine et al., 2018), but women often find it harder to access such networks, which are usually designed primarily by and for men.

Not all resources that have been accumulated in different societal contexts are as effective for overcoming the ‘stressors’ associated with biographical events in subsequent spatial settings. In turn, variations in the transnational conversion and sustainability of previously accumulated resources have important implications for the spillover effects of geographical displacement, both among the different life spheres of mobile individuals and among individuals whose mobile lives are ‘linked’ in some way.

### CRITICAL LIFE EVENTS ON THE MOVE

Previous research has explored the implications of transnational relocation for managing the work-life interface, particularly regarding family formation patterns and gender equality issues (Cangia et al., 2019; Riaño & Baghdadi, 2007). This work has stressed the implications of the geographical displacement of one individual for the lives of other family members. A similar ‘linked lives’ perspective has been used in the field of highly skilled migration or expatriation research to analyse the influence of international career mobility on the life chances and career perspectives of partners or other close relatives (Mancini-Vonlanthen, 2021; Salamin & Hanappi, 2014), who may not necessarily conform to the common image of the ‘trailing spouse’ (Cangia, 2018; Davoine et al., 2013).

In our LIVES research, we used biographical interviews and life-event calendars to explore how men and women redefine and reconfigure their priorities, preferences and practices at different stages of their mobile life course (Seminario, 2018b; Mancini-Vonlanthen, 2021). For example, previous research has explored the gendered dimension of transnational mobility and has identified the ‘mobility imperative’ as a potential source of inequality (Schaer et al., 2017; Jöns, 2011). Most professional

occupations define career paths and expectations based on the symbolic figure of the ‘care-less’ male (Lynch, 2010). Highly skilled workers, particularly those singled out for recognition and promotion, are expected to be entirely free of care and domestic commitments and therefore entirely ‘free to move’ as the company requires. This presumption often creates a bias against (married) women. On the one hand, due to the persistently unequal gender division of domestic labour, women are more likely than their male counterparts to be spatially ‘rooted’ by care duties, including geographically localised access to informal support networks (Viry et al., 2015). On the other hand, even when they are single and childless, women are perceived as being ‘potentially tied down’ by the domestic and care duties that they are expected to have at some point in the future.

However, there is a dynamic aspect of these normative expectations. In most European countries, women are increasingly being given the opportunity to develop their skills and career opportunities through corporate expatriation schemes. Nevertheless, as Salamin (2021) has shown, the relative ‘advantage’ these women enjoy in comparison to their married counterparts may have negative spillover effects on their ability to establish durable intimate relationships and to satisfy their own parental aspirations. In the host country, single female expatriates may be expected to accept long hours precisely because they have no ‘legitimate reason’ to benefit from any existing family-friendly policies. As a result, they may find it hard to adapt to the normative rhythm of local life and thus may be excluded from opportunities to socialise, build up friendship networks and eventually meet a potential partner. The advantages of being single and childless for the accumulation of professional skills may thus translate, over time, into disadvantages for the realisation of personal goals (Salamin, 2021), illustrating one possible configuration of the spillover effect between life domains.

Furthermore, despite significant shifts in the gender division of domestic labour in most Western societies over the past several decades (Sullivan & Gershuny, 2016), the ideal figure of the ‘unencumbered’ male worker continues to be opposed to the archetypal ‘trailing female spouse’, who is expected to follow and support the mobile male partner as he moves around the globe to enhance his career chances and accumulate resources (Callan & Ardener, 1984). However, the increase in women’s share of self-initiated and corporate expatriation and an increase in dual-career couple configurations (Salamin, 2021) is challenging the traditional vision

of transnational mobility as an unequivocal ‘resource’ for men and an inevitable source of ‘vulnerability’ for women. Some studies have recognised the growing presence of ‘dual-career couples’ in which both partners negotiate their work trajectories to continue their careers on the move (Mancini-Vonlanthen, 2021). In such cases, the experience of transnational mobility can prevent women from pursuing an independent career (Cooke, 2001; Vohlídalová, 2017), but it can also challenge previously established ‘conservative’ gender arrangements (Coles & Fechter, 2012; Cangìà et al., 2019).

For example, a study of internationally mobile couples currently working in Switzerland identified the importance of a ‘sense of belonging to a dual-career couple’ (Mancini-Vonlanthen, 2021, p. 25) in determining interviewees’ career outcomes. This study of sixteen heterosexual couples with at least one partner on an academic career path showed how a shared and long-term commitment to egalitarian gender arrangements within these households acted as a resource that might buffer the risks of professional downgrading otherwise faced by the female members of these internationally mobile couples. In a similar vein, other studies have revealed the pragmatic strategy of prioritising the job opportunities of whichever partner can enable the couple best to avoid the inherent precariousness of the geographically mobile postdoc period. In this case, mobility decisions are made, and some job offers are even refused, on the explicit understanding that neither partner should have to ‘sacrifice’ his or her career for the sake of ‘the family’ (Bataille et al., 2017).

Likewise, a qualitative study of men and women accompanying their professionally mobile partners to China and Switzerland has shown that male partners sometimes support the international career ambitions of their female spouse by quitting their jobs and taking care of the children (Suter & Cangìà, 2020). Similar ‘couple strategies’ or domestic arrangements have been observed in the German and Swiss contexts (Tissot, 2020). Some men struggle to find employment in the destination country, where they may start to experience the work-family interface in new and alternative ways, leading to a durable revision of the couples’ gender arrangements. However, the role of ‘accompanying spouse’ does not always open up such opportunities for revising gender norms. Sometimes, apparently transgressive practices, such as the male partner ‘following’ a female spouse abroad, are renormalised through the definition of an exclusively male ‘trailing spouse’ repertoire. In a study of the spouses accompanying Swiss diplomats on foreign assignments, Davoine and his

colleagues noted that male spouses rarely took charge of the daily household management, whereas this was a particularly common option for their female counterparts. These men tended to emphasise their specific role in providing moral and psychological support and sometimes protection to their female partners, thus recasting their atypical behaviour in line with gender stereotypes (Davoine et al., 2013).

This capacity for realigning transgressive gender initiatives with the normative expectations of the host country was confirmed by the results of a study of Peruvian men and women who had earned a degree from a Swiss higher education institution (Seminario & Le Feuvre, 2021a, 2021b). The biographical data collected from interviews with these highly skilled migrants revealed the role of national migration policies in determining gender-differentiated career outcomes in the host country, even when migrants hold Swiss qualifications (see also Riaño & Baghdadi, 2007). In Switzerland, foreign graduates can benefit from a 6-month visa extension to secure stable employment with the active patronage of a potential employer. This extension clause is well suited to the usual timing of recruitment processes in the least feminised sectors of the Swiss labour market, notably for engineering graduates, who are in high demand. Male migrants who follow a typically masculine educational route are therefore advantaged by the visa extension clause and benefit from employer sponsorship, irrespective of their domestic arrangements or parental status. In contrast, women graduating from the most feminised educational fields (social sciences, social work, etc.) are less likely to receive the required patronage within the given period. They usually have to pass through a series of extended 'school-to-work transition' phases, including unpaid work placements, before securing a permanent job. Because of the mismatch between Swiss migration laws and these gendered recruitment processes, migrant female graduates are less likely than their male counterparts to receive a job offer within the 6-month visa extension period. They are therefore much more dependent on the alternative 'family reunification' route into permanent resident status in Switzerland. However, for these women, marriage to a Swiss or European national represents an uncertain route to eventually securing a job that is congruent with their educational credentials. According to the domestic arrangements adopted within their binational households, family reunification measures can represent a potential threat to career success for these highly qualified female migrants: 'The more unequal the organisation of domestic care work within their households, the less likely [these women are] to benefit



from the stability and extended time scale provided by family reunification measures to consolidate their transition to the upper reaches of the Swiss labour market' (Seminario & Le Feuvre, 2021a, 2021b, p. 224).

This example provides a good illustration of the potential variation in spillover effects according to the gendered impact of macro-level regulations on men and women. On the one hand, men who graduate from highly masculinised fields of study succeed in their transition to the labour market independently of their domestic arrangements (and not, as the literature often suggests, thanks to the domestic support of their female partners). They experience no family-employment spillover effect (Seminario & Le Feuvre 2021a, 2021b). On the other hand, this effect is vital for female graduates: Being in a stable relationship and accepting marriage to a Swiss or European national is both a necessary condition for them to remain in Switzerland long enough to secure employment and (at the same time) a potential hindrance to their career progression. In other words, the spillover effect of educational credentials on the professional careers of male and female graduates is unevenly mediated by macro-level migration regulations and by their respective domestic arrangements.

## CONCLUSIONS

This chapter proposes a multilevel perspective on mobility and vulnerability, with a special focus on the gender dynamics that emerge at the interface of professional and family life. It has considered the potential effects of geographical relocation on the spillover among life domains and among individuals whose lives are linked in some way. We have used transnational mobility as a lens through which to explore the impact that an event in a particular domain can exert on an individual's engagement in other life spheres. However, we have also been attentive to the spillover effects that are located beyond the individual life path, particularly within professional careers and domestic arrangements. We have seen how spillover effects may be mediated through broader social norms and expectations, beyond the individual or the household. The case of transnational mobility seems especially interesting in this regard, considering that mobility may potentially create normative dissonance as individuals move from one social context to another.

Our studies have explored vulnerability in the life course of populations who experienced self-initiated expatriation and corporate assignments that are not usually associated with the challenges of forced migration (Hercog

& Sandoz, 2018). We have stressed the complex interplay of subjective values and structural constraints in determining the ability of men and women to resist relegation to ‘traditional’ gender roles at strategic points in the life course, particularly after a critical event. We have confirmed the need to reject the binary distinction between ‘unequal’ and ‘egalitarian’ domestic arrangements in life-course research (Känsälä et al., 2015). Our results suggest that, particularly in the case of geographically mobile individuals, commitment to a particular set of gender norms and the adoption of specific gender arrangements are not determined only once but rather emerge in line with ‘opportunity factors’ (e.g., job offers, equal-opportunity measures at the national or occupational level, availability and cost of support for dual-career couples) encountered in the local environments through which individuals pass at specific, more-or-less critical moments in their life course.

Thus, we have explored the potentially diverse effects of geographical displacement on both the domestic arrangements and the career paths of geographically mobile individuals. We have confirmed that, irrespective of the ‘voluntary’ or ‘constrained’ nature of transnational mobility, it is a potential source of vulnerability that poses challenges of adjustment, integration and resource conversion or depletion. However, our empirical studies have also revealed that mobility does not inevitably reinforce conventional gender norms and practices. Although some forms of geographical displacement may be associated with the ‘traditionalisation’ of gender arrangements, our empirical studies stress the variety of potential outcomes, including atypical gender configurations, that are associated with the uncertainties and unpredictable nature of life on the move.

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# Vulnerability and Resilience After Partner Loss Through Divorce and Bereavement: Contributions of the LIVES ‘Intimate partner loss study’

*Daniela S. Jopp, Charikleia Lampraki, Davide Morselli,  
Hans-Jörg Znoj, Jeannette Brodbeck, Dario Spini,  
and Pasqualina Perrig-Chiello*

## CONTRIBUTION TO THE LIVES BOOK

Intimate partner loss represents an important critical and stressful life event in later life, offering the opportunity to study vulnerability and resilience processes after what is considered one of the most important stressors that adults may face. Occurring either through separation/divorce or

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D. S. Jopp (✉) • C. Lampraki • D. Spini  
University of Lausanne, Lausanne, Switzerland  
e-mail: [daniela.jopp@unil.ch](mailto:daniela.jopp@unil.ch); [Charikleia.Lampraki@unil.ch](mailto:Charikleia.Lampraki@unil.ch); [dario.spini@unil.ch](mailto:dario.spini@unil.ch)

D. Morselli  
Institute of Social Sciences & Swiss Centre of Expertise in Life Course Research  
LIVES, University of Lausanne, Lausanne, Switzerland  
e-mail: [davide.morselli@unil.ch](mailto:davide.morselli@unil.ch)

death of the partner, partner loss can have notable consequences in several domains of life, illustrating the interdependence of these domains and spill-over effects. Apart from the change in marital status and associated social implications, losing a long-term romantic partner can affect a person's physical and mental well-being, social and personal identity along with more practical aspects of everyday life, such as financial resources, as well as social relations and support. The effects of partner loss vary substantially among people, which is in part due to event-related factors but also because of interindividual differences in personal resources and psychological strengths leading to variations in adaptation success. In the 'LIVES Relationships in Later Life Study' (LRLLS; Hutchison et al., 2013), we examined in more detail what contributes to vulnerability and resilience processes in the context of partner loss. Specifically, we investigated the extent to which individual (e.g., health) and event-related (e.g., type of partner loss: divorce vs. bereavement; time since the loss) factors contribute to vulnerability in the context of partner loss and aimed to identify personal resources (e.g., social support, psychological characteristics such as perceptions of self- and social continuity) that contribute to resilience trajectories. Furthermore, based on the project findings, an online intervention was developed to help individuals overcome partner loss. This chapter will summarise some key findings of our project.

## DIVORCE AND BEREAVEMENT IN LATER LIFE

Divorce in later life is a recent phenomenon associated with important yet understudied economic, social and psychological consequences (Brown & Lin, 2012; Dykstra & de Jong Gierveld, 2004; Perrig-Chiello et al., 2015). Between 1999 and 2019, the divorce rate of older individuals increased substantially in Switzerland: For those aged 50 to 59 years, it

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H.-J. Znoj • P. Perrig-Chiello

University of Bern, Bern, Switzerland

e-mail: [hansjoerg.znoj@unibe.ch](mailto:hansjoerg.znoj@unibe.ch); [pasqualina.perrigchiello@unibe.ch](mailto:pasqualina.perrigchiello@unibe.ch)

J. Brodbeck

University of Bern, Bern, Switzerland

University of Applied Sciences and Art Northwestern, Basel, Switzerland

e-mail: [jeannette.brodbeck@unibe.ch](mailto:jeannette.brodbeck@unibe.ch)

increased by approximately 40%; for those aged 60 years and older, it doubled (SFOS, 2021). Switzerland follows a similar trend as that observed in many countries (e.g., Japan). While the divorce rate of the general population seems to have reached an upper limit and has not increased further in more liberal northern countries (OECD, 2020; UN-DESA-PD, 2015), a continuous rise can be expected for countries with more conservative values, such as Switzerland, especially for those in old age. Consequently, divorce in later life has become a critical life event that can no longer be considered an off-time transition. Spousal loss through bereavement has also increased in old age, but it is often experienced today later in life. Because of the increase in life expectancy, a larger number of individuals are likely to lose their partner in very old age. Between 1999 and 2019, the number of widow(er)s increased by approximately 30% for those aged 80 years and older, while for the group of 65- to 79-year-old individuals, the number of widow(er)s decreased by approximately 20% (SFOS, 2021). Even though divorce and bereavement may be similar critical life events, as in both cases an individual loses their spouse, both events can have different consequences, for example, for psychological health, financial adequacy, and the family and social relations of the remaining partner.

A host of studies has shown that, for most individuals, partner loss is challenging and stressful at all ages and can have substantial negative and lasting consequences. Lucas (2005), for example, found in a large prospective longitudinal study that individuals who faced partner loss through divorce or bereavement showed substantial reductions in life satisfaction and did not recover to their pre-loss level during the following seven years. A more recent study found that widow(er)s recovered 3 to 4 years after their loss (Kettlewell et al., 2020). Neither study, however, considered the role of age, thereby neglecting the fact that speed and success of recovery may depend on the life stage at which the loss is experienced. In addition, these studies focused on levels and changes of well-being at a group level but did not consider the existence of interindividual differences in adaptation and recovery. Analysing individual trajectories with longitudinal data is crucial, as previous research has revealed different post-loss developments (e.g., Bonanno et al., 2002), with some individuals overcoming divorce and bereavement rapidly and efficiently but others feeling lost and alone. In addition to enabling a closer, more fine-grained picture of individual differences in the adaptation process, the analysis of such trajectories is critical to identifying factors that contribute to experiencing partner loss as an unbearable tragedy or as an opportunity for personal growth.

Furthermore, the specific moment in life when individuals lose their partner is important, given that personal and societal resources and challenges differ over the life course. Losing one's spouse in later life can come with particular and/or additional risks for social, physical and mental health (Dykstra & de Jong Gierveld, 2004), stressing the importance of considering the timing of specific life events within the life course and their consequences for different life domains when investigating vulnerability (Spini et al., 2017). To begin with, older adults seem more vulnerable than younger individuals, in part, because they often face loss accumulation across many central domains of functioning when advancing towards old age. For instance, they are likely to experience age-related changes in professional life (e.g., retirement) and health (e.g., chronic illnesses, multimorbidity) that challenge identity. Social losses due to the death of network partners also represent a risk associated with advancing age (d'Epina et al., 2010). At the same time, older individuals are often confronted with increased family needs associated with care provision: Prolonged caregiving for their even older parents can further challenge the resources of older individuals (Boerner et al., 2021; Oudijk et al., 2011). Apart from the multidimensionality of the risks associated with a precarious position after partner loss, it is of note that vulnerability in this context is also related to the limited availability of resources and support at multiple societal levels, such as close friends, organised social groups, or governmental support to family caregivers.

Partner loss often leads to a reduction in social contacts, indicating that apart from the actual loss, individuals have to cope with stressors originating from their social network instead of receiving support in times of need. Divorcees are often confronted with the loss of social ties (Widmer et al., 2012) and groups taking sides, while widow(er)s tend to associate social activities that were related to the late husband or wife with painful memories (Smith et al., 2020), which makes it difficult for them to engage in such activities. Widow(er)s also report feeling let down by their social context, as old friends diminish interactions with the remaining spouse (Ha, 2008). Replacement of resources such as social support and well-liked activities may become more difficult in older age, and, consequently, individuals may feel isolated and socially and emotionally lonely (De Jong-Gierveld et al., 2006). Thus, older individuals' higher risk of vulnerability calls for a more systematic examination of the process of adaptation to partner loss, given that this event has consequences in multiple life domains, and the investigation of factors contributing to resilience and

better adaptation over time. In the LRLLS (Hutchison et al., 2013), across three assessment waves, we therefore investigated a large sample of individuals in the second half of their lives who were confronted with partner loss over the course of four years. A married group served as the control. The goals of the study were to examine the psychological effects of partner loss on vulnerability and resilience trajectories (i.e., health, well-being) and their mediators.

## VULNERABILITY AND RESILIENCE AFTER PARTNER LOSS

Adaptation trajectories to major transitions or traumatic events have been described by Bonanno and colleagues (e.g., 2002). Having identified different trajectories within the context of adaptation to bereavement first (Bonanno et al., 2002), Bonanno et al. (2011) extended their approach to different traumatic and stressful experiences, notably on war veterans, survivors of terror attacks or other disasters. Based on longitudinal data analyses, their work showed four prototypical trajectories. The first and most frequent trajectory (ranging between 35% and 65% depending on the studied event) was that of resilience, in which individuals continued to function well and showed no major physical or psychological damage after a potentially traumatic experience. Second, the recovery trajectory (ranging between 15% and 25%) was characterised by moderate to severe levels of initial physical or psychological symptoms and some difficulties meeting role obligations, from which individuals eventually recovered to their baseline levels of functioning. The third trajectory (ranging between 5% and 30%) was qualified as chronic distress, during which people continued to suffer from symptoms long after the event. Finally, the fourth trajectory was characterised by a ‘delayed’ reaction (ranging between 0% and 15%), as individuals began to show distress and malfunctioning related to the traumatic experience after some period of resilience. This typology of trajectories has been observed after various types of events, such as heart attack (Galatzer-Levy & Bonanno, 2014), spinal cord injuries (Aparicio et al., 2020; Van Leeuwen et al., 2012), and outbreaks of chronic health conditions (Debnar et al., 2020).

Inspired by this approach, we first analysed the post-bereavement profiles of Swiss older widows and widowers in the prospective LRLLS with cross-sectional and longitudinal data. Further extending prior work, we aimed to better understand the role of personal resources and contextual factors as discriminant variables among patterns of psychological

(depressive symptoms, hopelessness, loneliness, life satisfaction) and subjective health. Cross-sectional analysis of first-wave data and profile analysis of the psychological and subjective health indicators revealed three different groups. The most frequent profile was the *Resilients* (54% of the sample). A total of 39% represented the *Copers*, with a similar profile but with an adjustment at a lower level of functioning. The third group, the *Vulnerables* (7%), showed more depressive symptoms, loneliness and hopelessness (Spahni et al., 2015). When considering how the three profile groups differed in terms of specific characteristics, we found that the most important variables for group allocation were internal resources (i.e., psychological resilience, personality) but also event and relationship variables (i.e., former relationship quality, how the loss was experienced). More specifically, the *Resilients* were more extraverted, more conscientious, more open, more agreeable, and less neurotic than the other two groups. The *Copers* were also more extraverted and less neurotic than the *Vulnerables*. In addition, the three groups differed in terms of psychological resilience, with the *Resilients* having the highest score. The latter group also had received more spousal support from their late partner than the other two groups.

Analyses of the longitudinal data (all three study waves) confirmed the three-group typology of profiles found cross-sectionally (Spahni et al., 2015): approximately 48% belonged to the *Resilients* group, 40% were *Copers*, and 12% were *Vulnerables* (Bennett et al., 2020). While there was a general trend of adaptation, moving from maladaptiveness to resilience, the findings also showed that a limited number of individuals shifted from higher to lower adaptation. This backwards movement was associated with closer proximity to the event and the partner's need for care in the period preceding death, resulting in temporary relief for the survivor with a later backlash. Our results underlined the important role of internal resources (i.e., psychological resilience, personality) in facing spousal death in old age and, notably, the difficulty of maintaining self-functioning.

Extending this approach to divorce, we explored the patterns of adaptation to marital breakup after a long-term marriage—a neglected group in divorce research—and the longitudinal trajectory of these patterns using the LRLLS dataset. Latent transition analyses were used to examine the course of psychological adaptation (i.e., depressive symptoms, life satisfaction, hopelessness, mourning and subjective health) to divorce over two years. Two larger groups appeared: individuals adapting very well (*Resilients*: 29%) and individuals adapting quite well (*Average Copers*:

49%). We also observed three smaller groups characterised by major difficulties, including two groups with the most negative outcomes, the *Malcontents* (12%) and the *Vulnerables* (6%), with the latter having the largest deviation from the mean, and a third group, the *Resigned* (4%), which identified individuals with high depression scores (Perrig-Chiello et al., 2015). The results again showed that adaptation trajectories depended primarily on internal resources—including personality traits, notably extraversion, which was associated with a resilient trajectory—but also on contextual variables related to breakup and relationship characteristics. Specifically, a shorter time since the breakup was observed among respondents who moved from maladaptive to adaptive statuses. The length of the marriage played a somewhat counterintuitive role: Whereas for most respondents the number of years in the terminated relationship was not associated with the probability of recovery, there was a link for the resigned group, with individuals exiting marriages longer than 35 years being more likely to recover than individuals exiting shorter marriages (Knöpfli et al., 2016).

In sum, analysis of adaptation profiles and trajectories suggested that most people coped well with divorce and widowhood and were resilient when they lost their life-long romantic partner in the second half of life. However, a significant minority had difficulties and showed vulnerability. The findings further indicated that individuals possessed internal resources that help during these stressful transitions and highlighted the importance of contextual variables associated with a higher risk for vulnerability. Furthermore, our findings extended earlier work (e.g., Bonanno et al., 2002, 2011) in an important way by demonstrating that later-life partner loss is different from other stressful events through the identification of specific profiles and trajectories, by showing differences among types of partner loss, and by providing a more detailed picture of the characteristics associated with these trajectories.

#### SPECIFIC INTERNAL RESOURCES FOR ADAPTATION: SELF- AND SOCIAL CONTINUITY

Extending the findings on internal resources such as personality as predictors of adaptation success, identity and self-regulatory processes were investigated in LRLLS, with a special focus on the beneficial value of perceptions of self- and social continuity. As individuals age, their sense of



identity and well-being is likely to be influenced by the experience of change and/or continuity in several life domains, such as health or social ties (Atchley, 1989). However, the impact of any objective transitions, including divorce or bereavement, may depend on the extent to which an individual perceives these changes as disruptive. Critical life events in later life, such as divorce and bereavement, may destabilise the individual's sense of personal and social identity during a time when they are most needed, as other age-related losses may also occur at the same time. Individuals who are nevertheless able to maintain a strong sense of self- and social continuity may be more successful in adapting to adversity caused by the loss of the partner.

According to Breakwell (1986), continuity is an identity end-state: Individuals strive to maintain a sense of continuity throughout their lives (Spini & Jopp, 2014). Self-continuity is defined by the extent to which individuals are able to identify similar core characteristics between their present, past and future selves. Based on this identity mechanism, people construct their own life story: At younger ages, this mechanism helps visualise how the person may be in the future (future self-continuity), while in later life, self-continuity helps evaluate one's personal history (past self-continuity). Social continuity, in contrast, refers to persisting environmental structures, long-lasting social ties and groups, and roles in society. The two mechanisms act in parallel in constructing a unique sense of personal and social identity.

Little is known about the development of self- and social continuity across the life course, and the beneficial role of both identity mechanisms has rarely been investigated within the context of critical life events. Using LRLLS data, we aimed to close these gaps in the literature by investigating stressors and resources that shape continuity perception in later life, in line with LIVES' dynamic view of vulnerability (Spini et al., 2017; Spini & Widmer, Chapter 2 this book), and by determining the extent to which self- and social continuity buffer the impact of partner loss on relevant outcomes, including feelings of loneliness.

Self-continuity develops early in life (Erikson, 1968). Individuals who have difficulty developing a strong sense of identity during childhood and adolescence may be more vulnerable when confronted with self-threatening life events. There is also empirical evidence that adversity in childhood and adolescence interferes with identity development, leading to psychopathology in later life (Hayward et al., 2020). Following these theoretical assumptions and findings, we used the three study waves of the LRLLS to

examine the link between childhood adversity and self-continuity in later life, a relationship that had not, to our knowledge, been previously studied. We investigated this association in three different groups, namely, divorced, bereaved and married individuals, with the last serving as a control group. Our findings confirmed that individuals who had experienced childhood adversity (e.g., poverty, emotional or physical neglect) lacked self-continuity in comparison to their peers (Lampraki, Spini, & Jopp, submitted 2022a). In addition, childhood adversity was related to lower levels of self-continuity for the divorced and bereaved individuals compared to the married control group. Considering further the temporal development after the partner loss event, we found that divorcees were the most disadvantaged group in terms of self-continuity as, even six years after the divorce, they still experienced less self-continuity than the bereaved and married individuals who had, meanwhile, experienced an age-normative increase in self-continuity.

Another gap in the literature concerned the protective role of continuity perceptions in adaptation to partner loss. Results indicated that low self- and social continuity was related to increased levels of social loneliness after divorce and, especially, two years or more after marriage dissolution (Lampraki et al., 2019). In addition, positive personality traits (e.g., extraversion) seemed to protect individuals with closer proximity to divorce from feeling socially lonely.

Following up on our finding that individuals with childhood adversity (e.g., poverty, emotional or physical neglect) experienced lower self-continuity later in life, we also investigated the long-term impact of childhood events on social and emotional loneliness after divorce and bereavement and in long-term marriages while considering their perception of self- and social continuity as protective mechanisms (Lampraki, Jopp, & Spini, submitted 2022b). Although childhood adversity exerted a negative impact on well-being with the increase of social and emotional loneliness, this relationship weakened when also considering the effect of self-continuity. In other words, when individuals reported fewer negative childhood experiences, they had a stronger perception of self-continuity in later life and, therefore, had better psychological well-being outcomes after partner loss, as well as in long-term marriages. In addition, maintaining a strong feeling of social continuity in life was also related to less social and emotional loneliness.

In sum, our findings contribute to a better understanding of the development of continuity perceptions and their protective value for adaptation

to partner loss in later life, showing the multilevel influence of resources and stressors (intraindividual and contextual) on well-being, the multidirectionality of individual trajectories, and the multidimensionality of consequences following a single critical life event.

### AN EVIDENCE-BASED ONLINE INTERVENTION AFTER PARTNER LOSS: LIVIA

While the majority of individuals managed to cope successfully to losing their spouse, our findings also documented important interindividual differences in coping means, length of the adaptation process and the extent to which individuals were able to return to previous functioning and well-being. Seeking out help from mental health specialists can help coming to terms with the partner loss, yet systematic variations in professional help seeking across types of partner loss exist: Within the LRLLS study, we found that professional help seeking was much higher after separation (57%) and divorce (49%) compared to widowhood (18%; Jopp et al., 2021). Further, results indicated that higher likelihood to seek professional help was related to specific person characteristics (i.e., being a woman), social resources (e.g., having a person to count on), poorer adaptation success (i.e., more depressive symptoms; needing more time to overcome the loss) as well as event-specific characteristics (i.e., unexpected loss; needing more time to overcome the loss; Jopp et al., 2021). Informing individuals unlikely to seek help, namely those suffering from bereavement, being male, and without a confidant, about the potential benefits of professional support after partner loss in later life seems particularly important. Given potential barriers to professional support seeking, self-help online interventions have become increasing attention over the recent years.

Based on the identified patterns of adaptation and factors of influence, the LRLLS study gave rise to the conceptualisation and completion of an online intervention aimed at actively helping individuals adapt to loss, maintain a stable identity and improve well-being. More specifically, we developed a guided online self-help intervention for prolonged grief after partner loss (LIVIA) to help individuals create new adaptative resources. Online self-help interventions (e-health) are a convenient, low-threshold, and immediate way of delivering interventions. By addressing prolonged grief after the death of a significant other, online self-help interventions complement traditional face-to-face grief counselling and have been

proven to be effective (e.g., Eisma et al., 2015; Litz et al., 2014; van der Houwen et al., 2010).

LIVIA is the first online intervention that focuses explicitly on grief after spousal death in older adults and the first that addresses grief and adaptation problems after separation or divorce (Brodbeck et al., 2017). It is based on the task model by Worden (2009) and the Dual Process Model by Stroebe and Schut (1999) and encompasses loss-related interventions aimed at coping better with grief as well as restoration-oriented generic interventions for activating personal resources and improving well-being and life satisfaction. The cognitive-behavioural online self-help program consisted of ten text-based modules, which were similar for widowed and separated/divorced participants. Exceptions were two loss-related modules that had an identical structure but were adapted to the specific event: One provided information about bereavement or separation reactions, and the other focused on telling the story of the loss. The self-help intervention covered topics such as emotional reactions in the context of interpersonal loss, obstacles to successful adaptation and possibilities for overcoming them. Cognitive-behavioural intervention elements aimed at fostering positive thoughts and emotions, finding comfort and self-care. Worksheets for practising these strategies in daily life complemented the module. Writing tasks assessed changes in the participant's life since the loss, identified unfinished business and possibilities of putting these issues at rest, and redefined the relationship to the lost partner. Restoration-oriented modules focused on creating a new life without the partner, such as finding sources of support and strength, improving existing relationships and building up new social contacts.

LIVIA proved its efficacy in a randomised controlled trial (Brodbeck et al., 2019). Inclusion criteria were the loss of a partner through death or separation/divorce more than six months ago and wanting help for better coping with grief and emotional adaptation after the loss. A total of 110 German-speaking older adults took part in LIVIA; the majority of them were divorced (77%). Although all LRLLS participants reporting difficulties coping with the loss of their partner were informed about the intervention, most of the LIVIA participants were recruited via newspaper advertisements. When comparing the intervention group with the control group, LIVIA led to significant reductions in grief ( $d = 0.81$ ,  $p < .001$ ), depression symptoms ( $d = 0.59$ ,  $p < .001$ ), psychopathological distress ( $d = 0.39$ ,  $p = .011$ ), embitterment ( $d = 0.37$ ,  $p = .006$ ), loneliness ( $d = 0.37$ ,  $p = .025$ ), and an increase in life satisfaction ( $d = 0.41$ ,  $p = .007$ ).

Improvements in these areas were confirmed for both separated/divorced and widowed participants and for different grief severities at baseline. Notably, these improvements were stable at the six-month follow-up (for details, see Brodbeck et al., 2019). These findings underlined that the intervention principles for treating prolonged grief after bereavement also work for separated and divorced older adults and for participants with milder grief symptoms. This finding suggested that LIVIA may also function as a preventive measure to counteract negative developments after the loss. Further analyses addressing underlying mechanisms showed that LIVIA improved emotion regulation and loss-related coping self-efficacy, which in turn led to a reduction in grief symptoms and psychopathological distress (Brodbeck et al., 2019).

LIVIA provided the ground for further interventions. An adaptation of LIVIA is currently being evaluated in the French-speaking part of Switzerland (Debrot et al., 2017). Building on LIVIA, the ongoing LEAVES project integrated the content of the self-help intervention into an online bereavement support service for older adults in the Netherlands, Portugal and Switzerland (Van Velsen et al., 2020). The LEAVES program with further methodological refinements, including dialogues with a virtual agent, is currently being evaluated through a new randomised controlled trial. In sum, the newly designed LIVIA intervention for individuals wishing to receive help to overcome the loss of their partner had strong beneficial effects, thereby demonstrating that this online intervention is highly useful to support individuals with pathological or potential problematic trajectories.

## CONCLUSIONS

Taken together, the findings from the LRLLS study offer rich and valuable insights into vulnerability processes in the context of partner loss later in life. They showed that partner loss as a critical life event has substantial consequences for multiple central life domains, that various resources and risk factors can be identified and that interventions addressing different angles are highly helpful. More specifically, our work highlighted interindividual differences in vulnerability: The profiles and trajectory results clearly demonstrated that individuals differ in adaptation progress and success and that these differences are associated with personal resources and contextual as well as event-related characteristics that promote (e.g., experiencing self-continuity) or hinder (e.g., feeling unable to overcome the

loss) adaptation to this critical life event. The interdependence among vulnerability trajectories, life domains and multilevel contexts, which lies at the core of the LIVES approach to vulnerability (Spini et al., 2017), is exemplified by our research. The findings further highlighted the long arm of childhood by underlining the role of early life risk factors, such as childhood adversity, and their lasting negative influence on later life identity processes; moreover, divorce and widowhood, as additional adverse events, weigh even more on individuals who have experienced childhood adversity, with notable consequences for the adjustment to partner loss. As underlined by Spini and Widmer (Chapter 2, this book), vulnerability trajectories are shaped before, during and after a critical event such as the loss of an intimate partner from childhood to adulthood.

Although childhood is important, our results showed that programs augmenting resilience can also be implemented in later adulthood. While many individuals are well equipped to handle partner loss successfully, it is obvious that some adults do not seem to possess sufficient internal resources (e.g., protective personality traits such as extraversion, psychological strengths such as trait resilience) and external resources (e.g., having a confidante, social support; see Chap. 10) to master stressful transitions such as divorce or bereavement well. These vulnerable adults benefit from interventions that facilitate adjustment after spousal loss at an early phase of the adaptation process as well as after having developed manifest difficulty. Based on our findings, future interventions may consider more specific modules that focus on improving specific resources, such as individuals' continuity perceptions, to strengthen these identity mechanisms, thereby going above and beyond classic coping skills.

Following a life course perspective, it is of interest to target vulnerability as early as possible. Such distal factors of vulnerability were also shown by Cullati et al. (Cullati & al., *Childhood Socioeconomic Disadvantage and Health in the Second Half of Life: The Role of Gender and Welfare States in the Life Course of Europeans*, 2022) and may call for early intervention to create reserves during childhood that will favour resilience during adulthood. Based on our findings, such an approach entails concentrating on preventing childhood adversity, including poverty and maltreatment, as an important governmental target and creating societal structures that effectively reduce all types of inequality. In parallel, efforts are needed to enable individuals, ideally from childhood on, not only to develop cognitive, social and functional resources but also to enhance psychological strengths (e.g., self-efficacy, internal control beliefs) and coping

strategies (e.g., problem-solving skills). Building a strong identity, which will act as a resource (or reserve) in times of need in later life, should become the aim of preventions and interventions during adolescence, the life stage at which identity emerges. The development of a strong repertoire of coping skills should further target not only active, self-dependent problem solving but also the capacity to ask others for practical and emotional support, as well as strategies such as acceptance and perspective taking, as these are especially important when the individual is confronted with issues that tax personal resources or with problems that cannot be solved. In addition, providing professional support for dealing with traumatic childhood experiences early in life may exert a positive impact on psychological health and may help to create healthy and functional relationships for the years to come. Enhancing the development of psychologically strong young individuals would be a valuable societal public health goal, which should be complemented by active political measures to fight the roots of childhood adversity, as mentally healthy citizens able to shoulder personal critical life events such as partner loss are the best basis of a well-functioning and prospering society. Finally, as shown in this chapter, intervention strategies can be tailored to increase individuals' resources and reserves at different stages of the vulnerability process, starting from childhood as a preventive strategy to adulthood as a compensatory strategy.

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## Synthesis: A Multidimensional Perspective on Vulnerability and the Life Course

*Laura Bernardi and Danilo Bolano*

The life course approach to vulnerability (Spini et al., 2017; Spini & Widmer, (introduction chapter) posits that vulnerability is a dynamic process of accumulation/loss of reserves and resources over the life course while facing life stressors (critical life events, transitions, etc.). Individuals have resources (e.g., time, money, relations, human capital) of different natures and in different amounts and use them to engage in activities belonging to various life domains to achieve different goals. Such resources are often limited, and if drained by one life domain, they may hinder activities and well-being in another life domain. Time is a typical example: Increasing the time spent on work-related activities often means reducing the time available for leisure and family life, with potential negative effects on life satisfaction and relationship quality. However, resources may also

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L. Bernardi (✉)

Faculty of Social and Political Sciences, Institute of Social Sciences and LIVES  
Center, University of Lausanne, Lausanne, Switzerland  
e-mail: [laura.bernardi@unil.ch](mailto:laura.bernardi@unil.ch)

D. Bolano

Centro Dondena, Bocconi University, Milan, Italy  
e-mail: [daniolo.bolano@unibocconi.it](mailto:daniolo.bolano@unibocconi.it)

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be generated within one life domain and, as a side effect, facilitate activities in other domains. For instance, if we take time as a resource, in the classic and highly debated household specialisation theory of Becker (1965, 1991), marriage may bring about a specialisation and division of roles that, in turn, may represent a resource gain since at least one of the partners can free up resources, including time, from family life and invest them in labour market activities.

Resources cannot always be allocated as desired to reach multiple and potential conflicting life goals. Activities pertaining to different domains may then *compete* for such resources, thereby necessitating trade-offs (time for family or work or leisure, money for health or leisure). Such a process potentially gives rise to different investment strategies in resource distribution across life domains and over time. In contrast, other types of resources, such as personality traits, are by definition not finite and may be used to sustain different activities across domains without producing trade-offs but, rather, by being *subsidiary* to other resources.

This situation raises an important point of the life course paradigm (Giele & Elder, 1998): the multidimensionality of the life course. Life domains are strictly interconnected: Decisions and events occurring in one domain may exert a strong influence on another life domain, either in the short or long term, thereby creating *spillover effects* (Bernardi et al., 2019). The intertwining of family and working life is a classic example: There is consistent evidence of the differentiated impacts of women's employment on fertility (e.g., Matysiak & Vignoli, 2008) or the labour market disadvantages faced by mothers—the so-called 'motherhood penalty' (e.g., Budig & England, 2001). In terms of resources and reserves, as mentioned above, when life domains compete for resources, such competition may lead to negative spillovers across life domains; in contrast, when resources are transferred across domains, they may create positive spillover effects (Bernardi et al., 2017; Freund et al., 2014; Hanappi et al., 2017; Roeters et al., 2016).

In this vein, vulnerability can be viewed in terms of how and to what extent individuals are able to mobilise their reserves to cope with (life) stressors in *one or multiple linked life spheres*. Life stressors, such as life hazards, events and transitions, may increase or reduce available resources in related domains. For instance, changing jobs might increase the amount of economic resources available but simultaneously reduce the time for leisure and family life activities. The literature has also noted great heterogeneity in the observed effects. Individuals respond differently while

facing similar stressors, according to the reserves available and their ability to mobilise them. For example, Struffolino et al. (2016) showed that among lone mothers, the resources available in terms of employment stability and educational level mediated the negative effect of becoming a lone mother on mental health.

The interconnection among life domains, despite being a pivotal aspect of the study of vulnerability over the life course, cannot be investigated in isolation from two other key points that have already emerged in the introduction (Spini & Widmer, introduction chapter): the role of time and the interconnection among related individuals. In the conceptualisation of the life course as a series of relationships proposed by Bernardi et al. (2019)—the so-called *life course cube*—the dimensions of time, domains, and levels (including the micro/meso/macro levels) represent the three main axes of the cube at which developmental, behavioural, and societal processes occur.

## THE ROLE OF TIME

Time emerges as a key aspect in the analysis of vulnerability over the life course and the interconnections across life domains. Time is one of the three dimensions of the *life course cube* (Bernardi et al., 2019) and is embedded in the definition of vulnerability as a dynamic process (Spini et al., 2017, see also Spini & Widmer, this book/this volume).

Within the life course framework, time is a multifaceted concept. It can be viewed simply as a *measure* to study the evolution over time of a certain characteristic of interest, such as health, employment status, living arrangement, to trace the so-called life trajectories. It can also be viewed as an indicator of *when* an individual experienced a given event and transition in the study of, for instance, the time to an event (e.g., timing of divorce, age at leaving home). When interpreting vulnerability as individuals' (in)ability to accumulate and mobilise resources in response to critical life events, the timing of the events becomes crucial: The moment in life at which the stressor occurs matters. Losing a job at the beginning of one's career or at age 50 does not have the same effect on future employment perspectives, for example. Moreover, not only the timing but also the spacing between events matters. The combination of timing and spacing defines the distribution of events across the life course. Such distribution matters for crucial life course outcomes such as levels of well-being. The study by Comolli et al. (2021) advanced this line of research by proposing an innovative

indicator of life event concentration that measures its effect on well-being later in life across different life stages.

Time can also be viewed in terms of the *time schedule*, i.e., *the time clocks* that prescribe individual goals and decisions. The time schedule can refer either to a single life domain or to multiple domains (e.g., becoming a parent and having a stable job by age 30) and may involve different *levels*. We can think of an *individual time clock* and the *societal time clock* (Neugarten & Lowe, 1965; Sanchez Mira & Bernardi, 2021; Settersten & Hagestad, 1996a; 1996b). Individuals have internal motivations and plans to reach certain goals in life and might *set—consciously or unconsciously—individual time clock(s)*. Furthermore, time clocks are also set at the macro (policy makers) and meso levels (society, social network), thereby creating *societal time schedule(s)*. Norms, both legal and social, might define the age and timing of events. At the meso level, for instance, social norms are a set of regulatory tools that establish a predictable order or timetable of events (Billari & Liefbroer, 2007). Age norms, for instance, set a sort of ‘age limit’ or ‘appropriate timing’ for certain transitions, such as leaving home, getting married, and having a child (e.g., Aassve et al., 2012). At the macro level, norms (social policies) play a crucial role and set some age ‘restrictions’. Retirement, marriage, sexual intercourse, and schooling are domains that, in many contexts, are highly normatively regulated with respect to age. All these different clocks may tick at the same time and may not always proceed in the same direction in their influence on individual behaviours across the life course.

### THE INTERDEPENDENCE OF RELATED INDIVIDUALS

The third aspect that might play a role in shaping the ability to access and mobilise reserves when needed is the interdependence among individuals. Changes in one person’s life patterns may lead to changes in other people’s lives and to a dependence on the attitudes and behaviours of members of the same group or network (household, working place). These are so-called *crossover effects* (Bernardi et al., 2019). Similarly, the accumulation or loss of resources might be due to the relationship across individuals: Social capital is a prototypical example of this process.

Empirical research on Elder’s concept of linked lives (Elder, 1994) has traditionally focused on interdependences across siblings or partners and has shown, for instance, similarities in preferences and outcomes among them. Examples include studies on the effect of parental characteristics

and events (joblessness, teenage pregnancy, health status, level of education) on children's development and outcomes (education, earnings, health, lifestyle). Studies on intergenerational links (usually across two generations: parents and kinship) have pointed out several forms of material and immaterial transfers of resources across generations, including grandparental care for grandchildren (Aassve, Meroni, & Pronzato, 2012; Albertini et al., 2007). Other studies have examined crossover effects across friends, schoolmates, neighbours and coworkers (e.g., Balbo & Barban, 2014; Bernardi, 2003; Pink et al., 2014).

### THE MULTIDIMENSIONAL PERSPECTIVE OF VULNERABILITY DISCUSSED IN THIS SECTION

The five chapters included in this first section (Spini & Widmer, this book/this volume) offered compelling examples of the multidimensionality of the life course and discuss the intertwining of life domains and the presence of spillover effects from different disciplinary perspectives.

LeGoff, Ryser and Bernardi, as well as Jopp and colleagues (Chap. 2 and Chap. 6), discussed some of the work conducted by LIVES on the links among life stressors in multiple life domains and wellbeing. Specifically, Le Goff and colleagues examined different dimensions of well-being from a sociodemographic perspective, while Jopp et al. used a psychological lens to discuss the effect of union dissolution, both divorce and widowhood, on well-being among older adults in Switzerland. Both chapters stressed the roles of individual characteristics (e.g., gender, family configuration) and intrapersonal resources available (i.e., psychological resilience, personality traits) in explaining the different ways individuals cope with critical events. Broadly speaking, life stressors in several different life domains have effects not only on physical and mental health but also on changes in behaviour and life conditions. Studies have shown an increasing risk of union dissolution after job loss (e.g., Charles & Stephens Jr, 2004; Di Nallo et al., 2020), change in social participation after becoming a widow(er) (Bolano & Arpino, 2020), or loss of wages and economic opportunities among new mothers (Oesch et al., 2017).

Considering individuals' psychological and behavioural involvement, Schüttengruber, Krings and Freund (Chap. 3) underlined the role of conflict and facilitation within and among life domains in the pursuit of multiple life goals. An interesting perspective on spillover effects addressed in



this chapter is the role of boundaries between domains. Domain boundaries influence the way in which people manage their activities in different life domains. However, the theoretical debate and the empirical evidence on whether it is more beneficial for decision making and life goal achievement to have strict or blurred boundaries across domains (physical, temporal, emotional, cognitive, and relational) is still open. This kind of research may certainly enrich the study of vulnerability over the life course related to spillovers across life domains.

Using a (socio)economic lens, Lalive, Oesch and Pellizzari (Chap. 4) discussed the link between personal relationships and employment outcomes. As argued by the authors, there are positive and negative spillover effects. Developing personal contacts and social connections might, on the one hand, result in an improvement of the labour market position—for instance, enabling access to a larger set of information—but, on the other hand, personal contacts, or more broadly workers' family status, can also hamper employment prospects. The motherhood wage penalty is a typical example: Women with children might be perceived by the prospective employer as less dedicated to the job and hence less productive than a childless counterpart receiving a lower wage (e.g., Budig & England, 2001).

Cangià, Davoine and Le Feuvre (Chap. 5) used a gender perspective to discuss the intertwining between transnational mobility and family- and work-related decisions. They explored a large variety of mobile people: those who moved alone or already in a couple, from less-qualified workers to highly skilled migrants, as well as those who moved 'voluntarily' to those who were 'forced' to move. The different sets of resources and reserves available exerted differentiated impacts on family and work trajectories. The authors stressed the crucial role of gender regimes and how international migration can be a potential source of vulnerability even for a group of individuals, such as highly skilled workers (e.g., university researchers, managers), who are conventionally not considered a vulnerable population. A residential move to another country is already associated with hardship during the integration process at arrival ('new place') when it is an individual who moves. When a couple undertakes such a move, transnational mobility might additionally require reconfiguration of the gendered division of roles and priorities within the couple, with potentially negative effects on relationship quality and overall wellbeing. The strategies for facing other life events that might happen subsequently to the move can also be challenging in a new environment. The authors, using Switzerland as a case study, reported several examples of difficulties

faced by mobile couples—even those highly skilled and, thus, potentially with higher economic resources—in, for instance, dealing with the birth of a child in a foreign country. The result, in some cases, is the decision of one parent to abandon their preferred career to care for the newborn.

While the chapters included in this section focused their attention on spillover effects, i.e., the strict interconnection of the allocation of reserves across life domains, in all the works discussed here, we can clearly identify the role of time and the interdependence across individuals—crossover effects—as key components in the study of life course vulnerability.

The contribution by Lalive and colleagues (Chap. 4) addressed cross-overs by focusing on sociability—the development of a social network as the result of the interdependence and interaction among individuals—and its effect on a given *outcome* (employability). Similarly, Cangia and colleagues (Chap. 5) discussed couple-level trajectories of transnational mobility and rearrangement that occurred within the couple in the organisation of gendered roles, offering another classical example of ‘linked lives’. The time dimension emerged clearly in all chapters. Starting from the stress proliferation theory (Pearlin, 2010) and building upon the definition of life course vulnerability by Spini et al. (2017), LeGoff and colleagues (Chap. 2) argued for the relevance of taking a *dynamic (longitudinal)* perspective in the study of variations in well-being in response to life stressors. This approach was also used and discussed in Jopp et al.’s study on the effect of bereavement among older adults in Switzerland. In one study (Spahni, Morselli, Perrig-Chiello, & Bennett, 2015), three post-bereavement trajectories were identified: Two groups, the *Resilients* and *Copers*, showed a stable level of distress, whereas a third group, the *Vulnerables*, showed increasing levels of depressive symptoms. According to the results of this study, interpersonal resources played an important role in predicting the potential post-bereavement trajectory.

Chapter 5 by Cangia et al. centred on the notion of mobility and *change* over time of *gender roles* and *career paths* of highly qualified workers. Similarly, the chapter by Lalive and colleagues showed how building social connections or given life events (e.g., getting married, having a child) can influence *future* employment prospects. Time in terms of the *moment in life* at which an event happens was explicitly discussed in Chap. 3 by Schüttengruber and colleagues, who focused specifically on boundary management and attempts to reach multiple life goals in middle adulthood, a moment of life defined by the authors as the ‘*rush hour of life*’. Middle adulthood is indeed a life stage during which individuals have to

play multiple roles at the same time (worker, parent, partner, caregiver for their own children and for an older parent) and is potentially full of events (e.g., death of parents, transition to grandparenthood).

### THE MULTIDIMENSIONALITY OF THE LIFE COURSE: THE NEED FOR LIFE COURSE POLICIES AND IMPLICATIONS FOR FUTURE LIFE COURSE STUDIES

Studies on life course vulnerability should simultaneously consider and discuss all three aspects: interconnection among individuals, intertwined life domains and the role of time. However, in practice, the majority of studies conducted thus far have focused on only one aspect at a time, or two at best. Research integrating spillover and crossover effects from a longitudinal perspective is still needed (Bolano & Bernardi, 2021).

Recently, several studies using dyadic data from large social surveys have examined the effect of the diffusion of resources and stress across life domains of people who are strictly interconnected (often partners, for example, as discussed in Cangia and colleagues' contribution to this volume). However, these studies have focused on outcomes that are couple level by definition, such as having a child and moving to a new place (e.g., Hanappi et al., 2017; Testa & Bolano, 2021). It is thus to be expected that both partners' trajectories would influence couple-level outcomes. More interesting is to analyse to what extent decisions made by an individual in a certain life domain exert an impact on a related individual in other life domains. Lam and Bolano (2019) examined the spillover effect on the physical and mental health of social participation across couple members. They found that not only is being socially engaged associated with a better level of health but also that the active spouse's engagement influences the level of health of his or her partner. Bolano and Bernardi (2021) took an integrative perspective to examine spillover and crossover effects simultaneously by analysing the interdependence between the choice of early retirement among middle-aged workers in Europe and the transition to grandparenting the first child of their adult children.

The increasing availability of linkable register and survey data that can enable a comprehensive analysis of the interdependencies among the three dimensions of the life course offers several opportunities for vulnerability research in the near future. Thanks to the widespread diffusion of social surveys covering multiple life domains and multiple linked individuals as

well as the availability of administrative record linkages in many countries, researchers have potential access to a large set of detailed information to investigate interactions as well as the role of time across levels and across domains. In addition to extending the knowledge on vulnerable trajectories, such research will also contribute to promoting the need for *life course policies* within political agendas.

When setting social policies, policy makers should give due consideration to the entirety of the life course of the individual and the implications of the policy in other life domains with respect to other individuals and over time. A holistic view of life is needed in legislation. For instance, with the increase in life expectancy, many countries are raising the retirement age for both men and women. This kind of policy, although necessary to keep the balance between retired individuals and the active population, should not be put in place without considering spillover and crossover effects that such an increase in retirement age might have. The link between retirement and becoming a grandparent can be formalised as a form of spillover (work-related decisions and family domain) and crossover (vertical ties across generations) effects over time (Bolano & Bernardi 2021). Alternatively, we can examine such effects in terms of the link between the institutional retirement ‘clock’ of older adults and the (societal and individual) fertility ‘clock’ of their adult children. In many countries with relatively few childcare facilities available, grandparents are crucial care providers for their grandchildren. Keeping individuals active in the labour market might, therefore, reduce the time available for grandparent care for grandchildren, with possible effects on the children of the workers concerned in the new law in terms of fertility decisions, family-work life balance, decisions on labour markets, and so on. Under this perspective, an increase in retirement age should be combined with compensatory policies to assist families’ childcare needs, for instance by increasing the offer of affordable and high-quality childcare facilities. Life course studies of this kind, directly addressing the presence of multiple clocks and multiple interdependencies across linked individuals as well as their combined effects, suggest the importance of adopting a holistic approach in designing social policies.

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PART II

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Vulnerability at the Articulation  
of Levels





## Social Policies, Vulnerability and the Life Course: A Complex Nexus

*Jean-Michel Bonvin, Jean-Pierre Tabin, Anne Perriard,  
Emilie Rosenstein, and Max Lovey*

One of the explicit goals of social policies, especially welfare-to-work policies, is to tackle vulnerability processes. For this purpose, they provide resources in the form of cash benefits, services and support to their beneficiaries, who are affected by multiple forms of vulnerability. It would, therefore, seem logical that social policies serve to reduce vulnerability and enhance their target groups' resilience and capabilities. Such, however, is not always the case. Indeed, social policies are often unable to adequately tackle vulnerability processes, sometimes because they convey misleading behavioural norms and expectations (Widmer & Spini, 2017) that act as

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J.-M. Bonvin (✉) • M. Lovey  
University of Geneva, Geneva, Switzerland  
e-mail: [Jean-Michel.Bonvin@unige.ch](mailto:Jean-Michel.Bonvin@unige.ch); [max.lovey@unige.ch](mailto:max.lovey@unige.ch)

J.-P. Tabin • E. Rosenstein  
Haute école de travail social Lausanne, Lausanne, Switzerland  
e-mail: [jean-pierre.tabin@hetsl.ch](mailto:jean-pierre.tabin@hetsl.ch); [emilie.rosenstein@hetsl.ch](mailto:emilie.rosenstein@hetsl.ch)

A. Perriard  
Haute école de travail social Genève, Genève, Switzerland  
e-mail: [Anne.Perriard@hesge.ch](mailto:Anne.Perriard@hesge.ch)

stressors for their beneficiaries, other times because the resources they provide are inadequate to beneficiaries' specific situations, and still other times for other reasons. In sum, contrary to what they claim to achieve, social policies can, in some cases, be viewed as stressors that reinforce rather than counteract disadvantage.

This chapter aims to analyse the reasons for such an apparently paradoxical situation and claims that it can be better understood if one considers the complex nexus between vulnerability and social policies as a *multilevel process*. Vulnerability is experienced by individuals at the *micro level*: it is then characterised by multidimensionality, in which diverse spheres of life (family, work, health, income, etc.) can be affected. Vulnerability is also framed as a social issue at the *macro level*, requiring the establishment of policy. This construction of vulnerability as a social problem that calls for intervention relies on a specific view of what vulnerability is (its causes and its main forms) and how it should be approached (its solutions). This macro notion of vulnerability, which differs from vulnerability as experienced by individuals, is then implemented at the *meso level* by so-called 'street-level bureaucrats' (SLBs), i.e., public (or publicly subsidised) agents who are called to translate the macro-level notion of vulnerability into actual public action, which often takes place in specific organizations (hospitals, welfare agencies, social services, NGOs, etc.) and in face-to-face interactions between an institutional representative and a potential user. As such, there may be a gap or a discrepancy among the different notions of vulnerability as a) experienced at the micro level (a multidimensional and complex fact), b) framed by social policies at the macro level (vulnerability as a norm detailing the expectations with which beneficiaries ought to comply to be lifted out of their situation and enjoy so-called professional and social integration) and c) implemented at the meso level (vulnerability at the crossroad between fact and norm). More specifically, the normative conception of vulnerability underlying social and welfare-to-work policies may act as a 'misleading norm' (Widmer & Spini, 2017) and reinforce vulnerability as experienced at the micro level. Consequently, SLBs are placed in an ambivalent and challenging position in which they are confronted with the inconsistencies between vulnerability as a multidimensional fact and vulnerability as a misleading norm. The role of SLBs is, therefore, key in the interaction between social policies and vulnerability; following Lipsky (1980), they can even be interpreted as policymakers who are in a position to (re)define social policies to better meet what they themselves define or consider the needs of their clients.

While the bulk of social policy literature focuses on a single level—mostly the macro (e.g., Esping-Andersen, 1990; Taylor-Gooby, 2001) or meso level (e.g., Brodtkin, 2011; Lipsky, 1980)—this chapter suggests that a multilevel focus that sheds light on the interdependencies among the macro, meso and micro levels allows for a deeper understanding of social policies and their impact on all actors involved (Bonvin, 2016).

Empirical analysis, then, requires attention to the multiple dimensions of vulnerability and how they are approached by social policies. It can indeed be the case that, while adequately tackling one dimension of vulnerability (e.g., increasing the educational capital of a so-called NEET—a young person who is not in employment, education or training—or supporting the professional integration of a poor single mother), social policies still miss other dimensions (e.g., lack of concern regarding employers' readiness to give unemployed youth a second chance or no due attention to the availability of childcare solutions). Such examples shed light on the complexity of the impact of social policies on individuals.

These introductory remarks show the crucial importance of situating the empirical investigation of social policies at the crossroads of these various levels and their different notions of vulnerability (Bonvin, 2016) to account for their impact on vulnerability. Indeed, a multilevel approach to social policies is key to explaining their ambivalent outcomes and how they can simultaneously provide resources and contribute to the construction of reserves and act as stressors and factors reinforcing vulnerability.

This chapter is articulated around three main findings that resulted from work within the LIVES research program. First, the content of public policies defines the objectives pursued and the expectations regarding vulnerable individuals. Although these official discourses vary along categories of social policy beneficiaries, they are extremely powerful and exert a strong, though mostly ambivalent, impact on how individual vulnerability can be addressed. The cases of vulnerable youth, poor single mothers and senior workers are considered. Second, the power of official discourses does not prevent individual differences in how social policies are perceived and received by their beneficiaries and, most importantly, in individual beneficiaries' potential for agentivity within the frame of social policies. LIVES research has shown that for individuals to benefit from social policies, their compliance with official norms is a prerequisite, which means that resistance takes place mainly outside social policies through forms of reasoned non-take-up. LIVES research has also demonstrated that target groups are unequal regarding the expectations purported by official

norms: Some are able and willing to ‘play the rules of the game’, as for them, social policies are mostly adequate; others are unwilling to abide by these norms but still choose to ‘play the game’ to enjoy the benefits and services offered by social policies, thus adapting their preferences and aspirations to the official expectations; still others are unable to comply with official norms due to a lack of resources or reserves. The cases of people with disabilities, vulnerable youth and reasoned non-take-up are emphasised in this section of the chapter. Third, LIVES research has shown the importance of social workers or SLBs to close the gap between official expectations and individual beneficiaries’ aspirations as much as possible. The issue here is to identify the extent to which the working conditions (available time, objectives, budgetary resources, training, etc.) of social workers and SLBs allow them to complete this intermediary role in a way that may reduce the ambivalence of social policies. The case of vulnerable youth, as well as an experiment conducted in local disability offices to boost the adoption of a life course perspective among SLBs, are mobilised to illustrate these points. Overall, this research review suggests that a life course approach to social policies and a more encompassing understanding of vulnerability mechanisms could help improve the effectiveness of social policies in overcoming their beneficiaries’ vulnerability or in supporting them in the development of more adequate coping strategies.

### THE POWER OF OFFICIAL DISCOURSES WITHIN SOCIAL POLICIES

Social policies define vulnerable categories of people and shape social interventions towards them. In doing so, they define what is problematic and what is not, i.e., what is ‘normal’ at a given time for a man, a father, a woman, a mother, a young, middle-aged or senior person, etc. In particular, such policies endorse normative behavioural expectations that are imposed upon beneficiaries if they wish to be eligible for benefits and services. Hence, access to social policies is conditional upon meeting these expectations on behalf of their potential beneficiaries. Those who refuse these conditions will be labelled ‘undeserving’ of the benefits and services offered by social policies, which may place them in very difficult situations if no alternative resources (family networks, own savings, etc.) are available to them. Thus, official discourses largely frame both the kind of

resources that will be devoted to tackling vulnerability and the expectations placed upon the beneficiaries of such resources.

LIVES research has emphasised the high relevance of one such impactful discourse in the contemporary context, namely, that of social investment (Bonvin & Dahmen, 2017). In this view, social policies should be designed as productive economic investments that will have positive economic returns in the long run. Thus, active labour market programs aimed at training people or increasing their work experience are considered investments because they enhance people's employability and thus their ability to be economically productive in the long run. In the same way, policies supporting the reconciliation of work and family life are presented as profitable investments since they promote women's participation in the labour market. Lifelong learning is the third pillar of the social investment strategy, which aims at equipping people to contribute to economic growth in the long run. This discourse has strong implications, as it conditions access to social benefits and services upon the ability and willingness to develop one's economic potential. A human capital approach lies at the very core of this notion of a 'social investment state' and implies that people must be ready to develop their human or educational capital to enjoy the full extent of social policies. Availability for training, motivation and capacity to do so are presented as prerequisites (Bonvin, 2019), which tends to turn social policies into educational policies (Bonvin & Laruffa, 2020) with exclusionary impact for those who are unavailable (e.g., women with childcare duties), unwilling (e.g., due to previous bad experiences with schooling—Bonvin & Dif-Pradalier, 2011) or unable to train (e.g., those with limited linguistic literacy). This discourse applies to all working-age categories who are considered fit for employment.

Research conducted in LIVES has shown the pervasiveness, in Switzerland, of such a discourse for young adults (from 18 to 25 years old) on welfare. Empirical analysis conducted from 2010 to 2016 encompassed three regional cases as well as a discourse analysis at the national level based on documentary analysis of legislative and administrative documents (also grey literature) and extensive semidirected interviews with policy-makers, heads of public services and local agents. It demonstrated that the target group of young adults on welfare were expected to be in employment or in training and illustrated the coincidence of the norm of autonomy with the requirement of financial independence from social policies (to avoid so-called careers of welfare dependency). Being on welfare is, hence, considered a kind of abnormality (Perriard, 2017a, b). At all policy

levels investigated, whether national or regional, there is unanimous agreement on the necessity of a public intervention regarding this category, with the aims both of dissuading young people from long-term financial dependence on welfare and of supporting an age group perceived as victims of the economic and social crisis (Tabin & Perriard, 2014).

To help young people on welfare (NEETs) reach autonomy, activation programs turning welfare into time-limited scholarships are introduced. The objective is that the acquisition of a professional degree will make these individuals autonomous, i.e., they will be financially self-sufficient (Young, 2003), thus converging towards the standardised life course pattern for their age category. This policy is inspired by the ‘education first’ motto (Bochsler, 2020; Dahmen et al., 2018), which is conceived as the solution to all problems experienced by young people on welfare. It is modelled on the norms of the standardised life course (Kohli, 1987, 2007; Levy et al., 2006), with all the ensuing problems for people, especially women, who do not fit into the expected tripartition of the life course, i.e., an educational stage, a full-time working stage and retirement. The newly adopted legislation makes it possible to move from a negative image (welfare recipient) to a positive image (trainee). The training of NEETs must begin as soon as they start receiving welfare, and a ‘coaching’ intervention is developed that aims to create behavioural dispositions and the necessary know-how for career development. Young beneficiaries will, for example, be taught how to manage their emotions, gain self-confidence, show motivation and build a professional project or acquire sufficient school and administrative knowledge. The development of resources, in the form of educational capital and individual know-how, is at the core of this policy frame. The training programs designed for NEETs invite them to acquire what can be called ‘full autonomy’. Participants must gain enough educational capital to access a job with a sufficient salary to meet their vital needs. They are accompanied through their training by a coach and benefit from social interaction and support.

LIVES research has shown the exclusionary impact of such policies, as many NEETs do not meet these expectations and must, consequently, make their living with lower benefits and services. As an SLB interviewed stated, young people involved in such programs are perceived as ‘the cream of the crop’. For the others, who have been categorised by SLBs as too vulnerable to enter education or employment, social intervention takes a slower pace (e.g., one meeting every year), and they do not enjoy the potential benefits of social interaction and support. This difference

demonstrates how an official discourse based on a rhetoric of inclusion may translate into two-tier welfare practices, where the most compliant beneficiaries (those who are available, willing and able to participate in 'education first' programs) are privileged. Dimensions connected to gender (especially regarding availability), migration and family background are particularly relevant in this respect and illustrate the potentially deleterious impact of misleading norms in social policies (Widmer & Spini, 2017).

Interestingly, research conducted in LIVES has also focused on two other categories, to which the norm of autonomy and the notion of social investment do not equally apply. The case of poor single working mothers belonging to the category of the working poor was investigated in one specific regional setting based on in-depth, semidirected interviews with social workers and beneficiaries, together with an analysis of relevant documents. In this case, the social problem to be solved is attributed to the inability of 'single mothers' to 'reconcile' family work and employment (Perriard & Tabin, 2017). The tension between parenthood and employment (Hays, 1996) makes the latter difficult to access in full. According to the legislation of the local state investigated, working mothers must be removed from welfare and receive other—less stigmatizing—financial support in the form of cash supplementary family benefits. To access these, they do not have to increase their employment rate, thus enacting the gendered division of labour in Switzerland, where part-time jobs are mostly characterised as women's work. A 'coaching' intervention is also added to help such women 'reconcile' family duties and employment. Like the case of NEETs, the coaching intervention focuses on individual dispositions, but here the main objective is to push them to accept part-time work. The development of educational capital is not a main concern for this target group. This discrepancy reveals the presence of a gendered notion of autonomy within social programs, which includes the issue of reconciling work and family life as a women's responsibility. Autonomy in this case is not defined as financial self-sufficiency, since families receive a financial income supplement if they enter the labour market, even in a part-time poorly remunerated job. Thus, this policy risks trapping people in working-poor positions. By proposing such a solution, local authorities show that they do not expect this category to become fully self-sufficient, unlike NEETs. As a consequence, this program may leave mothers in low-income jobs and lead them to become dependent on family relationships that reproduce gender inequalities. Furthermore, its beneficiaries lose the support they previously received from social intervention in various

dimensions of their lives. Consequently, further stress may arise from a successful implementation of the program.

Senior workers illustrate yet another situation. This category refers to people who have become unemployed within two years of the official retirement age, meaning 62 years for women and 63 for men. In this case, empirical analysis also focused on one regional setting, using the same methodologies (documentary analysis and semidirected interviews) as for single poor mothers. Senior workers were described by the local state as socially vulnerable and as victims of the labour market situation, with very low chances of professional reintegration. Since there is little hope of regaining employment, the government organises a specific exit from welfare, which is perceived as stigmatizing for this category, because, in their case, being on welfare constitutes a temporary solution before retirement (Perriard & Tabin, 2017). To this end, the government has developed a bridging pension two years before retirement age so that its beneficiaries can leave welfare and regain some 'dignity'. There is no question of training or human capital development for these people approaching the third phase of the ternary male life course (Kohli, 2007). The aid takes the form of a financial transfer, lower than the average wage, without any obligation of employment or activation. No coaching is available either, as the social follow-up is reduced to a minimum and is targeted mainly at accompanying senior workers towards the end of their employment period.

Autonomy for senior workers is not defined as financial self-sufficiency or participation in the world of work. By offering a bridging pension to senior employees, the state shows that it has renounced the standard of autonomy for this age category. In doing so, this approach gives senior workers less stigmatised financial support, yet it also reinforces negative subjective impacts on these people, who have been labelled as too old to be fully autonomous. This labelling is badly perceived by some recipients, mostly men. The modest benefits paid, together with the kind of resignation they entail (i.e., the acceptance that this category is no longer in a position to participate in the labour market), result in ambivalent outcomes for this target group. First, as they are pushed out of the labour market, they lose the dominant social status associated with adulthood, which can cause self-deprecation accompanied by stress. Second, interactions with social workers almost cease, which can have negative consequences for some individuals.

Thus, research conducted within LIVES has shown the diversity of normative expectations underlying social policies and their differential



anchoring in the notions of financial autonomy and social investment. For most target groups, social policies in Switzerland, as in many other advanced capitalist countries, rely on a liberal individualistic conception of autonomy, defined as an acquired set of capacities to live one's life, and are based on the idea that individuals realise such autonomy by gaining independence from others, mainly through employment (Anderson & Honneth, 2005). This approach constructs a misleading idealization of individuals as self-sufficient and self-reliant, which is also based on a lack of consideration for a genuine life course perspective (Widmer & Spini, 2017). This conception fails to conceptualise the neediness, vulnerability and interdependence of all individuals within society. As Anderson and Honneth have shown, 'individuals—including autonomous individuals—are much more vulnerable and needy than the liberal model has traditionally represented them as being'. The mythical character (Anderson & Honneth, 2005, p. 128) of this misleading norm of autonomy acts as a stressor for many people. Empirical analysis has also shown that this view does not apply to all target groups and that other categories, such as poor single mothers and senior unemployed workers, are constructed as unable to attain the standard of full autonomy. Nonetheless, policies designed for these groups can also act as misleading norms and stressors.

### INDIVIDUALS' DIFFERENTIAL AGENCY TOWARDS SOCIAL POLICIES

Empirical work conducted in LIVES has demonstrated that vulnerable people are not passive recipients of social policies. For various reasons, they often do not behave or (re)act as policymakers and people in charge of supervising the implementation of social policies would have it. A study on individuals with disabilities, for instance, revealed how, in a context emphasizing the activation principle, such individuals remain reluctant to take up the benefits and services provided by social programs. Empirical analysis conducted from 2010 to 2015 focused on a discourse analysis at the national level, together with a mixed-methods investigation at the local level that relied on both a sequence analysis of beneficiaries' administrative trajectories and in-depth semistructured interviews with local agents and beneficiaries (Rosenstein & Bonvin, 2020). Despite an increased emphasis on activation in recent reforms of disability insurance in Switzerland, fieldwork observations revealed that the understanding of

these reforms is often misleading among potential recipients. Indeed, many perceived the objective of reducing access to pensions as a disincentive and chose not to take up benefits, at least in the first stage. This decision leads to phenomena of delayed take-up of benefits and services, which runs counter to the notions of early intervention and detection purported in recent policy reforms in this field. Such phenomena illustrate that the issue of non-take-up must be analysed at the crossroads between individual perceptions (of the relevance of social policies, of one's situation and needs, and of how the two align) and official discourses (Lucas et al., 2021; Rosenstein, 2021).

The case of vulnerable youth also offers important insights. As mentioned above, empirical analysis has underlined the importance of the social investment discourse (Bonvin & Dahmen, 2017) for this target group. All the same, all regional programs investigated emphasised the necessity that young people on welfare develop realistic and realizable professional projects. This approach entails a so-called 'cooling out' process (Goffman, 1953) where young people must be persuaded to abandon oversized aspirations and adjust them to the aspirations allowed by 'reality'. In official discourses, SLBs are supposed to enact this 'reality' test, i.e., to decide upon what young people can realistically do. In such a view, young people's agency is denied. Our empirical observations have shown, in a more nuanced way, that young people's agency cannot be fully occluded or manipulated. Facing such 'cooling-out' attempts by SLBs, individuals react in three different ways (Hirschman, 1970): first, complying with SLBs' suggestions (loyalty) either because they are convinced of their relevance, or because they want to access benefits and services and, therefore, accept abiding by the rules of the game, or because they resign themselves to adapting their preferences to institutional expectations; second, voicing their aspirations and trying to negotiate and adjust the content of social interventions as much as possible (voice); third, renouncing benefits and services altogether (exit) rather than submit to conditions they assess as unacceptable. In the case of young people on welfare, observations show that loyalty and compliance (due to conviction, strategy or resignation) are the most frequent behaviours, with some opportunities for negotiation for the least vulnerable young people (Bonvin et al., 2013). In such a context, beyond beneficiaries' inability to participate in social policy design, agency during the implementation of social policies seems limited, as access to benefits and services is largely conditional upon the individual's acceptance of institutional expectations. This does not mean

that there is no space for individual agency, but it signals that such agency is shaped by normative discourses. In contrast, exit and non-take-up, which could open up larger spaces for unfettered individual agency, remained exceptions among our interviewees.

Research conducted within LIVES has also provided evidence of reasoned non-take-up, i.e., non-take-up of benefits and services as the outcome of individual agency and free choice (Leresche, 2018; Tabin & Leresche, 2019). In such cases, non-take-up is envisaged as a refusal to abide by state injunctions. Beyond this individual protest, it can resonate as a call for transforming social policies, placing more emphasis on enabling dimensions (providing resources and contributing to the construction of reserves) and less weight on constraining aspects such as eligibility or behavioural conditions and, most importantly, highlighting the importance of involving beneficiaries in the social policy design process. Ongoing research in LIVES continues to investigate how such reasoned non-take-up is variously conceived and distributed along gender lines.

### THE MEDIATING ROLE OF SLBs

The previous sections have shown the potential gaps between official notions of vulnerability purported within social policies and what happens at the micro level (individual situations and perceptions). Various illustrations concerning youth on welfare, poor single mothers, senior unemployed workers, people with disabilities and reasoned non-take-up have shed light on the consequences of such gaps in terms of vulnerability and resilience and shown how these may take different forms for each target group and each policy. In all cases investigated, a specific category of actors plays a key role in the policy process, namely, SLBs, who are at the crossroads between macrosocial policies and their beneficiaries. SLBs embody the meso level of social policies. This last section of the chapter explores the conditions under which SLBs could contribute to closing the aforementioned gaps and what could help them in this direction. Research conducted within LIVES has shown that three dimensions are key in this respect: available resources and the ability to convert them into more capabilities for beneficiaries; endorsement of a life course perspective by SLBs, in which living conditions and past trajectories are taken as the main points of reference when designing interventions; and spaces for negotiation and participation in which personalised and tailor-made interventions can be constructed.

LIVES empirical research has revealed the relevance of an encompassing conception of the resources provided by social policies. Cash transfers are doubtless an important component, but SLBs also need to devote sufficient time, mobilise adequate competencies, and have appropriate infrastructure if vulnerability is to be alleviated. Such an expansive view of resources may also facilitate their translation into reserves (Cullati et al., 2018) for the long term. In terms of objectives pursued within social policies, three dimensions have been demonstrated to have a potentially detrimental effect for some beneficiaries:

- First, the focus on work- and education-related dimensions of individual trajectories obscures other important aspects of vulnerability and prevents a holistic view of beneficiaries' needs. This limited focus may have negative consequences, e.g., when poor single mothers are pushed to the labour market without due attention to the availability of childcare facilities. Such limitations suggest the need to adopt an encompassing 'life first' approach to social policies rather than a narrower 'work first' and 'education first' focus (Dean et al., 2005).
- Second, a focus on the present state of the person at the expense of the overall past trajectory leads to reductionist views of social interventions, as it only considers a limited portion of the relevant information, which may again translate into inappropriate policies, for example, when emphasis on current unemployability occludes the importance of the migration background or family trajectory. This also entails taking a long-term perspective rather than targeting quick-fix solutions, as SLBs repeatedly emphasised in the case of young people on welfare, for instance.
- Third, an excessive emphasis on individual human capital (the supply side) may coincide with a neglect of dimensions connected to the labour market (the demand side). Such a focus may then act as an undue stressor on people who risk blaming themselves for something out of their reach (e.g., job unavailability).

This threefold enlargement of the policy focus—life-first, life course and demand side—calls for an extension of SLBs' margin of manoeuvre that allows them to include these dimensions in their daily work. It equally invites the creation of spaces of participation and negotiation with beneficiaries themselves to avoid cooling-out effects or paternalistic practices. Such developments would be in line with the objective of closing the gap

between the norms of autonomy underlying social policies and the actual situations and perceptions of vulnerable people.

A randomised controlled trial conducted in 2018 in two Swiss local disability offices was established to test the feasibility and relevance of some of these recommendations. The idea was to provide SLBs with a nudge to adopt a life-course perspective when assessing beneficiaries and deciding whether to give them access to rehabilitation measures. The results, although modest, suggested that a stronger intervention, such as a training program, could be efficient in boosting such a life-course perspective among SLBs (Visintin et al., 2021).

## CONCLUSION

This chapter illustrates the relevance of a multilevel approach to social policies, both in analytical and action-oriented terms. It sheds light on the potential gaps and discrepancies between the various levels involved in social policies and on their implications on the ability of social interventions to reduce beneficiaries' vulnerability. It underlines the key position of meso-level actors in this respect and the importance of providing them with adequate working conditions. Furthermore, it suggests how social policy analysis can provide insights towards a deeper achievement of social policy goals and the role of a life course perspective in this respect. By providing a convincing account of why social policies are often unable to reach their twofold objective of reducing vulnerability and increasing resilience, the approach developed in this chapter shows how a multilevel and life course analytical perspective on social policies can contribute significantly both to the social policy literature—by closing the gaps between most of the existing research works that tend to focus on a single level—and to the design and implementation of social policies that are more genuinely oriented towards the human development of their beneficiaries. Although many issues require further research, our work within LIVES paves the way towards opening a new agenda for a life course-oriented social policy.

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## Vulnerabilities in Local Contexts

*Felix Bühlmann, Katy Morris, Nicolas Sommet,  
and Leen Vandecasteele*

### NEIGHBOURHOODS AS MESO-LEVEL CONTEXTS OF VULNERABILITY

Over the last few years, the LIVES program has developed a theoretical framework that defines vulnerability as ‘as a process of resource or reserve loss or insufficiency in one or more life domains’ (Spini & Widmer, in this volume). When exposed to an individual or social stressor, vulnerable persons do not have the reserves to cope with the stressor and are unable to (rapidly) recover from stress (Cullati et al., 2018). The central concepts in the LIVES approach to vulnerability—exposure to stressors and endowment with resources and reserves—are not purely individual concepts but depend on contextual factors. Usually, these contextual factors are studied at the macro-level; for example, a country’s culture, economic situation or welfare policies have been found to shape the dynamics of vulnerability in daily life (e.g., see Cheung & Chan, 2007). While such macro-level contextual factors undoubtedly exert a critical influence on the risk of

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F. Bühlmann (✉) • K. Morris • N. Sommet • L. Vandecasteele  
University of Lausanne, Lausanne, Switzerland  
e-mail: [felix.buhlmann@unil.ch](mailto:felix.buhlmann@unil.ch); [katy.morris@unil.ch](mailto:katy.morris@unil.ch); [Nicolas.Sommet@unil.ch](mailto:Nicolas.Sommet@unil.ch);  
[leen.vandecasteele@unil.ch](mailto:leen.vandecasteele@unil.ch)

becoming vulnerable, we are all embedded within multiple layers of social relations below the country level. As Elder et al. suggest, individuals are not just national citizens but also residents of particular neighbourhoods and members of particular groups and communities. The local context is an important determinant of social inequality. For instance, living in a neighbourhood with concentrated poverty increases crime and reduces educational attainment, well-being and employment chances. We believe it is important not to neglect these so-called meso-level contexts or local contexts (Ranci, 2009).

According to Spini and Widmer (in this volume), a focus on the meso-level makes us aware that *'vulnerability is not just individual but also impacts close connections, who amplify, share or suppress the effects of stressors and who bring or share needed resources'*. In this contribution, we show how meso-level integration is necessary for the understanding of vulnerability processes. Specifically, we argue that the dynamic between resources and stressors is shaped by the local contexts within which individuals are embedded: in personal networks (that provide support or information), in social groups (that purvey collective identities and meaning), or in neighbourhoods (that structure daily routines and shape the experience of social structures). The moderating function of the meso-level seems particularly important to us as it can not only activate or reinforce processes of vulnerability but also weaken, transform, or nullify the effects of stressors (Vacchiano & Spini, 2021).

In the next three sections, we discuss the added value of the integration of the meso-level for the study of vulnerability. We first show how meso-level labour market contexts can substantially alter the size of the penalties associated with low levels of educational attainment or a more disadvantaged background for young people seeking employment for the first time. Second, we examine the role of local networks and neighbourhood deprivation for unemployment duration. Third, we investigate how people residing in zones with higher levels of income inequality perceive others as being more competitive and how such perceptions can affect their health.

## LOCAL ECONOMIC STRUCTURES AND VULNERABILITY IN THE SCHOOL-TO-WORK TRANSITION

Moments of transition, from one stage of the life course to another, are moments of heightened exposure to stressors. The transition from school or university to the world of work—where young people leave behind the fixed and familiar certainties of teachers, timetables and classes and seek employment—is one such moment (Schoon & Silbereisen, 2009). For some, the process of finding stable employment is a relatively swift and trouble-free affair. Others, however, face long periods of unemployment, inactivity or employment in insecure positions. These experiences have immediate consequences in terms of lost income and delayed independence and are also associated with a host of negative outcomes in middle age, including include higher unemployment, lower wages, worse outcomes in terms of mental and physical health and higher risk of premature death.

The multifaceted, enduring and costly nature of these so-called ‘scarring effects’ is such that there is a clear need to understand who is most vulnerable to ‘bad beginnings’ in the labour market. Sociological frameworks typically view vulnerability through a micro-macro lens that overlooks meso-level influences. The ‘transition regimes’ framework (Smyth et al., 2001), for instance, holds that vulnerability reflects the interaction between the micro-level resources and attributes of labour market entrants and macro-level institutional arrangements, which are assumed to be uniform at the country level (Raffe, 2014). This view offers invaluable insight into the sources of lingering cross-national differences in vulnerability among young people. However, there are also indications that it produces a misleading picture of the individual-level drivers of vulnerability and resilience.

Contrary to the implicit assumptions of much research on the school-to-work transition, uneven processes of economic growth and industrial restructuring have given rise to substantial variation in the number and range of occupational opportunities in any given location. Analysis that reflects the reality of this profound meso-level variation has shown that the local employment opportunity structure can substantially moderate—and, indeed, sometimes even nullify—the size of the youth labour market penalties associated with the core micro-level vulnerabilities of low educational attainment and a more disadvantaged family background.

For example, while individual educational attainment is widely recognised to be ‘the single most important determinant of occupational success in industrialized societies’, our analysis of British Household Panel and German Socio-Economic Panel data showed that the strength of the education-destination gradient varied substantially within the United Kingdom and Germany (Morris, 2021). In strong local economies such as Cambridge and Hamburg, young people obtain employment with relative ease irrespective of their highest level of educational attainment. However, gaps—between the less qualified and between the most and least qualified—appear and grow as local economic performance worsens. On average, it takes young people with low qualifications between one and three months longer to find employment of any sort if they are located in a place of low rather than high labour demand, and the job search time gaps between most and least qualified in weak local economies are substantial (Fig. 9.1).

A similar story emerges when considering the intergenerational transmission of (dis)advantage at labour market entry. Net of educational attainment, young people have an equal probability of finding employment and securing a good first job in strong local labour markets within the UK and Germany, irrespective of their social origins. However, those in weak labour markets such as Hull and Gelsenkirchen are 12-15 percentage points less likely to find employment within a two-year period, and those who do so obtain first jobs that are 5-8 ISEI points<sup>1</sup> lower in occupational status if their parents are care workers rather than secondary school teachers. Young people who are not bumped out of the labour market are bumped down into first jobs that likely offer fewer opportunities for progression over the later life course.

These findings highlight the relevance of the meso-level economic structures within which young people are embedded for understanding who is most at risk of bad beginnings in the labour market. Individual resources are undoubtedly the most important component of both vulnerability and resilience, but meso-level opportunity structures can both amplify and mitigate the risks associated with low educational attainment or a more disadvantaged family background.

<sup>1</sup>The ISEI is the International Socio-Economic Index of Occupational Status created by Ganzeboom et al. (1992). It ranges from a minimum of 16 (unskilled employee) to a maximum of 90 (judge), with higher values indicating higher occupational status and hence a higher location in social space.

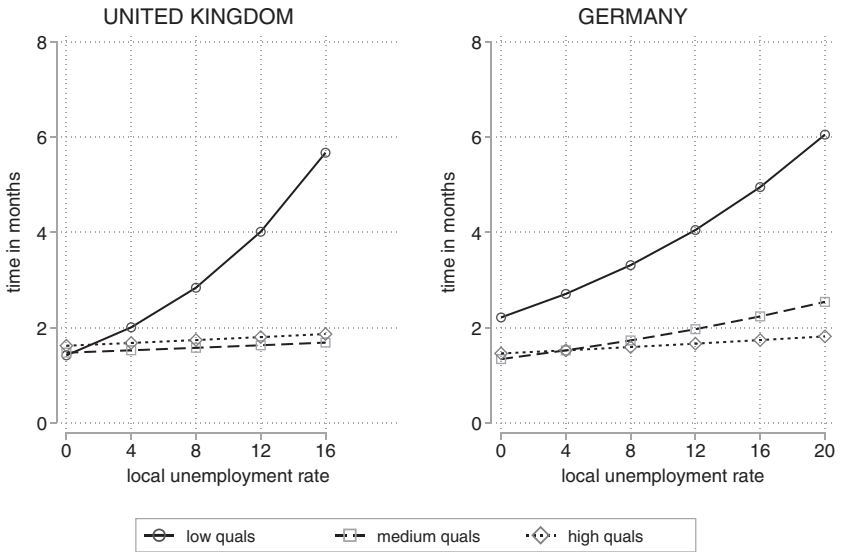


Fig. 9.1 Predicted median time in months to first job in the UK and Germany after leaving full-time education and training

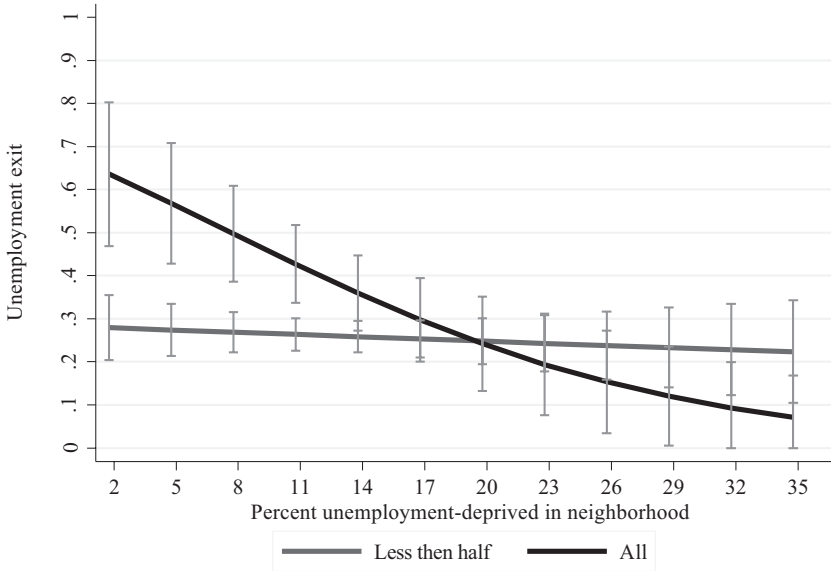
### NEIGHBOURHOOD DEPRIVATION AND UNEMPLOYMENT: THE ROLE OF SOCIAL INTERACTIONS IN THE NEIGHBOURHOOD

Several studies have demonstrated that living in a poor neighbourhood increases the risk of and duration of unemployment (Buck, 2001), independent of one's individual labour market and socioeconomic characteristics (Buck, 2001; Miltenburg & Van de Werfhorst, 2017). In the same vein, relocating residents from more- to less-deprived neighbourhoods improved their employment outcomes in the long run (Mendenhall et al., 2006). While research has convincingly demonstrated that neighbourhood disadvantage affects employment, the mechanisms through which this operates have been less explored. Inhabitants of disadvantaged neighbourhoods may face more unemployment for three main reasons: spatial mismatch, neighbourhood discrimination, and social interactions (Galster, 2012; Sampson et al., 2002). Jobs may be less available in deprived neighbourhoods, and transport connections to places with better employment chances may be bad (spatial mismatch). Job seekers from disadvantaged

neighbourhoods may face discrimination from employers on the basis of the stigma associated with their neighbourhood (*neighbourhood discrimination*), they may lack connections to people who can provide them with information about job opportunities or other help in the job search process, or they may put less effort into the job search due to neighbourhood peer influences (*social interaction mechanism*).

Whereas there is a good account of these mechanisms of neighbourhood disadvantage, it is more difficult to disentangle them in empirical research, and most studies are limited to demonstrating that neighbourhoods matter without explicitly examining the mechanisms influencing their significance. In particular, the social interaction mechanism is simply often assumed to be important without being explicitly measured. Neighbourhood deprivation and neighbours as part of personal networks are rarely examined simultaneously in empirical population-level research (Desmond & An, 2015; Fernandez & Su, 2004). One reason may be that the literature on neighbourhood effects and the literature on network effects have developed largely separately. The neighbourhood effects literature has shown that residential neighbourhoods affect their inhabitants' life chances and choices, but it has rarely included good measures of social networks and interactions (Galster, 2012; Sampson et al., 2002). The social networks literature, by contrast, has examined the properties of social networks and how these affect socioeconomic outcomes, usually without a focus on the geographical location of personal networks (Granovetter, 1995; Portes, 1998). More recent contributions, for instance, from Brändle (2018) or Ganjour et al. (2020), have examined the geographical and structural aspects of personal networks and have shown that these networks are, indeed, often local.

We conducted an integrated study of personal networks and neighbourhoods with population-level data from the UK Household Longitudinal Study, also known as Understanding Society (Vandecasteele & Fasang, 2020). The data include a measure of the proportion of friends who live in the same neighbourhood as well as small-scale information on specific dimensions of neighbourhood deprivation. Figure 9.2 shows the probability of ending an unemployment spell by neighbourhood employment deprivation as well as the share of friends in the local area. The results showed that neighbourhood employment disadvantage prolonged unemployment, but only for individuals who reported that all of their friends live in the same deprived neighbourhood (darker line). By contrast, the predicted probabilities in Fig. 9.2 show that living in an



**Fig. 9.2** Predicted probabilities of exiting unemployment between 2011 and 2012 by neighbourhood deprivation and proportion of friends in the neighbourhood (Vandecasteele & Fasang, 2020)

advantaged neighbourhood with all of one's friends in the neighbourhood improved the chance to exit unemployment.

Consequently, it is not only residing in a disadvantaged neighbourhood but also having social connections there that prevents individuals from re-entering employment. In contrast, neighbourhood location is not associated with unemployment exit if one's friends do not live in the same neighbourhood. Our study is the first to find evidence with population-wide panel data that neighbourhood effects on employment outcomes depend on the location of personal networks. These results thus show support for the importance of the social interaction mechanism of neighbourhood disadvantage. It could be argued that resource-sharing and norm-setting in neighbourhoods exacerbate vulnerabilisation processes in deprived local settings. Hence, at least for employment chances, local connections to other deprived people may add to the cumulative disadvantage experienced by economically vulnerable population groups.

## THE EFFECTS OF LOCAL INCOME INEQUALITY ON PSYCHOLOGICAL HEALTH

Over the last two decades, many countries have seen dramatic increases in income inequality (e.g., see Saez, 2019). Given the scope of this phenomenon, many scholars have wondered whether income inequality acts as a contextual stressor and impairs psychological health (for recent reviews, see Buttrick & Oishi, 2017). However, this body of research has produced mixed results: In particular, the effects of income inequality on psychological health outcomes seem to be largely inconsistent (for a meta-analysis, see Ngamaba et al., 2017).

We believe that one of the reasons for these inconsistencies is that most extant studies have operationalised income inequality at broad levels of aggregation (e.g., national income inequality). However, we know that individuals systematically misestimate the magnitude of macro-level income inequality (e.g., within their countries), whereas they perform much better when estimating the magnitude of meso-level income inequality (e.g., within their ZIP code or municipality; see Johnston, & Newman, 2016: 175-177).

We conducted three series of studies using meso-level income inequality as a predictor, with the aim of resolving some inconsistencies in the literature on income inequality and psychological health. Our theoretical starting point was as follows: In economically unequal (vs. equal) local contexts, the poor and the rich are mechanically further away from one another on the pay scale, which makes standards of income comparison more salient (e.g., the rich are more noticeable in the residential context and become recurrent targets of economic comparison; for empirical evidence, see Payne et al., 2017). As such, meso-level inequality could prompt concerns about one's relative position in the economic hierarchy and induce the perception that everyone around oneself is competitive.

A first series of studies tested the association of meso-level inequality with perceived competitiveness in the United States (Sommet et al., 2019). We asked 2,500+ U.S. residents to report the level of perceived competitiveness in their area on a scale comprising items such as 'In my town/city, it seems that people are competing with each other'; then, we gathered the Gini coefficient of the ZIP code where each participant

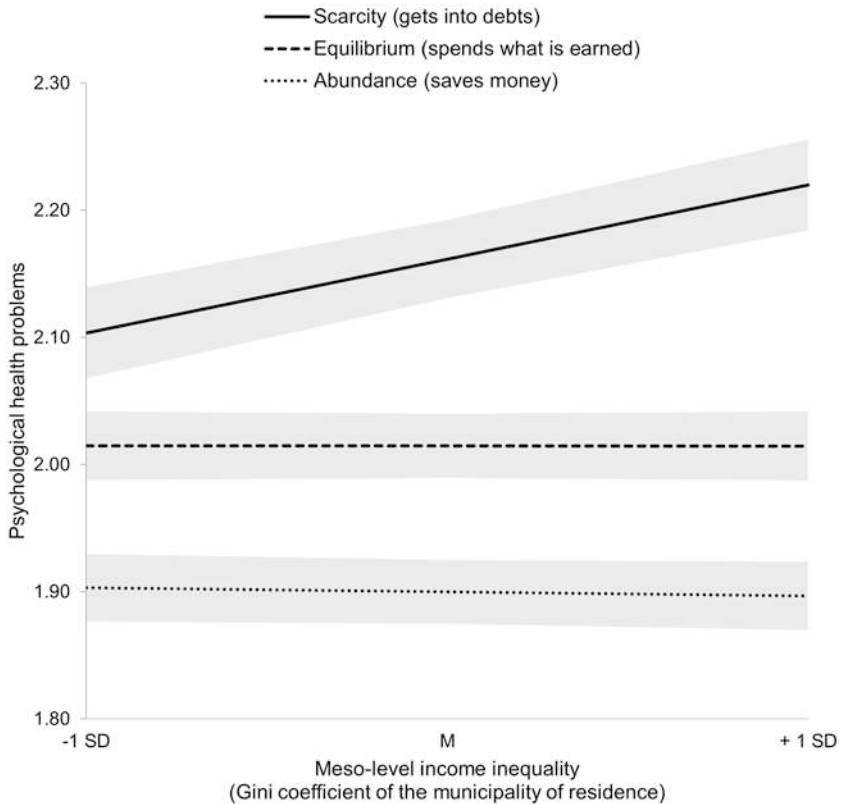


lived.<sup>2</sup> The Gini coefficient was found to be a consistent and robust predictor of perceived competitiveness: The higher the meso-level inequality, the higher the perceived competitiveness.

In a second series of studies, we went one step further and examined the downstream consequences of the inequality-competitiveness link on psychological health (Sommet et al., 2020). Drawing on the LIVES framework (see Spini and Widmer in this volume), we reasoned that the perceived competitiveness induced by income inequality should act as a social stressor and evoke both (i) avoidance-based psychological processes (focused on the risk of falling behind the competition) and (ii) approach-based psychological processes (focused on the possibility of getting ahead of the competition). To test this idea, we conducted a two-year longitudinal study with 1,700+ U.S. residents (median age = 48) recruited through a national volunteer research registry named ResearchMatch (see Harris et al., 2012). The Wave 1 (2016) to Wave 2 (2017) response rate was approximately 75%. We showed that an increase in the Gini coefficient of the participants' areas was associated with an increase in perceived competitiveness over time. More importantly, we showed that this increase led to opposing effects on psychological health: Meso-level income inequality had both a *negative* indirect effect on psychological health via avoidance-based psychological processes (focused on avoiding failure) and a *positive* indirect effect on psychological health via approach-based psychological processes (focused on attaining achievement).

In a third and final series of studies, we sought to examine the conditions under which meso-level income inequality impairs rather than improves psychological health (Sommet et al., 2018). This time, we reasoned that the contextual stressor of perceived competitiveness induced by income inequality should be particularly threatening for individuals with low monetary reserves (i.e., facing financial scarcity: having insufficient monetary resources to cover monthly expenses; Mullainathan & Shafir, 2014). To test this idea, we pooled the responses from the Swiss Household Panel, a nationally representative panel survey that followed approximately 15,000 participants from 1,700+ municipalities over 15 years of assessment. We showed that an increase in meso-level income inequality (i.e.,

<sup>2</sup>The Gini coefficient is an indicator describing the income distribution for a given zone and may range from 0 (perfect equality: each household in the ZIP code has an equal share of income) to 1 (perfect inequality: only one household in the ZIP code has all of the income).



**Fig. 9.3** Effects of meso-level income inequality over the life course on psychological health as a function of monetary reserves

the Gini coefficient of the municipality of residence) over the life course led to an increase in psychological health problems only for people facing financial scarcity (approximately 10% of the Swiss population; see Fig. 9.3).

## CONCLUSION

Our findings, whether on the school-to-work transition, unemployment or psychological health, have one common denominator: They show that meso-level structures such as local contexts or neighbourhoods are of crucial importance to understand vulnerability as a dynamic of stressors and

resources. It is in the local context that social stress is experienced, but it is also at this meso-level that people have access to resources that allow them to mitigate or nullify the impact of macro-level structures or individual characteristics.

In our study on the school-to-work transition, we showed that meso-level structural opportunities and resources crucially influenced how young people are able to handle such stressful biographical transitions—these resources can mitigate or in some cases even nullify individual disadvantages, such as low qualifications. Unemployment is one of the major social stressors of modern societies. In a second study, we showed how the effectiveness of resources connected to personal networks—information about job opportunities or help for the job search—depended substantially on their spatial distribution. In a deprived neighbourhood, those who reported all their friends as also living in the neighbourhood faced prolonged unemployment. Only for those living in a privileged neighbourhood did a high share of the personal network living nearby become a resource allowing them to exit unemployment. High local income inequality increased the perception that everyone around oneself is competitive. This perceived competitiveness can be conceptualised as a social stressor, especially for people living in unequal contexts. Our third case shows that an increase in meso-level income inequality led to an increase in psychological health problems, but only for people facing financial scarcity.

In terms of social policy, this finding means that the local level is particularly suited for interventions to buffer the main macro-sociological risks of vulnerability. It is the level at which people can be empowered to acquire and accumulate resources that protect them from vulnerability in the long term. For instance, policies supporting young people when entering the labour market should be adapted to regional specificities and reinforced in regions with a weak labour market. Regional and local policies, especially in regard to residential policies, should aim at blending populations across economic fault lines. Such an approach will help mitigate situations of vulnerability and reinforce the buffering effects that local contexts may have on social stressors.

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# How Family and Other Close Ties Shape Vulnerability Processes

*Clémentine Rossier, Laura Bernardi, Marie Baersywil,  
Michel Oris, Marlène Sapin, and Eric Widmer*

## INTRODUCTION

This chapter focuses on the effects of *close interpersonal relations* on vulnerability processes. Close relations—family and friends—affect vulnerability processes in three ways (Spini et al. 2017, Bernardi et al. 2019). First, they correspond to differential individual investments in varying life domains. These investments are highly gendered, as women invest more in close relations than men, especially in the family domain. Second, close

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C. Rossier (✉) • M. Baersywil • M. Oris • E. Widmer  
University of Geneva, Geneva, Switzerland  
e-mail: [clementine.rossier@unige.ch](mailto:clementine.rossier@unige.ch); [Marie.Baeriswyl@unige.ch](mailto:Marie.Baeriswyl@unige.ch); [michel.oris@unige.ch](mailto:michel.oris@unige.ch); [eric.widmer@unige.ch](mailto:eric.widmer@unige.ch)

L. Bernardi  
University of Lausanne, Lausanne, Switzerland  
e-mail: [laura.bernardi@unil.ch](mailto:laura.bernardi@unil.ch)

M. Sapin  
FORS, University of Lausanne, Lausanne, Switzerland  
e-mail: [Marlene.Sapin@unil.ch](mailto:Marlene.Sapin@unil.ch)

relations act as meso-level resources, providing emotional or instrumental support (of varying quality) and economic transfers that individuals use to advance towards their life goals. In times of shock, such resources act as buffers. Close relations also shape individuals' life goals, acting as meso-level normative references. Third, close relations accompany individuals throughout the life course (Spini & Vacchiano 2021) and constitute long-term investments or lasting constraints.

Close relations include both intimate family members and close friends. Together, these relations constitute the *personal networks* of significant others; however, *family ties* have specific properties. Family configurations of ties, as stressed by anthropologists, are created through filiation and conjugality (Sahlins 2013). Kinship shrinks or expands following diverse demographic events (birth, cohabitation, marriage, departure of children, union disruption, death). Moreover, rights and obligations are institutionalised within family ties, notably through laws, albeit sometimes informally (i.e., cohabiting unions and step relationships). Exchanges within family ties can be non-reciprocal, which is not the case with elective ties. Finally, family ties that do not enter personal networks are not dissolved as easily as friendship ties.

Family ties are thus likely to affect vulnerability processes differently from other close ties. First, the transmission of socioeconomic privileges (pensions, heritage, shared consumption, loans, investments) remains confined within families, especially well-endowed ones (Pitrou, 1992; Coenen-Huther et al., 1994; Künemund et al., 2005). Other close relations only occasionally provide useful information or bypasses. Second, family-transmitted roles and values are incorporated during childhood, thereby triggering stronger emotional reactions later (La Rossa & Reitzes, 2009). Moreover, poor relational style during childhood and trauma powerfully shape individuals' psychosocial skills and their capacity to create ties later. Third, and because of the aforementioned aspects, emotional and instrumental support is still mainly assumed by family members, especially when needs are high, although other close relations can also provide it. This limitation can have negative implications if family ties are of poor quality (Bengston et al., 2002). By contrast, purely elective ties are undone more quickly when conflict arises and are thus of better quality. The upside of the durability of family ties is that non-close family ties constitute a reservoir of close relations on which individuals can draw to create new close relations in times of need.



In what follows, we examine these hypothesised differences in how close family and close friends affect vulnerability processes by using three longitudinal datasets collected within LIVES, *Social Stratification, Cohesion and Conflict in Contemporary Couples*, *The multiple paths of lone parenthood*<sup>1</sup>, *Vivre/Leben/Vivere*<sup>2</sup>, and a stream of work leading to the construction of the network module of the *International Social Survey Programme 2017*<sup>3</sup>. The first three studies focused on the role played by family and other close relations over time for long-term couples, lone parents, and ageing individuals in their fight to overcome difficult events or maintain their level of well-being. The fourth stream of work examined the role played by conflict and support in personal networks (friends and family) of adults facing life events. In what follows, we examine the results of this last study before proceeding to the three longitudinal studies.

### CONFLICT AND SUPPORT IN PERSONAL NETWORKS AFTER LIFE EVENTS

One of the first task within LIVES was to explore the active changes in network composition which take place during life transitions or when facing vulnerabilizing events, as a way to secure sufficient relational resources (Sapin, 2014). Some individuals exclude extended family members from their personal networks and refocus on the nuclear family. In contrast, other individuals recompose their networks by including more distant family members (blood, alliance) with whom they have an affinity. Some individuals with fewer or poor quality family links nevertheless receive support from close relations by pluralizing their personal networks with the inclusion of friends and colleagues as well as health professionals, who provide links to resources in other groups (Widmer, Kempf, Sapin, & Galli Carminati, 2013). In general, the more diverse (nuclear family, extended family, friends, colleagues, health professionals) the personal network is, the more efficient the support. For instance, new parents heavily mobilise their personal network during the most demanding and stressful months following the birth of a child, when tremendous psychological and concrete adjustments are needed (Sapin & Widmer, 2016). In addition to the direct positive effect of diverse personal network compositions, such

<sup>1</sup> <https://www.lives-nccr.ch/en/page/multiple-paths-lone-parenthood-n3912>

<sup>2</sup> <https://cigev.unige.ch/vlv/>

<sup>3</sup> <http://w.issp.org/menu-top/home/>

diversity also increases network density, which bolsters the safety net of emotional and instrumental support. However, individuals who add their extended family as members in their personal networks, such as parents and parents-in-law, see a particular elevation of network density. After this first period, parents return to a more stable role organisation; the mobilisation of family and friends and their collective support tends to diminish. Larger and less dense personal networks (with links to other groups) then prove especially useful by providing more punctual and diverse assistance.

We also showed that families and personal networks can yield stressful and negative interactions among their members that contribute, in their own way, to poor psychological health, a negative impact which is exacerbated during life crises. We found that it is the overall ‘feel and look’ of such networks that matters, that is, the interdependent patterns of support and conflict, more than the amount of conflict (Sapin, 2014). Vulnerable individuals (showing higher levels of psychological distress) are embedded within networks in which family support triggers an overload situation; the individual often holds a central position in the family networks from the perspective of conflict (Sapin, Iglesias, & Widmer, 2016). Strains and conflict develop due to the increasing pressure exerted by life crises, not only on vulnerable individuals but also on members of their family or personal networks (Sapin, 2014; Widmer, Girardin & Ludwig, 2018). The limited resources circulating in these personal networks increase the competition between their members and do not allow them to fulfil members’ daily needs, especially when stressful events or transitions occur (Sapin, 2014; Sapin, Widmer, & Radulescu, 2008). Individuals in such vulnerable situations not only cope less well with stressful events but also perceive events to be more frequently stressful and have a lower level of social support in their personal networks while also not having the economic or cultural resources that might compensate for such challenges. The pressures of their life contexts are high, while their relational and other reserves are low or even, sometimes, absent. Such a situation makes them unable to navigate their life trajectories and to cope with the requirements and goals of each life domain.

To explore some of these patterns across national contexts, we developed a module to collect innovative data on personal networks and social resources for the *International Social Survey Programme* (ISSP) under LIVES leadership and expertise (Sapin, Joye, Wolf, et al. 2020; Joye, Sapin, & Wolf, 2019). Preliminary analyses of these data show that in high-income countries, support and socioeconomic resources that matter

for well-being more often come from the family, while in middle- and low-income countries, the resources have a more mixed origin; conflict has everywhere the strongest relation to well-being (Brule, Sapin, Rossier, 2020).

### THE PERSONAL NETWORKS OF CONJUGAL PARTNERS

Previous research has long shown that partners with larger and more overlapping networks, on average, perform better throughout their life together on a variety of outcomes associated with well-being than those with smaller and less overlapping networks (Kearns & Leonard 2004, Widmer, 2004). LIVES conducted the longitudinal *Social Stratification, Cohesion and Conflict in Contemporary Couples* study (Widmer et al., 2017) to explore the lesser-known influence of life course factors on couples' personal and family networks. Vesela (2017) showed that distinct types of conjugal networks are developed, from the least to the most supportive, with an unequal presence of friends and family members from both partners. Supportive networks decreased the likelihood of experiencing later low conjugal quality, hence confirming the overall positive impact of network support on couples. However, when a nonnormative event occurred, such as falling into unemployment, couples who were part of supportive networks were more likely than others to develop conjugal dissatisfaction and instability. These findings suggest a counterintuitive vulnerabilizing effect of supportive networks when couples are confronted with some important nonnormative stressful events. Altogether, the empirical results suggest that a small rather than large reserve of family members and friends and low levels of contact and support may better buffer stress associated with experiencing socially frowned-upon events, whereas supportive networks may in such circumstances create further stress that weakens couples because of their interference (Julien et al., 1994).

The personal and family networks of conjugal partners are impacted not only by nonnormative events but also by expected and positively defined life transitions. Our data underlined the overall stability of interaction models between partners throughout the years (Widmer, Kellerhals, Levy, Gouveia, 2017, Schika, 2015). However, change can be noticed in partners' personal networks. Because partnerships occupy a central position in the social lives of individuals and their self-concepts, they provide a strong impetus for couples to merge their respective personal networks of

close family and friends into a larger, shared social network in the early stages of family life (Kalmijn, 2003). Spouses whose households experienced empty nesting and retirement were more likely to report shared networks and shared personal contacts with their partner than those who did not experience such transitions (Cohn-Schwarz, Roth and Widmer, 2021). In other words, both transitions were associated with increasingly shared social interactions and friendship networks between spouses. The results are congruent with a series of mechanisms that account for the continuity of self-identity and well-being in later adulthood across life transitions and role losses. Because partners belong to each other's convoy of significant relationships (Antonucci et al., 2013), their network members tend to become closer (their network tends to overlap increasingly) as partners separate from peripheral ties when constraints associated with work and children dissipate. Because the transition to an empty nest and retirement entail disconnections from central face-to-face activities associated with paid work and raising children, more importance is placed on the partnership as a dimension of life continuity. Consequently, the time freed by role losses appears to be spent socializing with the partner and the couple's associates. Such changes in the shared personal networks of partners have beneficial effects for partners and lead to improvements in the spousal relationship (Kearns & Leonard 2004, Cornwell, 2012).

### LONE PARENTHOOD: VULNERABILITY AND SUPPORT

Focusing also on less normative family configurations, LIVES documented the trajectories of lone parents and their close relations as well as the interplay between this micro relational dimension and the macro dimension of institutional support. Lacking a partner to share economic and parental burdens, lone parents—and lone mothers in particular—are often poorer and more vulnerable in terms of health and income and are, on average, more socially isolated (Bernardi et al. 2018; Struffolino & Bernardi 2017). A few studies have examined the changing personal networks of mothers during the two years following divorce and found that despite women experiencing a significant decrease in network size and social support, the primary and most supportive members of their networks—family and friends—remained stable (Duffy 1993). Research that has focused on the agency and coping competencies of lone mothers and the role of support from family and friends has shown that lone mothers are rarely fully isolated (Niepel 1994; Lumino et al., 2016). Bernardi and Mortelmans

(2018) investigated the personal network of the most economically vulnerable lone mothers—those who were unemployed or receiving social assistance—as well as the ways in which the web of relations they were embedded in contributed to their well-being (Keim 2018). The findings showed a large variation in the number and composition of personal contacts and identified four kinds of networks: networks dominated by the family of origin, networks centred on a couple relationship, extended networks, and very restricted networks. Different types of networks were related to well-being in complex ways. Network composition was both a condition for support but also a consequence of the lone mothers' strains. Diverse larger networks, displaying the woman's own or her partner's family of origin or more heterogeneous and multiplex relations, were associated with higher well-being than other configurations. However, in most cases, the association was mediated by the lone mother's perception of the relational qualities of the single ties: only the absence of conflictual ties and the presence of adequate support fostered well-being (Keim 2018).

The most salient relationships for lone parents, besides that with their children, are the relationships with the children's biological father and that with a new partner. The relationship with the father of the children, when there is a relationship at all, can be legally, emotionally, and socially sustained by child maintenance and custody arrangements, emotional exchanges or the common social ties of the previous couple. A new romantic partnership, if started, may represent a further family transition (towards step and blended families) that brings about a role reconfiguration for the lone parent and their children. We examined the relationship between the biological father and the lone mother in its interaction with family policies and legal regulations in Switzerland (Larenza 2019). Overall, the conclusions stressed that lone mothers facing financial and custodial neglect from children's fathers do not always make full use of their rights. Some lone parents integrate their ex-partners' financial hardship into the negotiations on maintenance payments or do not react to violations of maintenance agreements already established to avoid repercussions to the father-children relationship. The relationship between repartnering and lone parents' health has also been a matter of empirical investigation. A new union formation could foster wellbeing because couples will possibly share and pool at least some resources, such as income and social ties (conjugal resource model: Williams, Sassler, & Nicholson, 2008), and, particularly for lone mothers, potentially partially share parental care responsibilities. In contrast, repartnering could also challenge wellbeing because it

represents a change in the relational status quo, thereby potentially creating stress even if temporary (crisis model: Amato, 2010). Repartnering may be particularly stressful if it deteriorates the relationship with the children's biological father (Berger, Cancian, & Meyer, 2012). Drawing on the resources and crisis models and on the comparative dataset of the Harmonized Histories, Recksiedler and Bernardi (2019) examined the relationship between lone mothers' repartnering and health in three welfare contexts in Europe, according to type of family policy: the dual-earner (family policy supporting gender equity and women's work), market-oriented (domestic and parental work outsourced to the economic market), and general family policy model and support for lone parents (less gender progressive family policy). They uncovered six distinct repartnering trajectories that varied regarding the timing, type, and stability of higher-order unions for different cohorts of lone mothers. The policy support context is related both to the shape of the repartnering trajectories and to the association of such trajectories with mental health. Unstable repartnering was more frequent in market-oriented contexts, while contexts with more comprehensive family support fostered more stable repartnering. Possibly, the lack of public family support induces lone mothers to quicker transition into a new union. Since a more dynamic union trajectory is also more common in market-oriented societies than elsewhere, mothers experiencing unstable repartnering reported enjoying better health if living in these policy contexts rather than in general or dual-earner contexts. Altogether, the findings suggest that even if higher financial needs and less generous welfare may translate into more unstable repartnering histories, they seem to have positive spillover effects on mothers' health.

#### PROGRESS AND INEQUALITIES IN THE EVOLUTION OF FRIENDSHIP IN OLD AGE

Finally, we examined the role of friendship as a resource in ageing to tackle vulnerabilities, which various studies show has important effects, for instance, in its impact on older adults' wellbeing (Ihle et al. 2018). In this context, we were more particularly interested in the structural factors of friendships (Baeriswyl & Oris, 2022), a dimension that is still under-documented in the older-age friendship literature. Because of the individualised characteristics (elective and flexible ties) of friendships,

researchers have tended to forget that friends are not distributed evenly across socioeconomic groups, nor are the resources required for the maintenance of these ties (Stevens & Van Tilburg, 2010; Suanet et al., 2013).

From a macro sociocultural perspective, we confirmed that the prevalence of friendship, a type of tie that theoretically meets the ever-increasing need for the expression of individuality that is a feature of our modern societies, has increased among individuals 65 years and older in Switzerland from the late 1970s until the end of the first decade of the new millennium (1979-2011) (see also Baeriswyl, 2017). Moreover, our analyses showed that a close friendship increase is part of a broader lifestyle change after retirement (the trend towards active ageing), with increasing social ties and engagements outside the family, in which close friendship can arise and be maintained.

However, at the individual level, it appears that close friendship is not equally distributed among the older population. In particular, having a close friend remained, in 2011, less likely among less educated people. In addition, because over these three decades the number of older adults with limited educational resources fell from a clear majority to a minority, the latter became even more marginalised compared with the rest of the population, who have taken advantage of the considerable progress that has occurred since the mid-20<sup>th</sup> century in access to education and in health conditions. Moreover, better-educated older adults have generally benefited from the increase in a more socially active lifestyle outside the household after retirement. This observation stresses the accumulation of advantages in which friendship resources are involved. However, our comparison across recent historical time of the structural determinants of friendship also showed a growing differentiation between men and women, with increases that benefited women more, which is not in line with the idea of an accumulation of dis/advantages. Older women are usually seen as more vulnerable because they tend to have fewer resources in terms of health or income and are at greater risk of residential isolation (which has been confirmed through our own data; see Baeriswyl, 2018; Oris et al., 2017). Nonetheless, they have a greater chance to benefit from this important socioemotional resource of friendship. This finding is in line with results in other Western countries (Arber et al., 2003; Chambers, 2018) stressing older women's advantages in terms of social relationships and some rewards of investing in this life domain.

These results highlight the various aspects of close friendship inequalities, whatever indicator we use to measure friendship, for example, the

visiting of friends or acquaintances (Baeriswyl, 2017; Baeriswyl & Oris, 2021). Moreover, we can contrast these results with those for family participation (visiting of family members): while both participation types are significantly linked to the satisfaction with life of individuals 65 years and older in Switzerland, family participation does not appear to be stratified in terms of gender or socioeconomic status. On the one hand, these results confirm the importance of involvement in close ties—kin and non-kin—for subjective well-being in older age, but on the other hand, they stress the particularly unequal dimension of friendship: As outlined above, socially better-off individuals are more prone to have elective friendships.

Overall, the various results obtained within LIVES stress the tension between progress and inequalities in friendship evolution in old age. While an increasing number of older adults can benefit from friendship, its availability is not equally distributed (by socioeconomic status and gender), notably in contrast with other close ties that are family ties. In this context, and in parallel with a more general evolution towards a post-retirement lifestyle that is more participative and open to the outside world, friendship integrates a trend involving increasing distance between wealthy and healthy older adults and those who have not benefited from the progress of recent decades and, on the contrary, have accumulated penalties across their life courses. However, our results underline the complexity of the inequalities linked to this relational resource regarding the dis/advantages accumulation hypothesis, in which socioeconomic inequalities are not combined with gender inequalities since women are more likely to develop elective friendships than men. This complexity highlights the importance of examining the issue of intersectionality in more depth in future work.

## CONCLUSION

In this chapter, we discussed the distinct role of two types of close relations on vulnerability processes: family ties versus friends. The research discussed in this chapter has shown that the ambivalent and sometimes negative (i.e., resource depletion) aspects of family relationships emerge, in particular, in situations in which other key resources (including friendship ties) are missing, typically with the occurrence of stressful life events. Conversely, negative family events are more quickly overcome when sufficient resources (including friends) are available. Interestingly, some negative life events, such as job loss, are better dealt with through sparser



personal networks. By contrast, normative life events act as densifiers or enlargers of both elective and family networks.

LIVES ‘vulnerability life course’ framework enabled us to uncover some of the conditions in which family relations become negative/remain positive during the life course process, and some of the situations in which friendship relations contribute to well-being and help overcome life’s hurdles. On the whole, the results obtained show that poor quality family relations and friendships deficits tend to reflect and amplify socioeconomic and structural inequalities, although there are exceptions. Further research could focus on the numerous functions still assumed by close families ties today -despite the de-institutionalizing of conjugality, the diversity of family trajectories, and the greater mobility and digitalization of society-, on the key role played by friendships in promoting supportive family links, and on the ways public policies could help individuals create resilient family and personal ties.

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## The Many Faces of Social Connectedness and Their Impact on Well-being

*Adar Hoffman, Anahita Mehrpour,  
and Christian Staerklé*

Over the last decade, different theoretical frameworks have been developed to account for the impact of social connectedness on individual outcomes such as subjective well-being and mental health (Santini et al., 2015), particularly approaches based on social identity theory (Haslam et al., 2018), social networks (Smith & Christakis, 2008), and social capital (Ehsan et al., 2019; Helliwell & Putnam, 2004). In this chapter, we review research that describes how such social connectedness approaches are rooted in psychological (Holt-Lunstad et al., 2010; Rook, 2015), social-psychological (Haslam et al., 2009; Jetten et al., 2017) and sociological (Putnam, 2000; Szreter & Woolcock, 2004) traditions. We review conclusive evidence regarding the links between social relations and well-being and discuss how these links intertwine in the contextual dynamics of vulnerability. Our contribution is thus concerned with the multilevel perspective advocated in the life course model of vulnerability that

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A. Hoffman (✉) • A. Mehrpour • C. Staerklé  
University of Lausanne, Lausanne, Switzerland  
e-mail: [adar.hoffman@unil.ch](mailto:adar.hoffman@unil.ch); [Anahita.Mehrpour@unil.ch](mailto:Anahita.Mehrpour@unil.ch);  
[christian.staerkle@unil.ch](mailto:christian.staerkle@unil.ch)

suggests analysing the dynamics of vulnerability across three levels of analysis: the person, the group and the collective (Spini et al., 2017). Further developing this multilevel view of vulnerability, we examine interactions between group-based resources and individual stress and well-being as a function of different forms of social connectedness.

In the first part, we summarise the key arguments of this multilevel approach in terms of the processes that relate the collective-relational (i.e., networks, identification with social groups) to the individual-psychological (i.e., well-being, mental health). Across disciplinary frameworks, there is a consensus that social connectedness is generally seen as a protective resource and is thus associated with positive individual outcomes such as resilience, prevention of physical and mental health issues and improved subjective well-being and life satisfaction (for a review, see Holt-Lunstad et al., 2010). Under some circumstances, however, these positive effects weaken or disappear (DeMarco & Newheiser, 2019; Villalonga-Olives & Kawachi, 2017). In the second part, therefore, we discuss how these approaches view the boundary conditions of these processes in relation to the dynamics of stress and resources as the basic components of vulnerability processes (Spini & Widmer, 2022). We review research that explains contextual variation in the relation between connectedness and well-being as a function of social conditions such as negative and stigmatised social identities (Begeny & Huo, 2017), weak social relations (Cheng et al., 2018), and structural inequality (Bakouri & Staerklé, 2015). In the last section, we offer an integrative approach that brings together the different disciplinary approaches to social connectedness as a novel contribution to the multilevel perspective of life course vulnerability (Spini et al., 2017).

## HEALTH AND WELL-BEING: FROM SOCIAL NETWORKS TO SOCIAL IDENTITIES

Social connectedness refers to “*the degree to which a person experiences belongingness, attachment, relatedness, togetherness or entrenchment in one’s social relationships. It refers to subjective feelings and attitudes towards oneself in relation to the social context, rather than to specific relationships*” (Santini et al., 2015, p. 54). By this definition, social connectedness is a meso-level concept that inhabits the intersection between the social context at the macro level and the self at the micro level. In the following section, we examine how different multilevel approaches conceptualise the link between social connectedness and individual well-being.

### *The Social Network and Social Capital Approach*

All individuals are part of multiple social networks throughout their life course. These networks may include inherited connections, such as in family networks, or chosen connections with individuals from different backgrounds. These networks have direct and indirect effects on members' attitudes, beliefs, and behaviours (Vacchiano & Spini, 2021). Social networks are a way of thinking about social life through a lens that focuses on the relationships among the entities that comprise the system (Scott, 2017). As social networks represent relationships (ties) among people (nodes) in groups, they are quintessential grounds for the empirical study of social relationships. Social Network Analysis (SNA) enables the systematic study of network structures and their impact on various outcomes (Clifton & Webster, 2017; Rosenquist et al., 2011) through processes such as 'social contagion' of psychological and emotional states (Smith & Christakis, 2008). Societies and communities in which people are well connected have been shown to possess greater levels of prosperity, health, and subjective well-being (Helliwell & Putnam, 2004; Putnam, 2000). Consequently, overall, people benefit from their involvement in these webs of relationships.

Two aspects of social networks account for their impact on individual well-being. On the one hand, social networks are viewed as *structures* consisting of ties or edges between actors and entities (Clifton & Webster, 2017). For example, *homophily* is a relational-level indicator of the quantity of ties with similar network members (McPherson et al., 2001). In a study with adolescents, Baggio et al. (2017) assessed homophily patterns related to mental health. Homophily patterns showed that participants with low mental health had fewer connections, but also were more likely to have ties with similar participants having poorer mental health. *Density*, the proportion of ties that actually exist relative to the number that could potentially exist, suggests that dense social networks are associated with positive outcomes for individuals, such as better integration and cohesion (Walker, 2015). Last, *centrality* measures how well connected a person is to the rest of the network (Girardin & Widmer, 2015) and has been shown to act as a stress buffer because it is associated with increased access to resources (Berkman et al., 2000). Nonetheless, although being well connected is generally beneficial, this is not always the case. In the context of transition to university, for example, Mojzisch et al. (2021) showed that occupying a central position in the network was associated with greater



stress for students weakly and moderately identified with other students. These findings imply that being well connected in a group, in the absence of a shared social identity, leads to unpleasant obligations and social pressure. However, centrality effects on stress are inconclusive, as centrality may, at the same time, lead to greater access to resources.

On the other hand, social networks are viewed as *resources* in terms of the *social capital* that the connections bring about (Widmer et al., 2018). The pioneers of social capital research, Coleman (1994) and Bourdieu (1986) conceptualised social capital as a resource available to individuals resulting from group belonging and other social relationships. From this resource perspective, maintaining enduring networks of relations enables access or mobilisation of resources through the ties that can generate a return for the actor (Lin, 2002). Subsequently, Putnam's (2000) work conceptualised social capital as social networks defined by associated norms of reciprocity and trustworthiness. In a multilevel approach, networks are meso-level structures that link *agency* and *structure*, understood as a space between micro and macro levels of analysis from which both constraints and opportunities arise (Vacchiano & Spini, 2021). This meso-level conceptualisation enables to link the value of social networks with individual health and well-being outcomes.

Investigating network composition and the structural position of individual members leads to a distinction between the resulting *bonding* and *bridging* social capital. These terms refer to the idea of horizontal versus vertical network ties, respectively. In this sense, bonding social capital refers to horizontal relationships, such as family, relatives, friends or colleagues, whereas bridging social capital describes vertical ties, such as in work hierarchies or between citizens and civil servants (Ferlander, 2007). Throughout the life course, bonding and bridging social capital play different roles and have both advantages and disadvantages for individuals (Girardin & Widmer, 2015). Bonding capital facilitates coordination, which is an advantage in life transitions and stages such as old age but can also represent an obstacle to autonomy, which is highly valued by the elderly (Cornwell, 2011). Bridging capital is advantageous since it provides opportunities to mediate and control the flow of resources in networks such as in the family context but is highly demanding of the individual in the bridging position (Widmer, 2016).

This distinction between bonding and bridging social capital has been used in various strands of health research concerned with structural health disparities, community health, and personal health behaviours. These

concepts are useful for analysing how the structural positions of individuals shape their general health conditions, behaviours, and the flow of health-related information and resources (Ferlander, 2007). Moreover, bonding and bridging capital have different functional values. While bonding social capital promotes functional and emotional support and is thus vital for *'getting by'*, bridging social capital facilitates access to resources and informational support and is thus vital for *'getting ahead'* (Briggs, 1998).

However, not all social relationships have the same supportive effects from a health point of view. Bonding social capital refers to relations between individuals who see themselves in terms of their 'shared social identity'. Bridging social capital, in turn, develops between individuals who "know that they are not alike in some sociodemographic (or social identity) sense" (Szreter & Woolcock, 2004, p. 655) and is based on less-permanent (e.g., professional) relationships that are highly context specific. It should be noted, however, that this terminology of a *shared social identity* is used here interchangeably with *shared sociodemographic characteristics*, thereby failing to consider conceptual differences in terms of an *objective* versus *subjective* understanding of social identity. Viewing a shared identity in terms of a shared sociodemographic characteristic refers to an objectively defined category membership that is a culturally provided and fixed part of the social structure. A subjective view of social identity, in contrast, is not confined to this classification (Emler, 2005). Rather, it refers to a subjective and contextual definition of selfhood based on a feeling of temporary belongingness within any social category that is relevant in a given situation or period of life (see next section). This objective versus subjective understanding of shared identity therefore serves as a meeting point between social capital and social identity approaches to social connectedness and individual health outcomes.

Empirically, little research has investigated the links between objective and subjective understandings of social connectedness. In a study with college sports club teams, network centrality and density were positively associated with team identification, used as a proxy for well-being (Graupensperger et al., 2020). In that study, network centrality functioned as an objective relational measure that predicted team identification, which is a subjective measure. Another study showed that social networks and religiosity predicted life satisfaction through increased religious identity (Lim & Putnam, 2010). In that study, again, an objective measure—i.e., congregational connections—explained a subjective measure, i.e.,

religious identity, measured as the subjective importance of religion for the sense of self. These studies shed light on the network-identity linkage and target the interrelationships among different conceptualisations of social connectedness and the mechanisms that link them with well-being.

### *The Social Identity Approach*

In considering how social networks impact individual health and well-being, it is necessary to consider how social group and category memberships are subjectively integrated into the self, that is, one's *identification* with social groups. This particular view of the intersection of the social and the individual is based on the social identity approach to health and well-being (for reviews, see Haslam et al., 2018), derived from *Social Identity Theory* (SIT; Tajfel & Turner, 1979) and *Self-Categorization Theory* (SCT; Turner et al., 1994).

According to this *social cure* perspective (Haslam et al., 2009; Jetten et al., 2017), the sense of self that individuals derive from their different group and category memberships (see SIT; Tajfel & Turner, 1979) has the potential to promote health and well-being. Empirical evidence over the past decade has demonstrated the key role of social identification as a psychological resource to cope with a wide array of planned and unplanned life stressors and transitions (for a meta-analysis, see Steffens et al., 2017). Social identification is the emotional valuation of the relationship between the self and the group (Postmes et al., 2013), and identification is a central driving force in the capacity of social groups to determine important health and well-being outcomes (Haslam, Jetten, Cruwys, Dingle, Haslam et al., 2018).

*Social cure pathways* describe the various mechanisms that make social identities a valuable resource for individual well-being, thereby highlighting the protective role of social identification (Jetten et al., 2017). Most prominently, the impact of social identity on well-being is mediated by self-esteem, social support, need satisfaction, sense of control, and self-efficacy (Haslam et al., 2018). In two studies among friendship and army groups, for example, the effects of group identification and social contact on mental health were compared. Group identification had stronger implications for mental health than contact, indicating that mere contact does not necessarily lead to better mental health (Sani et al., 2012). Therefore, what matters for health is less the frequency of contacts than the degree of one's identification with subjectively important groups, which suggests

that group identification is central to the process that leads from social connections to well-being. Another study found that social identity counters depression by facilitating social *support*, providing *meaning* in life, and enabling a sense of *belongingness* (Cruwys et al., 2014). Overall, social connectedness from the social cure perspective is a strong and consistent predictor of mental and physical health in large population surveys (Saeri et al., 2018) and moderately effective in fostering health and well-being in community interventions (Steffens et al., 2019).

### CONTEXTUAL DYNAMICS OF VULNERABILITY

Notwithstanding the general emphasis of the social cure approach regarding the protective mechanisms that link group identification with well-being, these positive effects weaken or disappear under specific circumstances. Social identification with a devalued or undermined group, or situations in which social capital does not lead to positive outcomes, represent such conditions. In such meso-level contexts, social connectedness does not act as a resource for individual well-being, which resonates with the conception of vulnerability as a *'process of resource loss or insufficiency in one or more life domains'* elaborated in the LIVES framework (Spini et al., 2017; Spini & Widmer, this volume). In this view, it is not the lack of resources *per se* that leads to negative well-being consequences. Instead, it is that the resource cannot be optimally mobilised or taken advantage of *within a given context*. In this section, we describe how both the social identity and social capital approaches undergo contextual variations in the protective function of social connectedness. In so doing, we analyse the boundary conditions of social connectedness and well-being and conclude with the necessity of a *dynamic* approach that integrates the contextual interplay between objective and subjective conditions in determining individual outcomes.

In the social identity approach, the capacity of social identification to function as a resource for well-being is constrained by a group-level factor formulated in the social cure paradigm as the *group circumstances hypothesis*. According to this hypothesis, the status and circumstances of the group with which people identify directly impacts well-being. An enhanced or compromised group thus entails, respectively, positive or negative consequences for individuals (Jetten et al., 2017). Identification with low status, stigmatised and discriminated groups may thus exert a negative impact on individual health and well-being (Begeny & Huo, 2017; Schmitt et al.,

2014; see also Haslam et al., 2018). Lacking group self-esteem may also interfere with the beneficial implications of identifying with groups (DeMarco & Newheiser, 2019).

In the context of the transition from high school to university, for example, students from low-status backgrounds benefit less from identifying with the (high-status) student group because their new identities are less compatible with their backgrounds (Iyer et al., 2009). From a life course perspective, transitions in the life course imply changes in social identities, which are more likely to be gradual than abrupt. First, such identities require psychological adaptations that take time to develop. Second, some social identities may drive resistance to the new post-transition identities (Emler, 2005). More generally, perceiving barriers to successful life transitions harms individuals' self-esteem, but this negative effect can be buffered by social identities that connect the self to significant others, termed 'bonding identities' (Bakouri & Staerkle, 2015). Finally, life course transitions often represent simultaneously lost and gained social identities, which are inherently challenging at different stages and transitions of the life course (Spini & Jopp, 2014).

The 'social cure' effect of positive social identities may thus be transformed into a 'social curse' effect for negative social identities (Muldoon et al., 2019). Notwithstanding such burdening effects of negative social identities, they may still be mobilised, under the right circumstances, to drive positive well-being effects. This empowering process has been demonstrated in the context of a group of individuals suffering from acquired brain injury who have been shown to benefit from a common feeling of belonging to this stigmatised group (Muldoon et al., 2019). In a similar vein, a Swiss study showed that perceiving a mental health problem as central to one's identity had positive effects for recovery, but only if patients had felt stigmatised due to that mental health problem (Klaas, 2018). In contrast, a study on migrant detainees revealed that while existing social identities supported them in coping with the distressing situation, these same identities were also experienced as a burden and cause for rejection (Kellezi et al., 2019). These examples point to a complex dynamic in which the negative impact of group circumstances on well-being operates alongside other compensation mechanisms aimed at restoring a sense of positive identity as a function of the social context (Jetten et al., 2017).

One such compensation strategy is strengthening identification with a stigmatised group that then functions as a buffer against the negative implications of group devaluation (see Rejection-Identification-Model;

Branscombe et al., 1999; Schmitt & Branscombe, 2002). However, identification with low-status or stigmatised groups does not occur in a void, as research has shown that identification with low-status groups is dependent on the perceived permeability of group boundaries (Ellemers et al., 1988). Indeed, when individuals perceive that it could be possible for them to move into another, usually higher-status group (i.e., perceived permeability of group boundaries), they may distance themselves from the low-status group and instead engage in individual upward mobility. The perceived properties of the social structure could therefore drive interactive effects between group circumstances and social identification and exert a complex impact on individual well-being.

Research in the social capital approach also provides evidence for the impact of group circumstances on the protective function of social connectedness. Limited bridging social capital, for example, can have negative implications for individual well-being (Szreter & Woolcock, 2004). Another study found differential effects of social capital on well-being as a function of ethnicity and race. The analysis of the impact of bonding and bridging social capital across 40 U.S. communities showed that social capital was associated with lower odds of self-reported poor health. This positive association between community bonding social capital and health, however, was significantly weaker among Black participants and among those who self-assigned to the 'other' ethnic category, compared with white participants (Kim et al., 2006). In a study among residents of an impoverished and racially segregated neighbourhood, bonding social capital was indeed positively associated with mental distress and did not mediate the relationship between economic and environmental stressors on well-being (Mitchell & LaGory, 2002). These findings further show that in severely disadvantaged contexts, social capital may lead to less rather than more favourable health outcomes.

Other factors that may impair the positive effects of bonding capital concern excessive demands for support by other group members, restrictions on freedom due to excessive informal control, exclusion of outgroup members, and harmful effects of norm conformity in general (Portes, 1998). A meta-analysis found such negative associations between bonding capital and health in 44 studies (Villalonga-Olives & Kawachi, 2017). Overall, these studies suggest that bonding social capital, in particular, should be viewed as a 'double-edged' phenomenon that, depending on the context, can have both positive and negative outcomes for individuals.

This short overview of contextual variations of the protective function of social connectedness calls for an integrative approach that focuses on dependencies between group and individual-level effects as well as on the interactions between these levels. As such, our perspective contributes to the general LIVES approach to vulnerability by providing a more detailed understanding of the multilevel nature of vulnerability and by answering the call for an interdisciplinary approach to vulnerability (Spini & Widmer, this issue; Spini et al., 2017). A dynamic approach that views social connectedness as operating at different levels and on different dimensions of objectivity and subjectivity may thus represent the common ground of social identity and social network approaches to individual health and well-being. In the final section, we outline such an approach, which should be able to account for multiple context-dependent processes linking social connectedness and individual well-being.

### A MULTILEVEL APPROACH TO VULNERABILITY AND SOCIAL CONNECTEDNESS

Social connectedness is inherently a meso-level phenomenon that calls for interdisciplinary perspectives to gain a comprehensive understanding of the mechanisms involved in predicting individual health and well-being outcomes. Findings from the social identity approach, social networks and social capital research traditions largely converge on the overall positive impact of social connectedness on individual well-being outcomes. However, these approaches also highlight contextual dynamics of vulnerability that suggest that in some contexts, individuals cannot mobilise social connectedness as a resource for well-being.

Considering these complexities, we conclude by offering a blueprint for an approach to the multilevel nature of vulnerability that aims to integrate these different conceptualisations of the relationship between social connectedness and individual well-being. We identify three organising principles of such a multilevel perspective, defined by its capacity to account for (a) subjective and objective conceptualisations of social connectedness, (b) the within- and between-group nature of social dynamics underlying agency and well-being trajectories, and (c) different types (additive, mediation, interaction, or moderation) of causal relationships between connectedness and well-being.

The first organising principle refers to *objective* versus *subjective* conceptualisations of social connectedness. As we have shown in this chapter, this

distinction characterises the conceptualisation and measurement of a shared identity from a social capital and social identity perspective. Regarding the impact of social connectedness on individual well-being, the objective and subjective can operate in tandem (Sani et al., 2012), indirectly (Lim & Putnam, 2010), in interaction (Mojzisch et al., 2021), or as compensation (Schmitt & Branscombe, 2002). Under conditions where objective circumstances are detrimental to the protective function of social connectedness (e.g., in stigmatised and marginalised groups), subjective strategies can compensate and protect well-being. The protective impact of social connectedness is therefore simultaneously contingent on the *objective* features as described in the social network and social capital approach (with measurements such as density, homophily and centrality) and on the *subjective* understandings and perceptions of group membership as described in the social identity approach (with measurements of identification, salience, and differentiation).

The distinction between objective and subjective understandings of connectedness is tied to the problem of overlapping or confusing terminology employed by different approaches. The terms ‘social identity’ and ‘shared identity’ are extensively used in the social network and social capital traditions, but often refer to mere membership in a category or to shared sociodemographic characteristics. The social identity approach, in contrast, uses the same concepts, but puts forward the subjective sense of self that is derived from (sometimes temporary) belonging to a group and the resulting categorisation in terms of ‘us’ vs. ‘them’. Precise terminology is important because, from the social capital and social network perspectives, the protective factor is actual engagement and involvement in the social group. From the social identity perspective, in contrast, people experience health-related benefits of a given group membership only to the extent that they identify with that group (Haslam et al., 2018).

The second organising principle concerns the within- and between-group nature of social dynamics underlying well-being. While the social network approach is traditionally concerned with the structure and composition of a single ingroup, the functional aspects of differentiation between ingroups and outgroups form a central tenet in the social identity approach. Although network research considers the multilevel and multi-group nature of networks (Lazega & Jourda, 2016; Vacchiano & Spini, 2021), the basic motivation to construe a positive social identity on the basis of comparative intergroup differentiation remains the hallmark of the social identity approach. This emphasis on subjective and perceptual



processes is most evident in the extensive research on the effects of the perceived properties of social structures, particularly in terms of perceived permeability from low- to high-status groups. Such perceptions determine whether individuals engage in individual (social mobility) or collective (social change and social creativity) strategies to improve their identity (Tajfel, 1978) and thus to cope with vulnerability.

These considerations lead us to suggest that these two strategies are likely to be contingent upon bonding and bridging capital, described above. Indeed, bridging social capital describes connections that link ('bridge') people *between* communities, groups, or organisations and thus helps them to 'get ahead'. Bridging social capital therefore implies a degree of perceived (vertical) intergroup permeability and is likely to facilitate individual social mobility strategies. In contrast, bonding social capital describes connections *within* a group characterised by high levels of similarity between group members and strong ingroup identification.

From this view, future research is needed to determine to what extent bonding and bridging social capital could bolster different identity strategies that can be used to compensate for negative social identities derived from low group status or group devaluation. Consequently, well-being can be improved via more positive social identities. If social identification with the ingroup is high, a lack of bridging capital may promote collective strategies that mobilise bonding capital, for example, in social movements and collective action. Lacking bonding capital (i.e., lacking social identification) can be compensated for with bridging capital and lead to individual upward mobility strategies.

The third organising principle of our multilevel approach to vulnerability requires the specification of *different types of causal relationships* between connectedness and well-being. Existing attempts to integrate social identity and social networks in determining well-being outcomes have hypothesised additive, interactive or mediating relationships of these approaches. Additive effects imply that social networks and social identity operate independently, exerting either equivalent or different impacts. Such an additive impact has been shown in friendship and army groups, where identification was a better predictor of well-being than network contact (Sani et al., 2012). A mediating effect, in contrast, implies that a given social connectedness measure impacts well-being indirectly via another construct, for example, when network centrality and density in sports teams are positively modelled with well-being through team identification (Graupensperger et al., 2020). Finally, interactive effects imply

that the impact of one social connectedness conceptualisation is contingent upon the level of another intervening factor. Such a moderating effect has been described in a ‘closed’ network of university students, in which network centrality and social identification interact in affecting stress, suggesting that being central in the group is only beneficial when accompanied by a psychological sense of belonging (Mojzisch et al., 2021).

## CONCLUSION

In this chapter, we have outlined possible avenues of an interdisciplinary integration between social network, social capital and social identity approaches to individual health and well-being from a life course perspective. Our overview has identified many commonalities but also important conceptual differences among these approaches. Combining the different social connectedness conceptualisations requires a careful analysis of the relational and psychological processes operating at each level of analysis, especially at the intersections of the collective and the individual levels, as well as regarding the objective and subjective conceptualisations of social connectedness. The various approaches converge on the idea that any process relating connectedness and well-being must necessarily be analysed as a function of the social context in which it operates, for example, in terms of (perceived) social structure, group status or competition between groups.

Overall, however, our analysis points towards the important explanatory potential of a multilevel and interdisciplinary approach that integrates social networks, social capital and social identity with a life course perspective. This approach should not only be able to account for the multiple context-dependent processes linking social connectedness and individual well-being but also to identify the structural conditions and the social psychological processes through which social capital leads to improved well-being. It is our hope that our multilevel perspective on vulnerability, notably showing the potential of an interdisciplinary and integrated meso-level perspective, proves useful for future life course research.

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## Vulnerability around Health Issues: Trajectories, Experiences and Meanings

*Claudine Burton-Jeangros and Vanessa Fargnoli*

In this chapter, we discuss how vulnerability takes on contrasting and ambivalent meanings when approached at different levels. More specifically, we are interested in how institutional approaches do not necessarily align with the perceptions and experiences of those who are defined as vulnerable. Over the last decades, scientific knowledge, and technical and medical measures have supported the development of the prevention and management of vulnerability. However, despite social and public health interventions, vulnerability reduction remains unequal across social groups. Starting from this mismatch, we focus our attention on how individuals in vulnerable circumstances develop their own strategies and meanings in the context of adversity, along but also against collective definitions of and responses to vulnerability.

In the introduction, Spini and Widmer contrast two main perspectives on vulnerability. The first focuses on individuals having difficulties coping with adversity due to their low resources and their subsequent need for support

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C. Burton-Jeangros (✉) • V. Fargnoli  
Institute of Sociological Research and LIVES Center, University of Geneva,  
Geneva, Switzerland  
e-mail: [Claudine.Jeangros@unige.ch](mailto:Claudine.Jeangros@unige.ch); [vanessa.fargnoli@unige.ch](mailto:vanessa.fargnoli@unige.ch)

from social institutions through different categories of welfare. The second perspective starts from individuals' interpretations of their own circumstances at different stages of their life course, thereby connecting vulnerability with their own definitions of social citizenship and in relation to integration in society. This distinction suggests that "vulnerability" means different things to different people' (Brown 2011, p. 313). Indeed, we propose that these meanings vary depending on people's relationship with vulnerability: as a condition that they ought to protect others as part of their professional role (as health professionals or social workers) or as a personal condition reflecting one's own life trajectory and aspirations. In this chapter, we tackle these contrasting meanings to better understand the complexity of the social processes taking place around vulnerability. We consider that institutional or professional views, on the one hand, and lay or ordinary meanings, on the other hand, are not fully independent. Rather, they are interrelated and mutually influential, notably through social norms.

This discussion will focus on health issues. From a medical and public health perspective, vulnerability tends to be defined through biological conditions, individual characteristics or behaviours (Armstrong, 2014). In this approach, contexts, interactions and life course effects are most often absent. However, the life course perspective invites us to consider how interpretations of vulnerability change over time at the individual level over successive life stages and at the societal level as a result of medical and social transformations (Delor & Huber, 2000; Wadsworth, 1997). These changes are not likely to occur synchronously across levels, thereby contributing to generating divergent views on what vulnerability actually means. In addition, focusing on how meanings and experiences develop over time sheds light on the intersection of agency and structural processes and emphasises the importance of contexts, social norms and interactions in people's understandings of vulnerability.

Based on research conducted on health trajectories in the context of the LIVES research program, the first section shows the importance of paying attention to various understandings of vulnerability and emphasising its situated character related to actors' positions. The second section illustrates the argument in greater depth by using elements from a qualitative study on the experience of HIV-infected women's trajectories (Fagnoli, 2021) to highlight contradictions between their own understandings of vulnerability and its medical framing. In conclusion, we stress the importance to policymaking of defining vulnerability based on people's needs and their own assessments.

## VULNERABILITY AROUND HEALTH TRAJECTORIES

We approached vulnerability through the lens of health inequalities. Along with developments in life course epidemiology, we aimed to contribute to the understanding of why health inequalities remain persistent in high-income countries, despite an overall improvement in population health (Cullati et al., 2018a). Analysing health trajectories implies approaching health as a dynamic feature that, beyond biological ageing, is shaped by a number of exposures, including genetic and biological make-up, family and work conditions, and societal and environmental factors (Burton-Jeangros et al., 2015). Moving beyond associations between individual risk factors and specific diseases, epidemiology has endorsed a life course perspective to account for the long-term influence of lifelong factors on the evolution of health (Burton-Jeangros, 2020). Adopting a cumulative (dis)advantage framework (Dannefer, 2003), empirical analyses of longitudinal data were employed to assess the role of individual socioeconomic resources and institutional resources in how health evolves across social categories. In addition to the influence of childhood and adulthood socioeconomic circumstances over health trajectories later in life (Cullati, 2014, 2015; Cullati et al., 2014a, 2014b), the impact of welfare regimes in moderating health inequalities was also assessed (Sieber et al., 2019; Sieber et al., 2020). Such quantitative analyses inform us about general trends and describe how social determinants shape contrasting health trajectories. They provide important insights into the accumulation of vulnerability as a result of ‘dynamics of stressors and resources across the life course’ (Spini et al. 2017, p. 5). These processes matter not only for individuals’ social life but also for their health. Current developments in epigenetics allow to analyse biomarkers and socioeconomic data jointly and thus to better understand the intersection of biological and social processes in shaping health trajectories (Landecker & Panofsky, 2013).

However, these analyses also present shortcomings. For one, they tend to adopt a top-down view of vulnerability based on definitions formulated by scientists and policymakers of what individuals should do to avoid being in a vulnerable condition. Furthermore, the medical perspective reflects modern individualism, emphasising the importance of individuals’ characteristics and behaviours for health (Armstrong, 2014). In both welfare and public health actions, activation policies have become the preferred strategies to address vulnerability. Next to recommendations to promote social justice, vulnerable people are continuously encouraged to

modify their ‘inappropriate’ behaviours to improve their social and health circumstances. The idea of risk, so common concerning health issues, has promoted this emphasis on individuals’ agency: ‘Being at risk therefore established the perfect machinery for placing the population in a constant state of readiness and awareness in regard their health’ (Armstrong 2014, p. 167). Public health measures advocated in the context of the COVID-19 pandemic have reiterated this focus on individual responsibility regarding risk.

Against this institutional perspective, a number of findings suggest that meanings of vulnerability can vary along contextual and temporal circumstances. People interpret their life circumstances and their capacity to act upon them in light of their own life course, experiences, hardships, and aspirations. In support of this, research dedicated to well-being has shown that additional resources do not systematically improve individuals’ quality of life, as revealed in analyses of the quality of life of successive cohorts of women born between 1916 and 1945 in Switzerland (Burton-Jeangros & Zimmermann-Sloutskis, 2016). Those born more recently reported higher resources but lower quality of life than those born earlier. This discrepancy could result from the contrasting levels of adversity experienced by successive cohorts; women born earlier having encountered more hardships. It could also reflect changing sociocultural expectations among more privileged populations with regard to health and life conditions, hence reducing their perceived quality of life.

In the Parchemins study on undocumented migrants’ health and well-being (Jackson et al., 2019), the quality of life of newly regularised migrants was found to be approximately as high as the quality of life reported by local residents. However, the resources available to both categories are widely unequal (as measured, for example, by average income, ranging between 23,000 CHF/year for undocumented migrants and 83,000 CHF/year for regular local residents). In this context, the motivations underlying undocumented economic migration are likely to shape expectations and aspirations that are clearly distinct from those of people who have resided in Switzerland without having encountered the hardship experienced by migrants who remain undocumented for a long time. The latter are willing to accept their difficulties in regard to their capacity to support their families who remained in the country of origin (Burton-Jeangros et al., 2021).

These findings indicate that the definition of vulnerability is normative, based upon values and goals that are not systematically shared across

societies, across groups and over time. This assertion is further evidenced by the fact that preventive activities tend to increase health inequalities rather than diminish them. For example, it has been observed that the higher uptake of preventive measures (such as not smoking, eating healthy food, and taking exercise) in higher socioeconomic groups tends to reinforce the gradient in health rather than to diminish it (Stephens, 2010). In other words, more privileged people, who are closer to those holding dominant positions in society, share similar worldviews and aspirations that contrast with those of less privileged people. Research on health care renunciation or social aid non-take-up has also emphasised such a clash of expectations and values across social groups. We observed this in the context of the first COVID-19 lockdown in Switzerland in spring 2020. Undocumented or newly regularised migrants engaged in only a limited use of institutional support, despite an important deterioration of their economic circumstances. Such limited use was motivated by their fear of being deported but also by their internalisation of the norm of autonomy and thus of not asking for any outside support, as well as by the shame associated with demanding help (Burton-Jeangros et al., 2020).

Health issues are particularly relevant in discussing contrasting views of vulnerability, since they typically encompass different framings of what it means to be healthy or sick. Medical and public health tend to approach individuals as autonomous, self-responsible agents who try to maximise their health (Petersen & Lupton, 1996; Armstrong, 2014). This framing has, however, been criticised for its overly limited consideration of individuals' socioeconomic resources and living conditions. Furthermore, the life course perspective invites us to consider not only contextual circumstances but also people's own interpretations of what matters to them in terms of health (Burton-Jeangros, 2020). Self-rated health, a commonly used item in population surveys, acknowledges the importance of individuals' own evaluations, especially since many health conditions do not end up in contact with health professionals. Indeed, it appears that this indicator presents important overlaps with more 'objective' indicators of health across cultural contexts (Cullati et al., 2018b). In addition, qualitative anthropological and sociological research has provided useful insights into emic views of health and vulnerability and their contradictions with the perspectives of other social categories, notably those of individuals in professional roles. We consider that these studies, stemming from a different research tradition and usually using ethnographic approaches, are important to provide a more in-depth knowledge of vulnerability. Notably,

they analyse how vulnerability changes over individual life stages, in tight connection with significant others, while considering individual strategies as well as the external constraints and social norms to which they are exposed.

In summary, longitudinal surveys are useful to show patterns in population health distribution and account for the dynamics of stressful experiences and resources available to individuals. However, they offer only a limited understanding of the mechanisms connecting social and biological conditions. The classical distinction among the medical definition of disease, the person's own experience of illness, and the policies framing sickness (Bjørn Hofmann, 2016) illustrates the variability and complexity of meanings attached to health-related vulnerability. In the next section, we elaborate on those contrasting understandings, with elements drawn from qualitative research concerning women living with HIV in Switzerland (Fagnoli, 2021). Health inequality research has shown how important resources are in facing stressors and remaining in good health (Burton-Jeangros et al., 2015). However, we want to emphasise here how vulnerability is also shaped by experiences and interactions and by the interpretation of vulnerable situations as elaborated by the people living them and by others around them (cf. Bonvin et al., in this volume).

### VULNERABILITY EXPERIENCES OF WOMEN LIVING WITH HIV

In the early 1980s, HIV/AIDS emerged as a risk that threatened large segments of the population at a global scale. The first decade following its emergence focused on health education to reduce risk behaviours and thus limit the spread of the virus. In the mid-1990s, antiretroviral therapies (ART) normalised the epidemic by keeping infected people alive, thus reducing their biological vulnerability. A decade later, the acknowledgement that HIV-infected people under regular medical treatment were not presenting risks to their regular partner reduced collective vulnerability even further. Medically, the risk of HIV infection has thus been 'domesticated' (Rosenblum et al., 2012), moving from an unacceptable to an acceptable risk with the 'normalisation' of AIDS (Setbon, 2000). Over the last 20 years, the image of an HIV-infected person as capable of leading a 'normal' life has gained traction. While the biomedical approach did not succeed in curing people living with HIV, it does keep them alive in an intermediate status between health and illness—and thus, in a condition of vulnerability. Next to the medical and institutional framings, which

emphasise the reduction of individual and collective risk, the narratives of women living with HIV who do not belong to targeted groups<sup>1</sup> have revealed how they experienced vulnerability over time.

*‘Treated Body’: HIV under Control*

In the Swiss context, the liberal health model protects individuals (confidential HIV status, access to social insurance in case of incapacity to work) and ensures care for everyone (treatment and medical follow-up reimbursed by mandatory health insurance). At the same time, this system makes individuals responsible for their own health: a ‘good’ HIV-infected patient or citizen is expected to take antiretroviral therapies, available in Switzerland since 1996. He or she takes care of himself/herself by adopting ‘responsible’ behaviours to avoid worsening his or her state of health and further disseminating the disease, since infecting others is sanctioned by law.

From the medical point of view, the ‘treated body’ (Pierret, 2006) represents an HIV infection ‘under control’. Thanks to the efficiency of ART, the viral load becomes ‘undetectable’, which means that HIV has been reduced to such a small quantity that standard blood tests cannot detect it. ‘Made undetectable through treatment’ (interviewed doctor in 2015) has become a medical standard in Switzerland and elsewhere (WHO, 2016).

Medically, ‘normalising HIV/AIDS’ has meant that in high-income countries, the virus has been transformed into a ‘manageable public health problem’ (Rosenbrock et al., 2000). The promise behind ART is the guarantee for people living with HIV to survive and lead a life like everyone else (Squire, 2010). Overall, for the HIV specialists interviewed, ‘being undetectable’ implies that 1) the treatments are taken and effective; 2) there is no risk of HIV transmission, and the virus does not develop resistance to the treatments; and 3) serodiscordant couples<sup>2</sup> can have a child naturally. According to their views, based on the latest evidence, vulnerability is thus minimised thanks to medical treatments.

Next to this medical framing, the promise to be able to live a ‘normal life’ appeared ambivalent for the study participants. The notion of

<sup>1</sup>Thirty in-depth interviews with women living with HIV, who do not belong to targeted groups as defined by the Federal Office of Public Health (FOPH), were collected between 2013 and 2016, and ten HIV/AIDS specialists were interviewed.

<sup>2</sup>One partner is HIV-positive and the other one is HIV-negative.

‘undetectable viral load’ remained vague and ambiguous for several of them. Their treated body still represented a ‘weak, sick and intoxicated’ body, and the perception of it as a ‘dangerous body’ for others remained.

### *‘Dangerous Body’: HIV as a Social Threat*

For the interviewed women, ‘being undetectable’ did not necessarily mean being healthy but rather no longer representing a risk of HIV transmission, which they translated into no longer being ‘dangerous’ or ‘monstrous’. Therefore, their views on vulnerability were foremost expressed in terms of a social condition that affects others—i.e., a body that had been previously dangerous had become safe for others—rather than as a physiological state. However, for some interviewees, the perception of ‘contagiousness’ persisted.

‘It means that I can’t transmit “it” to someone. I am no longer contagious. Even that would scare me. What does that mean? That I am less dangerous than someone who is HIV-positive and who wouldn’t know it?’ (Fanny).<sup>3</sup>

Although they were declared to have an undetectable HIV viral load and were living without symptoms, they remained perceived as potentially dangerous to others and to society.

‘Not many people today would drink from my cup, lick my spoon, when we know very well nobody can get AIDS like that! The fears are just as deep as they were back then. People get along intellectually, but fear is just as deep.’ (Adèle).

The infectious nature of HIV remained strongly embedded in social norms and was perceived by interviewees as a powerful driver of their rejection by others.

The impact of HIV on the interviewees’ feminine identity was evinced by their perception of their body as ‘dirty’, a view that nurtured negative feelings towards their intimacy. Being HIV-infected underpinned the idea that, somehow, they had failed to meet female social obligations and roles as ‘good’ mothers and wives and had transgressed the sociosexual norm of virtue typically assigned to women (Héritier, 2013; Théry, 1999).

<sup>3</sup> Quotes are associated with a pseudonym to respect participants’ anonymity.



Therefore, HIV-infected women's perceptions and experiences appeared to be strongly influenced by the social and gender construction of HIV/AIDS as a 'moral disease'.

'It is still stigmatised: either you are an ex-drug addict or a whore.' (Rose).

Some emphasised that their noninfectious status as a result of their treated body did not convince everyone; their body was still associated with representations of 'death transmission'. Indeed, two-thirds of the interviewees had been tested HIV-positive before the introduction of effective ART, at a time when this diagnosis was synonymous with death. Their infection and diagnosis thus took place in a context of medical powerlessness that particularly marked them then and continues to fuel their fears even today. Hence, for most of the interviewees, their current minimal risk of HIV transmission remained an unacceptable risk:

'I am still reluctant to have unprotected sex even if I have a steady partner. I'm never 100% ok. To say that we can have sex without a condom, there is always a little doubt about not infecting a third person.' (Tina).

Moreover, if these HIV-infected people were not themselves convinced of their low risk, nor were the health professionals they had worked with or contacted. Indeed, some participants claimed having experienced discrimination in those interactions. These elements indicate that living with HIV means living with the indelible imprint of the history of a threatening epidemic whose social representations have not been deeply altered by the development of medical solutions.

### *'Sick and intoxicated body': HIV as Personal Vulnerability*

Descriptions of the 'infected body', 'dangerous body', 'sick body', 'vulnerable body', 'vegetable body', and 'intoxicated body' were present in the women's narratives to express their body's fight against the virus and the medical treatments. They were concerned with the treatment's long-term side effects, viral resistance, interactions of ART with other treatments and comorbidities.

ART, by destroying HIV, also affects treated individuals' bodies. Most of the interviewees felt their bodies 'threatened' at some point. Some even mentioned having their bodies 'eaten up' by the treatments or 'being

intoxicated'. In the long term, the treated body becomes a painful, sick and worn-out body, which has both psychological and social consequences. 'Being in pain all the time' limited these women's autonomy and social interactions. In addition, the irreversible nature of HIV infection, the continuing uncertainty about the course of the disease and long-term treatment weighed on their life course:

'You may be sick, but at the moment you are not sick. You don't know how long you will not be sick and when you may or may not get sick.' (Valentine).

Discrepancies between participants' expectations and interpretations and those of their physicians also appeared in the explanations of the symptoms experienced. The interviewees considered the treatments exhausting, whereas the doctors never blamed the treatments. Participants complained about not being considered or taken seriously by specialists, who interpreted their complaints in light of the risks of treatment interruption.

According to the interviewees, in the absence of evidence—since their suffering, pain and exhaustion remained invisible—doctors would typically attribute their symptoms to something else, such as advanced age or psychological factors. Thus, the medical vision of an undetectable viremia (the presence of HIV in the blood) ensuring 'normal' experiences with HIV did not resonate with their lived experiences.

'What is the basis for saying that you're "healthy"? Medical tests or how do I feel?' (Béatrice).

For doctors, undetectable viremia defined a form of normality and the absence of vulnerability. For the participants, however, normality was defined by the way in which the disease affected their daily lives. Through their interruption of treatments, pauses, refusal or reduction in dosages and use of alternative therapies, they expressed a need to exercise some control over the virus and to be an actor in their own health. By (re)appropriating medical standards, they claimed a certain expertise, agency and autonomy.

## CONCLUSIONS

This case study of women living with HIV showed that vulnerability needs to be situated within the life course and social context of the persons concerned. First, if the vulnerability of people living with HIV is controlled

from a medical point of view, they live ‘a normal life’ only under certain conditions: life-long treatment and fear of social rejection. Despite the effectiveness of current treatments, concerns about their toxicity and the development of the disease are still raised. Furthermore, people living with HIV do not have the status of legitimate patients: By making them ‘undetectable’, treatments take away their legitimacy as ‘sick patients’. They are neither fully ‘sick’ yet, nor fully ‘healthy’ since they are still HIV-positive and under treatment. Second, their HIV-related vulnerability persists in its social and relational dimensions. Indeed, based on their past experiences, these women’s fears of discrimination from potential sexual partners, health professionals, and relatives remained high. Whereas medically HIV has been considered a chronic disease since the end of the 1990s in high-income countries, the treatments have not, to date, achieved ‘social normalization’ (Poglia Mileti et al., 2014). Furthermore, the transmissibility of the disease is highlighted in the law. This perception of risk makes HIV/AIDS not only a biological but also a social condition.

The medical point of view has emphasised how treatments have transformed HIV into a manageable public health issue thanks to compliant individuals endorsing the official definition of vulnerability. However, such normalisation of HIV is questioned by the experience of those who are infected. Indeed, women living with HIV reported encountering numerous obstacles in their emotional, sexual, professional and social relationships. Overall, their accounts showed how vulnerability, as defined by institutional approaches, does not match the ‘subjective’ or lived experience and understanding of those described as vulnerable. Along with others, we consider it important to address the complexity of these contrasting views: ‘In emphasising the relational, contextual, and process aspects of the risk itself, we avoid the pitfall of considering vulnerability to be a stable, essential characteristic of individuals’ (Delor & Hubert, 2000, p. 1564). The life course perspective contributes to this effort by emphasising not only the temporal dimension—crucial in the context of the HIV epidemic—but also the role of life-long development, interactions and agency in the meanings attached to vulnerability.

The case of women living with HIV described above notably helps us understand how situated definitions of vulnerability are shaped by the exposures, resources and trajectories of those who formulate them. The medical definition of vulnerability, based on biomedical and epidemiological evidence, adopts a top-down perspective along specialists’ professional trajectories and positions, which do not match the perspective of the persons

concerned. Their interactions, affected by divergent understandings, are thus potentially conflictual. In addition, people living with HIV remain exposed to social norms, which still define them as potentially dangerous. Consequently, they experience stigmatisation in different settings and interactions. Offering those who experience vulnerability the opportunity to characterise their experience in their own terms helps to uncover their agency regarding vulnerability amidst those multiple outside influences.

Thus, analysing the articulation of vulnerability across multiple levels confirms that it is not merely an individual experience. Rather, the understanding and experience of vulnerability are built along relations developed with others and institutions over time, through which people either consolidate or question their identity and their vulnerable position as assigned to them from outside. The difficulty and potentially damaging impact of defining ‘vulnerable’ groups or individuals have been made visible again in the context of COVID-19 pandemic measures. Official categories can deny people’s agency, since some elderly people have contested being labelled particularly vulnerable to the infection. Institutional responses can also potentially trigger discrimination, as observed across age groups in the COVID-19 context.

Considering the coexistence of multiple, socially anchored definitions of vulnerability also has implications for policymaking. Understanding people’s views, especially when these clash with the dominant definitions or with social norms, can definitely help to elaborate policies that are more likely to reach their goals since they are more in line with people’s needs. We therefore concur with the view that addressing vulnerability requires considering its implications in terms of social integration and citizenship. Findings from a number of studies reported here have suggested that the social sciences can contribute to a better understanding of the complexity of vulnerability processes in society. They can do so by comparing views and experiences across social groups and by paying attention to multiple levels, including institutions and social norms, as being either supportive of or detrimental to those who face different forms of adversity.

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## Synthesis: Vulnerability in Context

*Dario Spini and Mattia Vacchiano*

### INTRODUCTION: ON THE ARTICULATION OF LEVELS

Scholars in social sciences and life course research have always taken a great interest in understanding life trajectories at the articulations among levels of analysis (Bronfenbrenner, 1994). Since their genesis, the social sciences have turned their attention to how social reality is stratified into macrostructures, such as social norms, economic opportunity structures or welfare regimes, on the one hand, and microprocesses such as individuals' actions, behaviours or agency, on the other hand (Alexander, 1987; Hitlin & Elder, 2007). How these levels of analysis interact has already been widely discussed in many disciplines, such as anthropology, social psychology, economics, and sociology, albeit through different perspectives on the specifics of this articulation (Boudon, 2006; Coleman, 1988; Doise, 1986; Turner, 2012). What emerges from this debate is a common need to examine the articulation between macro- and microsocial

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D. Spini (✉)  
University of Lausanne, Lausanne, Switzerland  
e-mail: [dario.spini@unil.ch](mailto:dario.spini@unil.ch)

M. Vacchiano  
Department of Sociology, University of Geneva, Geneva, Switzerland  
e-mail: [mattia.vacchiano@unige.ch](mailto:mattia.vacchiano@unige.ch)

processes to understand their specificities and mutual influences. This approach means moving beyond the idea that individuals and societal structures can be studied as independent and instead adopting a multilevel perspective to address many complex analytical problems (Klein & Kozlowski, 2000; Spini et al., 2016).

Adopting such multilevel logic is also crucial in a field such as the life course. In particular, it is key to the study of vulnerability processes, their emergence across transitions and turning points, their persistence and the potential overcoming of them (Spini et al., 2017). Vulnerability is a multilevel problem for numerous reasons: not only are macrosocial structures a source of inequality as such, but every biography is nested within multiple intermediate levels in which human lives take place. The lives of individuals, after all, depend on the neighbourhoods that people inhabit, on the network of institutions and organizations in which they are immersed, and, thus, on their social capital and sense of community. In short, a plurality of meso-level contexts mediate the ‘macro’ with individual resources, whether genetic, biological, or cognitive (Bernardi et al., 2019).

While these intermediate dimensions are often little discussed in life course research, this section explores different directions through which it can approach this articulation among levels. A set of complementary multilevel perspectives emerges for studying vulnerabilities through examining the influence of geographic, organizational, or relational contexts on the stressors and resources of individuals. Together, these studies show how vulnerabilities are the result of the complex interactions among levels of social realities and their junctions in neighbourhoods, networks, organizations, institutions and communities.

### UNDERSTANDING VULNERABILITY: THREE WAYS ‘CONTEXTS’ MATTER

Individual strategies, skills, and resources play a role in the life course as well as the set of constraints and opportunities that are provided by social structures (Settersten & Gannon, 2005). Micro and macro coexist in many ways and explain a plurality of life course phenomena, including, of course, vulnerability. Often, as we stressed in the introduction to this book, vulnerabilities arise due to the lack of resources and reserves needed to cope with the many stressors that can intervene during segments of the life course. However, while structural and individual effects both exert a

decisive impact on these processes (see Bernardi et al., 2019), many of them play out primarily in the articulations among these levels in different intermediate dimensions. This characteristic means giving importance to a meso level in which micro and macro are simultaneously rooted and from which processes of vulnerability socially and cognitively emerge (Spini et al., 2017).

A focus on the meso level means giving importance to the multiple contexts in which individual lives unfold. It means looking at the key life-course principles—agency, linked lives, timing, time and space—across social environments that are more proximate than macrosocial structures (Elder, 1979, 1995). Vulnerability, after all, is amplified, shared, and overcome within neighbourhoods, communities, families, networks, institutions and organizations where individuals live and work. Consideration of these different contexts places the meso level at the centre of the study of vulnerabilities, thereby bridging the micro-macro gap.

How to address this articulation is certainly a matter of approaches and perspectives, three of which emerge most clearly from the studies that have been conducted as part of the LIVES research program. First, one way to examine this articulation is to study the geographic context in which human lives take place, i.e., the local economic and social contexts. Second, the focus may be on the intermediary role played by organizations and institutions, their norms and practical functioning, and their influence on vulnerabilities. Finally, a relational approach focused on social relationships can capture the influence of networks, as intermediate structures, as sources of both stressors and resources. (Sapin, Widmer, & Iglesias, 2016; Vacchiano & Spini, 2021).

In the study of geographic context, local social and economic contexts assume a major role (Ranci, 2010). Geographic areas (e.g., neighbourhoods or regions) can act as amplifiers, moderators, or even nullifiers of macrosocial dynamics and provide explanatory mechanisms for individual vulnerabilities. While individual resources play a primary role in explaining vulnerability and resilience, meso-level contexts of this kind implicate the opportunity structures that people can access through the territory they inhabit. Many studies have endorsed this perspective and have convincingly demonstrated that living in a poor neighbourhood, for example, increases the risks related to individual resources or reserves, such as low educational attainment or a more disadvantaged family background. Moreover, we know that relocating residents from more- to less-deprived neighbourhoods improves their competitiveness in the labour market

(Mendenhall et al., 2006). In short, studying the local context helps to understand macrodynamics, e.g., social policies, norms, macroeconomic indicators, and their influence on individuals through the study of their immediate social environment (Galster, 2012; Sampson et al., 2002).

As a second lens, organizations and institutions offer another privileged context for studying the articulations among levels of analysis (Klein & Kozlowski, 2000). Human lives unfold in workplaces, educational settings, administrative or health care institutions. The study of vulnerabilities can thus benefit from understanding the weight of institutional norms and obligations, status, practices or values that depend primarily on the organizations and institutions to which individuals belong (e.g., see Vacchiano, Lazega & Spini, 2022). It is important to understand how macrosocial aspects related to norms, social policies or economic structures are fundamentally negotiated within and among the organizations and institutions in which individuals are involved in different areas of their lives: such as education, work or health. At this juncture, it is possible to propose a further point of view on how macro and micro levels meet in the processes of vulnerability (Spini et al., 2017).

Finally, the relational approach conceptualizes networks of relationships as intermediate structures that bridge the micro-macro gap (Alwin et al., 2018; Vacchiano & Spini, 2021). Networks that provide constraints or opportunities, resources or sanctions, stressors or support for people's lives (Antonucci & Akiyama, 1995; Bidart et al., 2020; Cullati et al., 2018; Settersten, 2018). On the one hand, this approach captures how a plurality of macrosocial forces, such as those related to social stratification, are reproduced within the more proximate social environment of social relationships (Bourdieu, 1986). For example, the study of family ties allows us to capture social inequalities shaped by origin, gender and social class. Positive and negative effects of networks have been attributed precisely to the ability of these close ties to transmit socioeconomic privileges, as well as strategies of social positioning and material support (Portes, 1998; Widmer, 2006). On the other hand, research is also interested in networks as sources of emotional support and bonding social capital (Rostila, 2011), particularly their importance to the emergence of a sense of connectedness, relatedness, belongingness or attachment at the cognitive level, as explanatory factors of mental health and well-being (Berkman et al. 2000, see also Hofmann, Merphour, & Staerklé, this book). Both the instrumental and cognitive implications of networks offer a look at the articulation of the macro, meso, and micro levels.

## VULNERABILITY IN CONTEXT

Different chapters addressing these multiple facets of the meso level are presented in this section.

In Chap. 8, Bonvin et al. offered insights into how vulnerability processes depend on the implementation of social policies at the meso-level. More precisely, they considered the role played by those intermediary agents in translating and applying the normative regulations of social policies, whom the authors call ‘street-level bureaucrats’. This approach led to a reflection on the normative functioning of many organizations, such as hospitals, welfare agencies, social services, NGOs, and the (often inadequate) working conditions of those representatives who come into contact with potential recipients of social policies.

In Chap. 9, Bühlmann, Morris, Sommet and Vandecasteele addressed the importance of territory and neighbourhoods as meso-level contexts for understanding three specific aspects related to individual vulnerabilities: school-to-work transitions, psychological effects of wage inequality, and unemployment. In doing so, they provided insights into some of the mechanisms (e.g., location of networks, lack of social support, living in a stressful neighbourhood) through which these vulnerabilities emerge from disadvantaged socioeconomic contexts.

In Chap. 10, Rossier et al., offer a classic look at the meso-level addressing the role played by networks of strong ties. By doing so, the authors engage with network and social capital theory, thus emphasizing the role of social relationships as a source of opportunities and constraints, resources and stressors that are still strongly influenced by the closest network environment in which individuals are embedded, such as those of family ties.

In Chap. 11, Hoffman, Merphour & Staerklé offered an interdisciplinary consideration of the meso level by reconstructing the intersections between social networks and social identity theory. The authors offered a broad overview by identifying not only the commonalities among these perspectives but also some of their important conceptual differences. In doing so, they used the notion of social connectedness as a key bridge for combining these two fields of research, thereby fostering understanding about the role of social relationships in vulnerability processes, especially regarding well-being and health issues.

In Chap. 12, Burton-Jeangros and Fagnoli examined how the vulnerability of HIV-positive women is influenced and negotiated within

medical and institutional contexts. In doing so, the authors emphasized the functioning of health care organizations and how they have influenced the individual subjectivities of these women through a highly normative gaze. The chapter showed that vulnerability is situated within these women's social and relational dimensions in the networks of sexual partners, health professionals and relatives through whom HIV-positive women today still suffer from discrimination, stigma and marginalization.

### CONCLUDING REMARKS

This book advanced the idea that stressors and resources are active not only at the individual or structural level but also in the intermediate space that bridges the micro and macro: the meso level. Networks of relationships, geographical contexts, organizations, groups or communities are all concepts that help researchers examine different ways in which the micro-macro gap can be observed throughout the ongoing flux of social life (Vacchiano & Spini, 2021). Such complexity cannot be fully addressed in a single book, and although we have a sense that much has been accomplished, as the various chapters of this book demonstrate, much remains to be explored in the future. For example, as previously analysed by the exploratory work of Brändle (2018), more research needs to be conducted to analyse the simultaneous influence of territories and organizational and relational contexts to understand vulnerability processes. Additional theoretical and methodological solutions are thus required for further integrating multiple contexts into a single study. Such integration is technically possible (e.g., Spini et al., 2008) but has yet to find systematic fruitful applications in the study of vulnerability processes.

The LIVES research program has established a strategy aimed at providing space for a diversity of approaches to understanding the articulations among these levels. Although most of these approaches have combined different methods, there is a need for greater cross-disciplinary integration to implement a richer multilevel logic. One avenue taken in the final phase of the LIVES research program to foster encounters among disciplines was to develop collaborations among groups of researchers to study a specific community (Ehsan & Spini, 2020; El Ghaziri et al., 2019; Jackson et al., 2019; Zwygart et al., 2016; Spini et al., 2021). Although they have been little explored in this section, community-based longitudinal studies can help analyse vulnerabilities through a more complex multilevel logic. A focus on communities, after all, means closely examining the

functioning of a given territory, that of the organizations that operate within it and, of course, that of the networks of relationships among community members. This multicontextual synergy is what makes communities such a powerful study setting and why researchers should further analyse their functioning to grasp how vulnerabilities lie ‘in between’ macro- and microprocesses.

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PART III

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The Unfolding of Vulnerable Life  
Trajectories



# Childhood Socioeconomic Disadvantage and Health in the Second Half of Life: The Role of Gender and Welfare States in the Life Course of Europeans

*Stéphane Cullati, Stefan Sieber,  
Bernadette Wilhelmina Antonia van der Linden,  
Dan Orsholits, Martina von Arx, Matthieu P. Boisgontier,  
and Boris Cheval*

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S. Cullati (✉)

Population Health Laboratory (#PopHealthLab), University of Fribourg,  
Fribourg, Switzerland

Department of Readaptation and Geriatrics, University of Geneva, Geneva,  
Switzerland

e-mail: [stephane.cullati@unifr.ch](mailto:stephane.cullati@unifr.ch)

S. Sieber • D. Orsholits

Swiss NCCR “LIVES - Overcoming Vulnerability: Life Course Perspectives”,  
University of Geneva, Geneva, Switzerland

Centre for the Interdisciplinary Study of Gerontology and Vulnerability,  
University of Geneva, Geneva, Switzerland

e-mail: [Stefan.Sieber@unil.ch](mailto:Stefan.Sieber@unil.ch); [dan.orsholits@unige.ch](mailto:dan.orsholits@unige.ch)

## INTRODUCTION

The long-lasting influence of childhood socioeconomic circumstances on adulthood health has been documented across two decades of flourishing research in the fields of social epidemiology, medical sociology and life course (Boyce & Hertzman, 2018; Cohen et al., 2010; Demetriou et al., 2015; Galobardes et al., 2004; Galobardes et al., 2008; Kuh et al., 2004). However, largely because most evidence to date has been based on birth cohort studies that were initiated after World War II, whether this influence remains in the second half of life (50 years and after) remains unclear. For example, in the United Kingdom, birth cohort studies started in 1946, 1958 and 1970, and the oldest participants from these studies had just entered their seventh decade in 2016. As researchers wait for the maturation of birth cohort studies, detailed retrospective information

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B. W. A. van der Linden

Centre for the Interdisciplinary Study of Gerontology and Vulnerability,  
University of Geneva, Geneva, Switzerland

Population Aging Research Center and Population Studies Center, University of  
Pennsylvania, Philadelphia, USA

e-mail: [bernadette.vanderlinden@unifr.ch](mailto:bernadette.vanderlinden@unifr.ch)

M. von Arx

Swiss NCCR “LIVES - Overcoming Vulnerability: Life Course Perspectives”,  
University of Geneva, Geneva, Switzerland

Citizen sciences group, Biology section, Science Faculty, University of Geneva,  
Geneva, Switzerland

e-mail: [Martina.VonArx@unige.ch](mailto:Martina.VonArx@unige.ch)

M. P. Boisgontier

School of Rehabilitation Sciences, Faculty of Health Sciences, University of  
Ottawa, Ottawa, ON, Canada

Bruyère Research Institute, Ottawa, ON, Canada

e-mail: [matthieu.boisgontier@uottawa.ca](mailto:matthieu.boisgontier@uottawa.ca)

B. Cheval

Swiss Centre for Affective Sciences, University of Geneva, Geneva, Switzerland

Laboratory for the Study of Emotion Elicitation and Expression (E3Lab),  
University of Geneva, Geneva, Switzerland

e-mail: [Boris.Cheval@unige.ch](mailto:Boris.Cheval@unige.ch)

collected in longitudinal panel studies of respondents aged 50 years and older, such as the Health and Retirement Study in the United States, the English Longitudinal Study of Ageing in England, and the Survey of Health, Ageing and Retirement in Europe (SHARE), can contribute to the understanding of the long-lasting influence of childhood, including socioeconomic circumstances, on old-age health. Specifically, these longitudinal studies collected information about the life course between childhood and the second half of life, thereby offering an opportunity to investigate whether the influence of childhood socioeconomic circumstances on health in the second half of life is attenuated by adulthood socioeconomic characteristics. Moreover, owing to their panel design, these studies have allowed changes in health statuses or health trajectories to be examined. In 2016, the LIFETRAIL project (LIFETRAIL) was launched within the LIVES research program to consolidate the evidence about this long-lasting influence of childhood on health in older age by using the SHARE data and to examine whether adulthood socioeconomic characteristics can attenuate this influence. In this review, we summarise two findings of the LIFETRAIL project. First is the gendered impact of childhood socioeconomic disadvantage on health and illness in older age (health statuses and health trajectories). Then, we assess to what extent the influence of childhood socioeconomic disadvantage is attenuated or mediated by adulthood socioeconomic characteristics. Second, we take advantage of SHARE's multi-country design to examine whether the childhood socioeconomic disadvantage and older-age health links differ across welfare states. Finally, these results are discussed in light of their strengths and limitations to determine their level of causality.

## BACKGROUND

The lack of resources is a driver of vulnerability, which is defined as the inability to avoid, cope with, and recover from individual, social, and environmental stressors (Spini et al., 2017). The consequences of such inabilities are more detrimental when they occur during critical or sensitive periods of the life course (Ben-Shlomo & Kuh, 2002; Wadsworth, 1997) and when they accumulate over time through long lifetime exposure to stressors (e.g., living in poverty or living in highly deprived or polluted neighbourhoods). In addition, people are more at risk of vulnerability when they do not have sufficient reserves to recover from stressors (Cullati et al., 2018).

The life course perspective suggests that complex social dynamic processes lie at the origin of vulnerability in health (Burton-Jeangros et al., 2015). In the LIFETRAIL project, the precursors of poor health status and of an accelerated declining health trajectory in the second half of life were sought in people's exposure to disadvantaged structural and interpersonal stress and lack of socioeconomic resources in childhood and adulthood. In other words, health status and health trajectory in old age were considered the result of a social process. The dynamics of this social process were considered in light of two models in life course epidemiology. First, the accumulation model (O'Rand, 1996) suggests that the lifetime duration of exposure to environmental and socioeconomic disadvantages is the driver of health inequalities. The longer the individual is exposed to disadvantages, the higher the risk of poor health and being diagnosed with illnesses. An accumulation of exposures to disadvantages over the life course (from childhood to adulthood) places these people at higher risk of exposure to stress, lower development of the (social, economic, cognitive) resources required to counteract stressors, and, ultimately, to increasing later-life health differences between disadvantaged and advantaged groups (Dannefer, 2003, 2020). A second model, the critical period model (Ben-Shlomo & Kuh, 2002; Wadsworth, 1997), hypothesises that health differences are explained by exposures that occur in specific periods of human development. In utero life, infancy, childhood, adolescence, and young adulthood are critical and sensitive periods for the development of physical and mental health as well as the resources required to sustain this health over the life course. Therefore, exposure to structural and interpersonal adversities during these periods may lead to potentially irreversible damage or 'structural', permanent differences in later-life health.

Based on the accumulation and critical period models, the LIFETRAIL project examined the mechanisms underlying the long-term effects of retrospective childhood socioeconomic disadvantage on (1) health status and (2) health trajectories in older age.

## A MULTIDIMENSIONAL MEASURE OF CHILDHOOD SOCIOECONOMIC DISADVANTAGE

The LIFETRAIL project used a comprehensive and multidimensional measure of childhood socioeconomic disadvantage. In the SHARE study, life course information was measured with the ‘SHARELIFE’ module, which was administered during the third (2008/2009) and seventh (2017) waves of data collection. SHARELIFE consisted mainly of a detailed retrospective assessment of respondents’ life course.

Childhood socioeconomic disadvantage was operationalised according to the Wahrendorf and Blane measure of childhood circumstances (Wahrendorf & Blane, 2015). This measure is an index combining four binary indicators of disadvantaged socioeconomic circumstances at the age of 10 years. First, the occupational position of the main breadwinner was constructed on the basis of a reclassification of the main occupational groups of the International Standard Classification of Occupations (ISCO) according to their skill levels (Wahrendorf et al., 2013). The first and second skill levels were grouped as ‘disadvantaged’ and the third and fourth levels as ‘advantaged’ occupational positions. Second, a binary item was constructed for the number of books at home, with ‘none to 10 books’ being an indicator of social disadvantage (Evans et al., 2010). Third, household overcrowding used information related to the number of people living in the household and the number of rooms (excluding kitchens, bathrooms, and hallways). We combined the information to specify that more than one person living in the household per room was equal to overcrowding (Marsh et al., 1999). Fourth, the quality of the household was assessed by the presence of the following facilities: fixed bath, cold running water supply, hot running water supply, inside toilet, and central heating. If none of this equipment was present, the household was coded as ‘disadvantaged’ (Dedman et al., 2001). By summing these four binary indicators, we computed a five-level categorical variable of childhood socioeconomic disadvantage (most disadvantaged, disadvantaged, middle, advantaged and most advantaged).

With this index, we examined the influences of childhood socioeconomic disadvantage on multiple health outcomes, which we grouped as follows (WHO, 1946) for the purposes of this review: physical health (muscle strength, peak expiratory flow); chronic conditions (cancer onset, metabolic syndrome, multimorbidity, and polypharmacy); functional health (disability and frailty); mental health (cognitive function,

depression, and sleep troubles); and health behaviour (physical inactivity). We also examined two indicators of general health (the single item ‘self-rated health’, an umbrella indicator capturing most dimensions of health (Cullati et al., 2020), and well-being). All health outcomes were self-reported indicators based on single questions or validated scales (Euro-D for late life for depression (Prince et al., 1999); quality of life (CASP-19) for well-being (Hyde et al., 2003); functional limitations with activities of daily living, ADL and IADL, for disability (Katz et al., 1963; Lawton & Brody, 1969)), except for two biomarkers, muscle strength (based on grip strength (Leong et al., 2015)) and lung function (based on peak expiratory flow (Wright, 1978)). Cognitive function was measured with cognitive tests (measuring verbal fluency (Rosen, 1980) and delayed recall (Harris & Dowson, 1982)). For frailty, we built a score based on the phenotype of Fried (Fried et al., 2001).

## GENDER DIFFERENCES IN THE ASSOCIATION BETWEEN CHILDHOOD SOCIOECONOMIC DISADVANTAGE AND HEALTH IN OLDER AGE: DO WOMEN PAY THE PRICE?

### *Association of Childhood Socioeconomic Disadvantage with Late-Life Health Status*

In both men and women, based on minimally adjusted models, we observed that the index of childhood socioeconomic disadvantage was associated with physical health, chronic conditions, functional health, and mental health in older age (Table 14.1, part A). Men and women who grew up in disadvantaged socioeconomic households had poorer physical health (lower grip strength (Cheval, et al., 2018a)); more frequently reported chronic conditions (greater incidence of cancer (Bernadette W. A. van der Linden et al., 2018), metabolic syndrome and multimorbidity (Jungo et al., 2020)); reported lower functional health (higher IADL (Landös et al., 2019) and higher frailty (van der Linden, Cheval, et al., 2020a) and poorer mental health (higher depressive symptoms (von Arx et al., 2019)) than participants in advantaged socioeconomic households. Of note, for cancer onset (van der Linden et al., 2018), we observed a higher risk of overall cancer among men and women born in advantaged households. This result can be explained by the higher rates of cancer screening among socioeconomically advantaged people. Among women



**Table 14.1** Summary of (A) the associations of the childhood socioeconomic disadvantage index with health, illness and behaviour outcomes in the second half of life among men and women and (B) whether the association was partially or fully attenuated by socioeconomic conditions and status in adulthood

<i>Outcomes:</i>	<i>Men</i>		<i>Women</i>	
	<i>A</i>	<i>B</i>	<i>A</i>	<i>B</i>
<b>Physical health</b>				
Muscle strength (Cheval et al. 2018a, 2019)	Yes	–	Yes	–
<b>Chronic conditions</b>				
Self-reported cancer onset (van der Linden et al., 2018)	Yes	Yes, attenuated	Yes	Yes, attenuated
Metabolic syndrome (Lagger et al., n.d.)	Yes (G)	–	Yes (G)	Yes (G), attenuated
Multimorbidity (Jungo et al., 2020)	Yes (G)	Yes, attenuated	Yes (G)	Yes (G), attenuated
Polypharmacy (Jungo et al., 2020)	No	/	Yes (G)	–
<b>Functional health</b>				
Disability (ADL) (Landös et al., 2019)	No	/	Yes (G)	Yes (G), attenuated
Disability (IADL) (Landös et al., 2019)	Yes (G)	–	Yes (G)	Yes (G), attenuated
Frailty (van der Linden, Cheval, et al., 2020a)	Yes (G)	–	Yes (G)	–
<b>Mental health</b>				
Depressive symptoms (Recksiedler et al., 2021; von Arx et al., 2019)	Yes (G)	–	Yes (G)	Yes, attenuated
Sleep troubles (van de Straat et al., 2020)	No	/	Yes (G)	Yes (G), attenuated
<b>Health behaviour</b>				
Physical inactivity (Cheval, Sieber, et al., 2018b)	No	/	Yes (G)	–

*Notes:* ADL=activities of daily living; IADL=instrumental activity of daily living. Part A: ‘No’ means no categories of the childhood socioeconomic variable were significantly associated with the outcome. ‘Yes’ means all, or most of, the categories of the childhood socioeconomic variable were significantly associated with the outcome. ‘(G)’ means an expected gradient (i.e., the lower the advantage, the lower the health) was observed across the categories of the childhood socioeconomic variable. The results came from models minimally adjusted for age, birth cohort, country and participant attrition. Part B: ‘Attenuated’=association partially attenuated; ‘–’=association fully attenuated

only, we observed additional associations of the index of childhood socioeconomic disadvantage with polypharmacy, limitations in activities of daily living (ADL), sleep troubles, and physical inactivity (Jungo et al., 2020; Landös et al., 2019; van de Straat et al., 2020; Cheval et al., 2018b).

In analyses that grouped men and women, we observed supplementary robust associations of childhood socioeconomic disadvantage with physical health (grip strength (Cheval et al., 2018a), lung function (Cheval et al., 2019a)) and general health (self-rated health (Sieber et al., 2019)). These results suggested that the index of childhood socioeconomic disadvantage (Wahrendorf & Blane, 2015) was a heuristic indicator of socioeconomic circumstances in early life. This finding raised the question of what within this index drives this relationship. After disaggregating it and examining the four binary factors separately, we observed that, among both men and women, most associations were driven by the number of books and less frequently by household (overcrowding, number of facilities) and occupation of the main breadwinner indicators (Table 14.2). This remarkable result points out the importance of the cultural dimension in the measure of socioeconomic resources, which may play a key role in the transformation of social inequality into health inequalities (Abel, 2008).

### *The Influence of Adulthood Socioeconomic Characteristics*

Considering that a disadvantaged start in life does not necessarily impair health for the rest of the life course, we investigated whether the above associations can be cancelled or attenuated by adult-life socioeconomic characteristics (three indicators: educational achievement in early adulthood, main occupation in middle age and satisfaction with household income in older age). After adjusting for these three indicators of adult-life socioeconomic characteristics (Table 14.1, part B), the results showed that in men, the impact of socioeconomic disadvantage in the beginning of life disappeared for most health dimensions (physical health, functional health, and mental health). For example, childhood socioeconomic disadvantage was no longer associated with muscle strength, metabolic syndrome, IADL, frailty and depressive symptoms. In contrast, in women, childhood socioeconomic disadvantage remained associated with seven of the ten health indicators, representing the health dimensions of chronic conditions and functional and mental health. Notably, these results were robust to adjustment with risk factors associated with the outcomes and to

**Table 14.2** Summary of significant childhood socioeconomic factors associated with six health trajectories (A) before and (B) after adjustment for adulthood socioeconomic characteristics. (Cheval, Orsholits, et al., 2019c)

<i>Health trajectories (outcomes):</i>	<i>Men</i>		<i>Women</i>	
	<i>A</i>	<i>B</i>	<i>A</i>	<i>B</i>
<b>Physical health</b>				
Grip strength	- number of books - breadwinner job	- number of books - breadwinner job	- number of books - breadwinner job	- number of books
Lung function	- number of books - housing quality		- housing quality	
<b>Mental health</b>				
Cognitive function (delayed recall)	- number of books - breadwinner job	- number of books	- number of books - breadwinner job - housing quality	- number of books - housing quality
Cognitive function (verbal fluency)	- number of books - breadwinner job - overcrowding - housing quality	- number of books - breadwinner job - overcrowding	- number of books - breadwinner job - overcrowding - housing quality	- number of books - breadwinner job - overcrowding - housing quality
Depressive symptoms	- number of books - overcrowding	- housing quality	- number of books - breadwinner job - overcrowding	- number of books
<b>General health</b>				
Well-being	- number of books		- number of books - breadwinner job - housing quality	- housing quality

adjustment with other childhood circumstances, such as health status and adverse experiences (Cheval et al., 2019b; van der Linden, Cheval, et al., 2020a; von Arx et al., 2019).

In summary, men were better able to compensate for a difficult socioeconomic start in life, while women seemed to pay the price of this bad start. At least for women, our results supported the critical period model, i.e., that exposure to socioeconomic disadvantages in early life may lead to potentially permanent differences lasting into old age. Gender inequalities in education and occupation in the twentieth century could be one of the main explanations. Indeed, most women who grew up during the first half of the twentieth century may have faced social barriers in accessing life course opportunities, such as access to skills (due to social limitations in pursuing education at the higher secondary and tertiary levels), economic resources (due to social limitations in access to employment), and social resources (Breen et al., 2010). These social barriers could also be linked to the internalisation of and conformity to misleading norms such as gender norms related to the division of paid and family work (Widmer & Spini, 2017).

### *Association of Childhood Socioeconomic Circumstances with Late-Life Health Trajectories*

We tested whether childhood socioeconomic disadvantage could affect health trajectories (Burton-Jeangros et al., 2015) or the evolution of health throughout ageing. For example, we investigated potential accelerated or reduced rates of health decline between disadvantaged and advantaged groups (Dannefer, 2003, 2020). The main result was that participants' health trajectories throughout ageing (or slopes) ran mostly parallel between childhood socioeconomic groups—a result that did not support the accumulation model. This finding has also been reported in a multi-outcome study suggesting that childhood socioeconomic disadvantage robustly influenced health status but not health trajectories (Cheval, Orsholits, et al., 2019c) and in single-outcome studies (Sieber et al., 2020; van de Straat et al., 2020; van der Linden, Cheval, et al., 2020a). One exception, however, was observed for cognitive function (Aartsen et al., 2019). We observed that participants who grew up in advantaged households had stronger declines in verbal fluency (an indicator of cognitive function) compared to disadvantaged participants, but this decline started at a later age and from higher levels of fluency. This result supported the

cognitive reserve hypothesis (Stern, 2009) and suggests that cognitive reserves delay cognitive decline throughout ageing, but that deterioration occurs more rapidly as decline begins. The mechanism behind this effect could be that participants with socioeconomic advantages had a greater chance of building and maintaining cognitive reserves throughout their life course: They were more likely to live in family environments with higher mental stimulation, increased encouragement of learning and curiosity, and endorsement of healthy behaviours (such as practicing regular physical activities and eating a healthy diet); had a greater chance of achieving a higher level of educational achievement; and might have well-off occupations that allowed more leisure time and higher income. This mechanism applies to the SHARE participants who lived most of their professional lives during the second half of the twentieth century, but it would be hazardous to generalise to more recent cohorts.

### MULTILEVEL PERSPECTIVE ON THE INFLUENCE OF CHILDHOOD SOCIOECONOMIC CIRCUMSTANCES ON HEALTH IN OLDER AGE: THE IMPORTANCE OF WELFARE STATES AND SOCIAL PROTECTIONS

We explored the multilevel dimension of vulnerability (Spini et al., 2017) in health in older age through macro- (welfare regimes, social protection expenditure) and meso-level (neighbourhood) perspectives.

#### *Macro Level: The Welfare Regimes*

We examined whether country-level social protection offered by institutions could attenuate the negative influence of a poor socioeconomic start in life. We approached social protection through the welfare regimes approach, using the typology of Ferrera (1996), an extension of the Esping-Andersen welfare regime typology (Esping-Andersen, 2006). We grouped countries included in SHARE into the following welfare regimes: Scandinavian, Bismarckian, Southern European, and Eastern European. We observed that in the Scandinavian (important interventionist state, generous redistributive system) and Southern European regimes (fragmented welfare system, more important reliance on the family and charitable sector), the association between childhood socioeconomic disadvantage and self-rated health became nonsignificant when including

adulthood socioeconomic characteristics. In contrast, this association remained in the Bismarckian (minimal redistributive system administered by the employer, importance of the family) and Eastern European regimes (shift from universalist communist welfare to marketised welfare) (Sieber et al., 2020). For frailty, the association vanished in the Eastern European regime and appeared in the Bismarckian regime (van der Linden, Sieber, et al., 2020b). Considering each adulthood socioeconomic characteristic separately, we observed that education attenuated the association between childhood and self-rated health in Scandinavian and Southern European regimes but not in the other welfare regimes (Sieber et al., 2019). Occupation demonstrated similar results, as it attenuated the association between childhood and self-rated health in the Scandinavian and Bismarckian regimes only.

### *Macro Level: Social Protection Expenditure*

Although informative, these results related to social protection are restricted by the limitations of the welfare regime approach. This approach represents an insufficiently detailed proxy of social protection, as the clustering of countries is broad and lacks specificity (Lundberg et al., 2015). Moreover, such an approach can result in inconsistent patterns in how social democratic welfare regimes may reduce social inequalities in health in comparison to other regimes (Brennenstuhl et al., 2012). Thus, we implemented the social protection expenditure approach in this line of investigation and used the net social protection expenditure of the European System of Integrated Social Protection Statistics (European Union, 2019), an indicator in which expenditures on social protection policies are computed as the percentage of the country's gross domestic product. We found that longer exposure to socioeconomic disadvantage throughout the life course (using a score combining socioeconomic disadvantages in childhood, young adulthood, middle age and older age)<sup>1</sup> was associated with worse subjective (self-rated health) and objective (lower muscle strength) health among women and men. This result supported the accumulation model, as living for a longer time in disadvantaged

<sup>1</sup>We combined socioeconomic indicators in childhood, young adulthood, middle age and older age into a single life course socioeconomic score to test the accumulation model, as well as to reduce the number of three-way interaction tests (life course score  $\times$  age  $\times$  one indicator of social protection; eight social protection indicators tested).

socioeconomic conditions over the life course increased the risk of poor subjective and objective health. Social protection expenditure was not directly associated with self-rated health and muscle strength, as expected. However, social protection expenditures attenuated the negative influence of life course socioeconomic disadvantage, and while this attenuation was observed in both genders for objective health, it varied between genders for subjective health: Higher social protection expenditure reduced the negative effect of life course socioeconomic disadvantage in women's self-rated health only (Sieber et al., 2022), suggesting that women benefited more from social protection expenditure than men.

### *Meso Level: The Neighbourhood*

We also focused on a meso-level factor, the neighbourhood, by examining the association between neighbourhood characteristics and depression and how childhood socioeconomic circumstances might modify this association (Baranyi et al., 2019). We observed that childhood socioeconomic circumstances might influence vulnerability to neighbourhood effects in older age. Participants who grew up in better circumstances were at lower risk of developing depression when living in a residential area with good access to local services. In contrast, they were at higher risk of developing depression when residing in areas with high neighbourhood nuisances.

## MULTIDOMAIN PERSPECTIVE ON THE INFLUENCE OF CHILDHOOD SOCIOECONOMIC CIRCUMSTANCES ON HEALTH IN OLDER AGE

To explore the multidomain dimension of vulnerability (Spini et al., 2017) in health in older age, we focused on marital life. We examined whether childhood socioeconomic disadvantage moderated the relationship between later-life widowhood and depressive symptoms in older age (Recksiedler et al., 2021). The hypothesis was that childhood socioeconomic disadvantage might trigger cumulative adversity and stressors across the life course that would shape how individuals may come through the stressful life event of widowhood later on. We found that experiencing widowhood and childhood socioeconomic disadvantages were both linked to depressive symptoms in old age. However, we found no evidence that childhood socioeconomic disadvantage aggravated the link between

later-life widowhood and depressive symptoms. This result suggested that the experience of becoming bereaved in old age was an impactful transition that similarly triggered the mental health of individuals across different childhood socioeconomic circumstances.

### *Discussion of the Limitations*

We discuss these findings in light of some of the criteria for causation from Hill (Hill, 2015). Foremost, it is important to note that this project is based on observational data, which poses a significant limitation in reaching a causal level in the findings compared to a project based on experimental data. Moreover, we did not perform any causal inference analysis. Therefore, we cannot conclude that the association of childhood socioeconomic circumstances with health is causal. Nevertheless, a number of points strengthen the argument for a causal relationship between childhood and health. First, exposure to childhood circumstances is chronologically ordered before the outcomes. Second, across all health outcomes, we observed a gradient across the five categories of the childhood socioeconomic variable (the higher the advantage was, the lower the risk of illness or the lower the health deterioration). Thus, this gradient suggests a dose-response relationship between exposure (childhood socioeconomic circumstances) and outcome (health). Third, the consistency of the link between childhood socioeconomic circumstances and multiple health outcomes suggests a potential causal relationship. Fourth, there is biological plausibility behind this association. Along with the social and psychological stress mechanisms outlined in the introduction, we also acknowledge that biological mechanisms can operate behind the association of childhood socioeconomic disadvantage with later-life health. Previous studies have suggested that social exposure could impact biological markers and systems, such as epigenetic (Fiorito et al., 2017; Hughes et al., 2018), inflammation (Castagné, Delpierre, et al., 2016a; Castagné, Kelly-Irving, et al., 2016b; Pollitt et al., 2008) and microbiome (Liss et al., 2018; Liu et al., 2019; Qin et al., 2012; Wirbel et al., 2019) outcomes, indicating that several biological pathways may underlie this association.

Finally, a number of limitations need to be stated. First, in SHARE, a small number of participants answered the SHARELIFE module, thereby creating a selection bias in the data. Second, as with all longitudinal panel studies, participant attrition is an issue. To limit this issue, all analyses were adjusted for participant attrition. Third, childhood information was



collected retrospectively, which increased the risk of information bias. Fourth, the lack of data about genetic, microbiome, and inflammatory markers in SHARE impeded adjustment of the childhood and health association with these confounders.

## CONCLUSION

In conclusion, the LIFETRAIL project has provided evidence supporting the long-lasting influence of childhood socioeconomic circumstances on women's health in the second half of life and suggested that social protection may attenuate the negative influence of a poor socioeconomic start in life. For the European cohorts of the SHARE study, men were able to compensate for a bad start in life, while women seemed to pay the price of such a start throughout their life. The explanation for this persistent inequality remains an open question. The answer probably lies as much in social factors (e.g., access to education and occupation, misleading norms) as in possible gender-specific biological mechanisms.

The LIFETRAIL project continues its work at the #PophealthLab of the University of Fribourg in collaboration with the LIVES Center.

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## Ageing and Reserves

*Andreas Ihle, Élvio R. Gouveia, Bruna R. Gouveia,  
Dan Orsholits, and Matthias Kliegel*

### INTRODUCTION

With regard to the unfolding of vulnerable life trajectories, reserves play a key role. Specifically, based on the overarching framework of vulnerability understood as dynamics of stress and resources within context across the life course (Spini et al., 2017; see also in this volume the introductory

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A. Ihle (✉) • M. Kliegel

Center for the Interdisciplinary Study of Gerontology and Vulnerability,  
University of Geneva, Geneva, Switzerland

Swiss National Centre of Competence in Research LIVES – Overcoming  
vulnerability: Life course perspectives, Geneva, Switzerland

Department of Psychology, University of Geneva, Geneva, Switzerland  
e-mail: [andreas.ihle@unige.ch](mailto:andreas.ihle@unige.ch); [matthias.kliegel@unige.ch](mailto:matthias.kliegel@unige.ch)

É. R. Gouveia

Center for the Interdisciplinary Study of Gerontology and Vulnerability,  
University of Geneva, Geneva, Switzerland

Department of Physical Education and Sport, University of Madeira,  
Funchal, Portugal

LARSyS, Interactive Technologies Institute, Funchal, Portugal  
e-mail: [erubiog@uma.pt](mailto:erubiog@uma.pt)

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chapter by Spini & Widmer), we have studied multidomain reserve accumulation and activation as key mechanisms of the development of vulnerability and resilience in older age (Cullati et al., 2018). In this regard, in contrast to situation-dependent momentary levels of resources, reserves are seen as latent capacity that is built up across the life course. Reserves are needed for protection against damage and stress to delay or change the processes of decline in well-being, mental and physical health, economic status, or social participation throughout old age, thereby enabling the individual to maintain performance above a functional threshold. Reserves must, of course, be activated when the individual is in stress, e.g., following shocks and adversity (Cullati et al., 2018).

Vulnerability is thus proposed to be the result of (a) insufficient reserve accumulation across the life course in various domains (e.g., cognitive, relational, economic, affective), linked with (b) inefficient reserve activation in situations of stress, in the context of (c) insufficient or entirely absent systemic (e.g., welfare state) measures to offset or prevent negative outcomes. Specifically, certain individuals are more vulnerable than others to impairments in human functioning because of insufficient reserves accumulated over their life course, which consequently exposes those individuals to greater difficulty dealing with threatening situations in old age to offset or prevent negative outcomes following shocks and adversity. In

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B. R. Gouveia

Center for the Interdisciplinary Study of Gerontology and Vulnerability,  
University of Geneva, Geneva, Switzerland

LARSyS, Interactive Technologies Institute, Funchal, Portugal

Health Administration Institute, Secretary of Health of the Autonomous Region  
of Madeira, Funchal, Portugal

Saint Joseph of Cluny Higher School of Nursing, Funchal, Portugal  
e-mail: [bgouveia@esesjcluny.pt](mailto:bgouveia@esesjcluny.pt)

D. Orsholits

Center for the Interdisciplinary Study of Gerontology and Vulnerability,  
University of Geneva, Geneva, Switzerland

Swiss National Centre of Competence in Research LIVES – Overcoming  
vulnerability: Life course perspectives, Geneva, Switzerland  
e-mail: [dan.orsholits@unige.ch](mailto:dan.orsholits@unige.ch)

general, our life course view on reserves is inspired by the use of the reserve concept in cognitive neurology, in which cognitive and brain reserves determine the level of protection against clinical manifestations of neurological damage (Stern, 2009). Building on this reasoning and establishing a broader perspective extended to new research areas beyond cognitive impairment, we emphasised the multidimensionality of reserves with a wider application in, e.g., social sciences. To illustrate our research perspective in this regard with empirical examples, we focused on cognitive and relational reserve domains and their role in cognitive health and well-being as ageing outcomes.

The cognitive reserve concept (Stern, 2009) aims to account for individual differences in the course of ageing and neurodegenerative development. Cognitive reserve is built up during life through cognitive stimulation and serve later on as a buffer for coping with brain alterations to preserve cognitive functioning in ageing (Stern, 2009). Frequently used proxies of accumulated cognitive reserve across the life course are education, cognitively demanding jobs, and engagement in cognitive, social, and physical leisure activities (Opdebeeck et al., 2016; Stern, 2009). Empirically, cross-sectional evidence has demonstrated that these cognitive reserve proxies are associated with better cognitive functioning in healthy older adults (see Opdebeeck et al., 2016, for an overview).

With respect to relational reserve, the literature has stressed that social support and social capital contribute to the individual's resilience (Furstenberg & Kaplan, 2004). Accordingly, we define relational reserve as constituted by pools of significant network members (including family, close friends, neighbours, and colleagues) who, because of a history of supportive relationships with the individual, are able to be providers for that individual, e.g., emotional support, to help him or her recover from life shocks and adversity or demanding life transitions (Cullati et al., 2018). Importantly, while, e.g., the social convoy model (Antonucci et al., 2014) perceives the pool of significant network members (e.g., family) as a stable and homogenous component of the personal network, it neglects the dynamic aspect of network configurations. In contrast, the relational reserve approach accounts for those dynamic changes in the degree of importance of certain social relationships (Widmer, 2016).

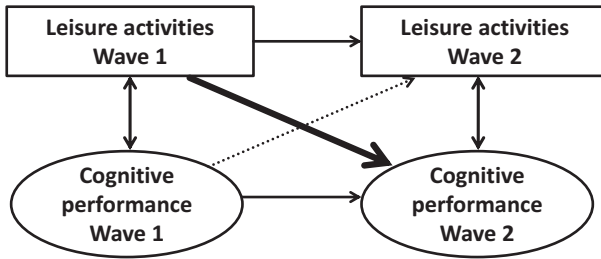
To investigate these important topics, we analysed data from large interdisciplinary datasets such as the CIGEV-LIVES *Vivre-Leben-Vivere* (VLV) survey. The VLV project has an interdisciplinary life course focus and aims to explore cognitive and physical health, well-being, activity

engagement, social relationships, etc., of the population aged 65+ living in Switzerland (for a more detailed description, see Ludwig et al., 2014; Oris et al., 2016; see also, e.g., Ihle, Jopp, Oris, Fagot, & Kliegel, 2016a; Ihle, Oris, Fagot, & Kliegel, 2017a; Ihle et al., 2015; Ihle, Gouveia, et al., 2021a; Ihle, Ghisletta, et al., 2021b).

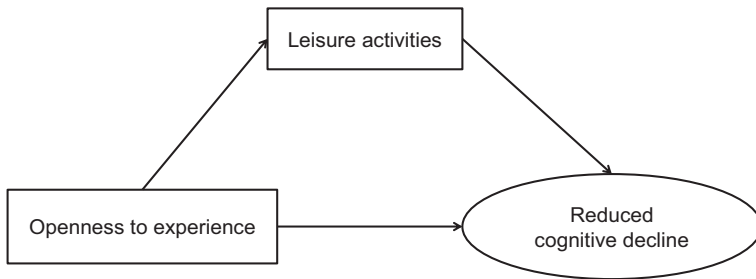
### ACCUMULATION OF RESERVES OVER THE LIFE COURSE

With respect to the cumulative nature of cognitive reserve accumulation during life, the contributions of education (in early life) and an active life-style (throughout adulthood) to cognitive reserve and thereby cognitive functioning in old age are interactive (i.e., dependent on each other). In this regard, individuals with lower (compared to those with higher) educational levels show greater potential for increasing their cognitive reserve during adulthood by engaging in activities in midlife and old age (Ihle et al., 2015). Leisure activity engagement is especially relevant for cognitive reserve accumulation after the transition from working life to old age (Ihle, Grotz, Adam, Oris, et al., 2016b). In addition to these contributions of adulthood leisure activity engagement, speaking different languages on a regular basis contributes to the accumulation of cognitive reserve during the life course (Ihle, Oris, Fagot, & Kliegel, 2016c).

Regarding the direction of effects, associations between stimulating leisure activities and cognitive functioning in old age may be reciprocal. However, prior results regarding these issues have remained rather inconclusive, especially with respect to the factors that may moderate such reciprocal patterns. Disentangling the different possible longitudinal mechanisms, Ihle, Fagot, Vallet, Ballhausen, et al. (2019a) showed that the association of leisure activity engagement in the first wave of data collection (i.e., a marker of cognitive reserve) predicting cognitive performance six years later in the second wave was significantly larger than the reciprocal association of initial cognitive performance predicting later activity engagement (Fig. 15.1). Notably, these cognitive reserve effects emerge, for example, particularly in individuals with low-skilled jobs in midlife and thereby demonstrate the additional contribution of late-life activity engagement to the accumulation of cognitive reserve. Interestingly, vulnerable individuals, such as those at a highly advanced age and with low initial overall cognitive ability levels, seem less able to benefit from such late-life activity engagement (Ihle, Fagot, Vallet, Ballhausen, et al., 2019a).



**Fig. 15.1 Cross-lagged model.** The association of leisure activity engagement in the first wave (i.e., a marker of cognitive reserve) predicting cognitive performance in the second wave was significantly stronger than the reciprocal association of initial cognitive performance predicting later activity engagement



**Fig. 15.2 Personality mediation model.** The association of openness to experience predicting reduced cognitive decline was mediated via leisure activities (i.e., a marker of cognitive reserve)

Such cognitively engaged lifestyle-cognition associations are influenced by individual characteristics, such as certain personality dimensions. For example, the personality dimension openness to experience reflects an individual's degree of intellectual curiosity, creativity, and preference for variety. Notably, cognitive reserve accumulated in late life mediates the association between openness to experience, on the one hand, and reduced cognitive decline, on the other hand (Ihle, Zuber, Gouveia, Gouveia, et al., 2019b). As illustrated in Fig. 15.2, this mechanism suggests that individuals with higher openness to experience show greater activity engagement in old age. This activity engagement enhances their cognitive reserve and may, in turn, result in smaller subsequent cognitive decline (see also Ihle, Oris, Fagot, Maggiori, & Kliegel, 2016d, for discussions).

Likewise, the accumulation of relational reserve over the life course also shows a dynamic dimension. Individuals have several opportunities to increase their relational reserve that accompany life transitions and the accumulation of social roles across the life course (child, student, citizen, worker, spouse, parent, etc.) that are the basis for relational reserve accumulation (Cullati et al., 2018; Sauter, 2020). Other life transitions, such as retirement, divorce, or widowhood, diminish or alter the pool of significant others. However, individuals can still actively react to those life transitions by adjusting their personal networks, reactivating prior relationships, and establishing new ties, which will contribute to their relational reserve over the long term (Sauter, 2020; Sauter et al., 2019, 2021).

### ROLE OF RESERVES FOR OVERCOMING COGNITIVE VULNERABILITY IN OLD AGE

It is crucial to understand the detailed mechanisms through which reserves help to overcome cognitive vulnerability in old age. Our main conclusion was that in several groups of individuals in vulnerabilising situations—for example, individuals suffering from major physiological stressors, such as obesity, unfavourable blood fat levels, chronic diseases, and psychological stress—cognitive and relational reserves accumulated over the life course can reduce the detrimental effects of these stressors on cognitive health in old age (Ihle, Gouveia, Gouveia, et al., 2018c; Ihle, Gouveia, Gouveia, Freitas, et al., 2017b; Ihle, Mons, Perna, Oris, et al., 2016e; Ihle, Oris, Fagot, et al., 2018b; Ihle, Oris, Sauter, et al., 2018a). Importantly, reserves show long-term preserving effects on cognitive changes over time, as demonstrated in individuals suffering from chronic diseases, stroke, obesity, and psychological stress (Ihle, Ghisletta, Ballhausen, et al., 2018d; Ihle, Gouveia, et al., 2021a; Ihle, Gouveia, Gouveia, Cheval, et al., 2019d; Ihle, Gouveia, Gouveia, Haas, et al., 2020c; Ihle, Gouveia, Gouveia, & Kliegel, 2020b; Ihle, Gouveia, Gouveia, Zuber, & Kliegel, 2019c; Ihle, Rimmel, Oris, Maurer, & Kliegel, 2020a).

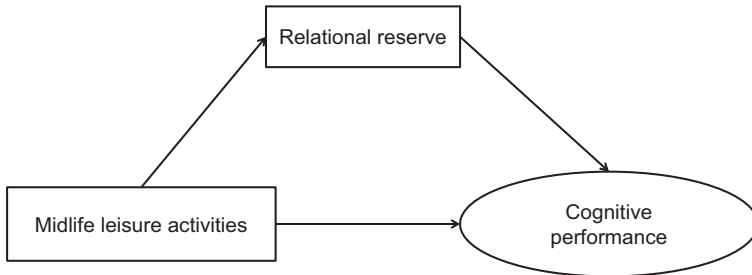
### INTERPLAY OF RESERVE EFFECTS WITH GENDER

Another challenge is to better understand gender-specific reserve effects. Stimulating internet activities have been investigated to examine gender-specific cognitive reserve outcomes (Ihle, Bavelier, Maurer, Oris, & Kliegel, 2020d). In this regard, internet use may represent a cognitively

challenging leisure activity and thus provide cognitive stimulation, thereby contributing to the accumulation of cognitive reserve. Notably, the benefits of internet use on reduced cognitive decline in old age differ between women and men. In this regard, social norms related to gender (e.g., Levy & Widmer, 2013) seem to determine the specific internet activities in which women and men engage. Older men usually use the internet for a broader range of activities than women. For example, older men mainly use the internet for information and research purposes, while older women mostly use it for communicating with family and friends. Potential differences in the cognitive complexity and demand of these internet use activities between women and men could be explanations for gender differences regarding cognitive reserve accumulation and cognitive outcomes (Ihle, Bavelier, Maurer, Oris, & Kliegel, 2020d). With respect to relational reserve, gender effects can also be observed within the social network. For example, men tend to provide support to fewer family members than women (Sauter, 2020). Such patterns may be linked to social norms related to gender and the distinct life experiences of men and women (McDonald & Mair, 2010). Thus, gender potentially plays an important role in the accumulation of relational reserve over the life course (Sauter, 2020).

### INTERPLAY OF DIFFERENT RESERVE DOMAINS

Understanding the detailed interdependencies of the different types of reserves, such as cognitive and relational reserves, is a key issue in research on multidomain reserves. Interestingly, relational reserve (e.g., the family network size, i.e., the number of family members whom an individual considers significant; and the given emotional support within the family network) mediates the association between cognitive reserve (e.g., activity engagement during middle adulthood) and better cognitive functioning in old age (Sauter et al., 2019). As illustrated in Fig. 15.3, this mechanism suggests that the interdependencies of cognitive and relational reserves over the life course are crucial for cognitive health in old age. Specifically, individuals who pursue an active lifestyle in middle adulthood accumulate cognitive reserve. They may have greater chances to preserve a stronger continuity of their personal ties throughout adulthood by maintaining sociability and support exchanges with significant others, thereby strengthening their relational reserve. Finally, this enhanced relational reserve results in better cognitive functioning in old age (Sauter et al., 2019). A



**Fig. 15.3 Reserves mediation model.** The association of midlife leisure activities (i.e., a marker of cognitive reserve) with cognitive performance was mediated via relational reserve

complementary mechanism suggests that relational reserve helps promote activity engagement in old age. This activity engagement enhances cognitive reserve and may, in turn, result in smaller subsequent cognitive decline (Ihle, Oris, et al., 2021c; see Ihle, Oris, Baeriswyl, & Kliegel, 2018e, for further discussions). Moreover, there is innovative evidence for the detailed interaction between cognitive and relational reserves (Sauter et al., 2021). Such evidence confirms the hypothesis that reserves from different domains are intertwined and that their combined effects contribute to less cognitive decline in old age.

### ROLE OF RESERVES IN ASSOCIATED ASPECTS OF EVERYDAY FUNCTIONING

Maintaining good cognitive functioning is crucial for associated aspects of everyday relevance, such as well-being (Ihle, Ghisletta, et al., 2021b; Ihle, Oris, Sauter, Spini, et al., 2020e). Notably, with respect to the aftereffects of maintaining cognitive health through multidomain reserves, a key mechanism suggests that the association of low cognitive abilities with low well-being in old age is mitigated in individuals with greater cognitive and relational reserves accumulated over the life course (Ihle, Oris, Sauter, Spini, et al., 2020e). Moreover, good cognitive functioning predicts a smaller subsequent decline in well-being in young-old adults but not in old-old adults (we used a median-split approach to divide these two age groups: < 73 years vs.  $\geq$  73 years, respectively; Ihle, Ghisletta, et al., 2021b). We concluded that as soon as individuals' functional abilities



break down and fall below a critical threshold, decline can no longer be compensated for, not even with the help of reserves (Ihle, Gouveia, Gouveia, Orsholits, et al., 2020f). This deficit makes highly advanced age a particularly vulnerable life phase (Ihle, Gouveia, Gouveia, van der Linden, et al., 2017c).

## CONCLUSIONS

With regard to conceptual implications, our empirical research achieved in LIVES confirmed the key features of multidomain reserves. Specifically, reserves exist in different domains (e.g., cognitive, relational, etc.) that are accumulated over the life course from childhood to old age through different sources (e.g., education, work, activities, social relationships, etc.). These different contributions to the accumulation of reserves across the life course depend on each other, e.g., the accumulation in earlier life phases influences the accumulation in later life phases. Moreover, these life course dynamics of reserve accumulation are influenced by several individual characteristics, such as age, abilities, personality dimensions, and social norms related to gender, which shape individuals' reserve accumulation pathways. The reserves accumulated establish a latent potential that can be activated when the individual is in stress following shocks and adversity, such as strong physiological and psychological stressors, which initiate reserve effects in old age. To be able to deal properly with stressors and avoid negative outcomes, reserves must be sufficiently accumulated, available at the right moment, and successfully activated. In this way, reserves allow individuals to overcome stressors and face vulnerability in old age by maintaining performance above a functional threshold (Cullati et al., 2018). Moreover, in the context of using one's reserves, the plasticity and maintenance of reserves is an important issue. Since vulnerability further emerges in cases of reduced capacity to restore reserves, to ensure resilience in older people's functioning in the long term, individual reserves must be reconstituted after the initial shocks (e.g., diseases) or transitions (e.g., retirement) to be ready for subsequent adverse events in later life (Cullati et al., 2018). Notably, the multiple reserve domains show dynamics and a strong interconnectedness across the life course, with different mechanisms emerging, such as mediation and joint effects between the reserve domains involved. We emphasise the investigation of the detailed interplay of multiple reserve domains and their life course dynamics as an innovative and fruitful field in life course and ageing research.

Thus, the concept of reserves is a powerful construct to explain processes of vulnerabilisation across the lifespan into old age. In this regard, the empirical evidence gained from our research presented above reinforces our central proposition that vulnerability is the result of insufficient reserves accumulated over the life course in multiple reserve domains that are crucial for maintaining cognitive health, well-being, and everyday functioning in old age. With regard to practical implications, social policies and intervention programs targeting the promotion of lifelong activity engagement and social participation are required to help people accumulate, maintain, and restore reserves to overcome vulnerability and preserve functioning in the long term in old age.

## OUTLOOK

This chapter focused on empirical examples of cognitive and relational reserves. However, importantly, the conceptual proposition of reserves and their role in overcoming vulnerability potentially also applies to other reserve domains (e.g., economic, biological, physiological, health-associated, motivational, affective) that comprise various aspects of human functioning (Cullati et al., 2018). Future research should thus focus on the interplay of multiple reserve domains, with a special emphasis on gender-specific effects. Another important angle could be to consider in more detail the interplay of reserves accumulated over the life course with individuals' normative and nonnormative (idiosyncratic) life events as well as contextual factors, such as demographic, economic, and societal characteristics of the surrounding environments in which an individual grew up and spent his or her adulthood, and systemic (e.g., welfare state) measures to offset or prevent negative outcomes.

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## Vulnerabilities and Psychological Adjustment Resources in Career Development

*Jérôme Rossier, Ieva Urbanaviciute, Fabian Gander,  
Jenny Hofmann, Jonas Masdonati, and Willibald Ruch*

The work conducted by our LIVES research team on *professional paths* is rooted in a long tradition of career development research dating back to the 1950s and the work of Super (1957) and other researchers. In our framework, career development has been conceptualised as an integral part of the life of individuals and as a process that evolves over time and cannot be dissociated from other spheres of life, such as family, leisure, and citizenship (see the chapter of this volume by Schüttengruber, Krings, & Freund). Career can thus be defined as ‘a combination of sequences of roles played by a person during the course of a lifetime’ (Super, 1980, p. 282). The globalisation and tertiarisation of our economies and the

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J. Rossier (✉) • I. Urbanaviciute • J. Masdonati  
NCCR-LIVES, CePCO, Institute of Psychology, University of Lausanne,  
Lausanne, Switzerland  
e-mail: [jerome.rossier@unil.ch](mailto:jerome.rossier@unil.ch); [Ieva.urbanaviciute@unil.ch](mailto:Ieva.urbanaviciute@unil.ch); [jonas.masdonati@unil.ch](mailto:jonas.masdonati@unil.ch)

F. Gander  
Department of Psychology, University of Basel, Basel, Switzerland  
e-mail: [fabian.gander@unibas.ch](mailto:fabian.gander@unibas.ch)

rapid technological evolution have deeply transformed the landscapes in which career development takes place (Urbanaviciute, Bühlmann, & Rossier, 2019a). Work environments are changing rapidly, thereby placing pressure not only on workers' adaptabilities and skills but also on the education system that prepares them for the labour market (Masdonati et al., 2021). For example, automatisations tends to accelerate labour market dualisation by decreasing midlevel jobs and increasing the number of insecure and atypical employment contracts, such as part-time, fixed-term, casual and seasonal work (ILO, 2016). The digital platform economy also promotes atypical employment or informal jobs that are sometimes neither declared nor subject to social contributions and offer no social benefit. This type of outsourcing, which is subject to less regulation, clearly increases workers' precarity (Vallas & Schor, 2020). In this context, the future of work seems difficult to predict, and such uncertainty may exert a profound impact on career path sustainability.

In this changing environment, traditional career development models can no longer adequately address the challenges of contemporary careers (Savickas et al., 2009). People are facing an increasing number of career transitions that must be considered moments of particular vulnerability, viewed as a multidimensional, multilevel, and multidirectional 'dynamic of stress and resources across the life course' (Spini et al., 2017, p. 5). Career paths are less predictable, offering vast opportunities for some, increasing uncertainty for all, and intensifying the dualisation of the labour market, which exposes part of the population to potential precarity. To describe how people navigate a plurality of life spheres and narrate their career paths, the different layers of the *self* (as an actor, agent, and author; McAdams, 2013) should also be considered. The development of the self is the result of a lifelong process influenced by various life experiences (corresponding to the intraindividual level of the life course cube; Bernardi et al., 2019). With fewer social markers available in late modernity, this development becomes a lifelong 'reflexive project of [the] self' (Giddens,

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J. Hofmann

Faculty of Psychology, Swiss Distance University Institute, Brig, Switzerland  
e-mail: [jennifer.hofmann@fernuni.ch](mailto:jennifer.hofmann@fernuni.ch)

W. Ruch

Department of Psychology, University of Zurich, Zurich, Switzerland  
e-mail: [w.ruch@psychologie.uzh.ch](mailto:w.ruch@psychologie.uzh.ch)



1991, pp. 32-33). The reflexive lifelong process is based on two important aspects: ‘the perception of the selfsameness and [the] continuity of one’s existence in time and space’ (Erikson, 1968, p. 50), with its ‘most obvious concomitants’ being ‘a feeling of being at home in one’s body, [and] a sense of knowing where one is going’ (Erikson, 1980, p. 127). This perspective describes how people link their past, present, and future to develop a sense of intentionality, use their contextual, proximal, and personal resources to develop agency, and narrate their journey to give meaning to their paths (Rossier et al., 2020b).

The abovementioned challenges are clearly reflected in recent policy work as well. The United Nations’ Agenda 2030 emphasised the importance of promoting access to education and decent work, and a recent report by UNESCO (2020) on the future of learning mentioned that the issue of sustainability will also become crucial for education. Indeed, education is a key issue for building capacities that help our societies to make the necessary transformation more sustainable. In times of uncertainty, exacerbated by—for example—the COVID-19 pandemic, the future of work is very difficult to predict (OECD, 2020). Access to decent work relies on several socioeconomic, community, and personal factors that can promote integration or marginalisation. Given that the cumulative (dis)advantage theory states that inequalities in terms of capital (financial, social, psychological, or health) tend to increase over the life course (Dannefer, 2003), we need to support the most vulnerable in particular, as they tend to be underserved. This necessity implies the importance of developing public policies and guidance practices that offer tangible means of securing career transitions, thereby improving the sustainability of career paths.

### INCREASING COMPLEXITY OF CAREER TRANSITIONS: IMPLICATIONS

One of the consequences of the destandardisation of career paths is an increased frequency and complexity of career transitions (Widmer & Ritschard, 2009). Career transitions—e.g., the passage from school to work, opting in and out of the labour market, turnovers, and career changes (Sullivan & Al Ariss, 2020)—imply complex adaptation processes, such as the development of new competences, ability to make sense of career changes, and the re-narration and the re-development of a new

social and personal (work) identity (Masdonati & Zittoun, 2012). The magnitude and risk of this challenge depend on multiple factors. According to Anderson et al. (2012), a transition is understood as an opportunity and leads to positive outcomes when it is intentional and anticipated, when the socioeconomic context is favourable, and when people benefit from psychosocial and environmental resources in experiencing uncertain times. In contrast, transitions are particularly risky when they are unexpected, unintentional (and potentially nonnormative) and when people lack the agency, resources, and support to cope with transition challenges (Fournier et al., 2017). In the latter case, career transitions are associated with risks of marginalisation and are therefore a source of labour market precariousness and social vulnerability.

Two types of career transitions seem particularly challenging within the contemporary world of work: 1) youths' passage from education to employment and 2) adult workers' involuntary career changes. The first type of transition, also referred to as the school-to-work transition, is indeed a crucial moment in individuals' life courses since it can affect their careers in the long term. Contextual, institutional, and psychosocial factors influence the smoothness of this transition (Schoon & Heckhausen, 2019). Among them, the 'transition regime' of the school system, the socioeconomic situation, and young adults' qualifications and social status are among the main predictors of sustainable labour market integration. For example, in Switzerland, low-qualified (those who have not completed compulsory school or professional training) and socially disadvantaged young people (coming from families with very low socioeconomic status) have a high risk of experiencing floundering transitions and falling into the NEET group (not in education, employment, or training), which in turn leads to economic and social exclusion (Vuolo et al., 2014). To combat potential exclusion, macro-level actions have to be taken, such as the development of integration policies or the application of measures aimed at helping the most disadvantaged. These socioeducational measures can strengthen psychosocial resources such as adaptability, a sense of identity, and self-efficacy and buffer the impact of contextual or institutional constraints on the school-to-work transition process and outcomes (Masdonati et al., 2021).

The second type of particularly challenging career transition is adult workers' involuntary career changes, or job changes that they did not actively choose. For example, such changes can occur following a layoff, an accident, or a health issue, which can also lead to nonvoluntary early

work exit, and unemployed older workers are particularly vulnerable (Oesch & Baumann, 2015). Unlike voluntary transitions, which commonly represent an opportunity to grow, unintentional career changes tend to put the person in psychologically and socially vulnerable positions (Fournier et al., 2017). Such changes imply a challenging process of occupational identity loss and recovery and force workers to confront the obsolescence of their skills and the obligation to build new ones (Masdonati et al., 2017). This vulnerability is even higher when transitions are not only involuntary but also unexpected, since people experiencing such changes often go through periods of uncertainty and unemployment (Daskalaki & Simosi, 2018). In these cases, career changes can be qualified as a negative career shock (Akkermans et al., 2018) and imply a precarisation of the career path and the subsequent risk of social exclusion (Fournier et al., 2017).

#### ADAPTABILITY AS A RESOURCE FOR COUNTERACTING OCCUPATIONAL VULNERABILITIES

The quality of career transitions and of individual working lives are largely shaped and influenced by macro- (e.g., labour market characteristics, economic crises) and meso-level (e.g., organisational transformations, job design practices) factors (Tomlinson et al., 2018). The work environment broadly interacts with micro-level factors, defined as personal characteristics of resilience, agency, flexibility, proactivity in crafting one's career, and use of contextual resources (Urbanaviciute, Bühlmann, & Rossier, 2019a). These different factors must be considered to understand employees' well-being. They also provide information about the sources of various disadvantages and vulnerabilities that threaten access to high-quality jobs and sustainable career development. The LIVES *Professional Paths Survey* (Maggiori et al., 2016) aimed to systematically study the direct and moderating effects of the professional context (e.g., working conditions), individual differences (e.g., personality characteristics, self-regulatory skills), and other resources (e.g., social support) on individuals' professional paths and career development. Based on a large representative sample of Swiss workers and unemployed people, this 7-year longitudinal panel study focused particularly on human agency, which 'suggests intention, volition, will, purpose, and some modicum of personal control in life' (McAdams, 2013, p. 276), in dealing with disadvantages and

vulnerabilities along the career path. According to the conceptualisation of self-determination (Ryan & Deci, 2000), being an agent implies making self-determined and goal-directed choices throughout the life course. In this context, we studied how agency manifests in personal resources that help workers cope with adversities in the world of work and proactively construct their working lives.

*Career adaptability* is a personal resource that has gained considerable attention in the last 10 years (Johnston, 2018) and can be defined as ‘a psychosocial construct that denotes an individual’s readiness and resources for coping with current and imminent vocational development tasks, occupational transitions, and personal traumas’ (Savickas, 2005, p. 51). Career adaptability includes four dimensions—career concern, control, curiosity, and confidence—that reflect specific abilities to manage the work-related challenges mentioned above (Savickas & Porfeli, 2012). Our LIVES research team has offered compelling evidence regarding how career adaptability may promote well-being within and outside of the work domain. For instance, a study by Fiori et al. (2015) investigated adaptive psychological mechanisms in the workplace and demonstrated that adaptability resources were related to higher job satisfaction and lower work stress over time through affect regulation. In addition, Maggiori et al. (2013) revealed that career adaptability maintained its positive effects on work-related well-being even in cases of adverse working conditions (i.e., job insecurity and job strain). Our study also showed the broader role of career adaptability in general well-being either via direct impact or by reducing the detrimental effects of the work environment, which notably hints at career adaptability as a transversal resource. In line with the theoretical literature (e.g., Rossier, 2015), the results of our research have generally shown that adaptability resources may mediate the relationship between the work environment or personal dispositions and well-being by reducing the detrimental effects of environmental factors and potentiating people’s positive dispositions.

To further explore how career adaptability helps people counteract work- and career-related challenges, we tested the so-called activation hypothesis (Rossier, 2015), which defines career adaptability as a ‘dormant’ resource or reserve that is activated in precarious or otherwise demanding situations. For instance, in our study of the long-term benefits of career adaptability for work and life outcomes, we observed that the presence of career difficulty (such as a lack of career opportunities in the present study but also difficulties in the workplace or unemployment in

other cases) might activate career adaptability resources that are used to overcome this difficulty (e.g., looking for alternative opportunities, setting new goals, or engaging in other career-development activities) and foster well-being (Urbanaviciute, Udayar, & Rossier, 2019b). Furthermore, we examined different professional trajectories (i.e., stable employed, stable unemployed, changing employment, moving from unemployment to employment) and concluded that activated career adaptability resources may be a precursor to career changes, which suggests that people who anticipate such changes proactively activate their career resources (Johnston et al., 2016). Finally, separate career adaptability dimensions have been shown to have some specific effects. Notably, the dimensions of career concern and control were found to be particularly relevant in regulating the dynamics of job insecurity among employees with varying levels of employability and financial status (Urbanaviciute et al., 2020), which draws attention to the utility of specific aspects of adaptability in managing uncertainty.

To gain a holistic understanding of career development, we also considered the abovementioned aspects in conjunction with contextual factors that exert a substantial impact on people's career paths. Recent data have unequivocally underlined the role of macro-level factors, such as the increase in nonstandard employment, the development of digital labour platforms and other changes in the quality of working conditions (ILO, 2016). Structural boundaries and these new challenges in our contemporary and globalised world of work may substantially alter one's career options, thereby creating space for (increasing) inequalities and precarious employment (Van Laer et al., 2019). Thus, it is necessary to understand not only career-specific but also broader resources that help people adjust to these complex psychosocial situations and counteract the risk of precarity.

### BROADER PSYCHOLOGICAL ADJUSTMENT RESOURCES

Knowing about relevant resources that accompany the successful negotiation of work- and career-related vulnerabilities or allow for positive career development might not only help identify at-risk populations but also shed some light on the required skills for positive adjustment when facing challenges. However, the study of career development should consider not only what resources prevent specific vulnerabilities but also what resources promote overall thriving in working lives (e.g., enjoyable,

engaged, and meaningful careers). While a broad array of such resources has been discussed, including social support or other determinants of agency, a large body of research has specifically examined the role of broad personality dimensions, such as the Big Five personality traits, in predicting career-related outcomes and has predominantly identified the major role of conscientiousness (Shanahan et al., 2014).

At the same time, it has been argued that other, more specific personality traits beyond the Big Five might also be relevant for predicting relevant criteria in the work context. Peterson and Seligman (2004) offered their ‘values in action’ classification, a framework for studying these more specific and positively oriented traits. This classification comprises a set of 24 stable but malleable traits (‘character strengths’) that are expected to contribute to a ‘good life’ and to produce desirable outcomes (including competence or satisfying work) but also to represent protective factors when facing adversity. With regard to work and careers, specific character strengths (e.g., perseverance, honesty, teamwork, kindness, zest, hope, or creativity) have been found to accompany career ambitions, task performance and positive organisational behaviours, or satisfaction with work and life in general (Gander et al., 2012; Heintz & Ruch, 2020). Furthermore, research has shown that character strengths are associated with better coping and reduced stress or less burnout, and there is evidence that current levels of character strengths predict future levels of job satisfaction (e.g., Gander et al., 2020; Harzer & Ruch, 2015).

In addition to such potential direct effects, personality traits might also play a crucial role in social resources (e.g., social support), which have often been reported to promote positive effects, such as career engagement or mitigate work stress (e.g., Hirschi et al., 2011). On the level of character strengths, those such as zest, love, hope, humour, or social intelligence are associated with greater perceived social support (Martínez-Martí & Ruch, 2017).

## IMPLICATIONS

To promote career development in a more sustainable and fairer world, we assert that we need to secure career transitions through a combination of macro-, meso-, and micro-level actions. Against the backdrop of the changing world of work, both the Organisation for Economic Co-operation and Development (OECD) and the International Labour Organization (ILO) have stressed that social protection must be adapted to changes in

employment and offer security not only to traditional workers but also to self-employed, temporary, and part-time workers and those affiliated with digital platforms. Considerable efforts must be made to regulate atypical employment and to combat unfair competition. As the destandardisation of career paths is associated with an increase in precarity and insecure transitions that remain periods of vulnerability, it is important to develop tools for sustainability that career paths can no longer offer through the provision of support during these transitions. Such support should include not only life-long learning but also life-long guidance, aimed at helping people take advantage of their contextual and personal resources and strengths. As researchers and practitioners, we need to become political actors to promote the development of public policies that secure access to lifelong learning and counselling for all (Rossier et al., 2020a). For this reason, we need to develop our critical consciousness (Freire, 1993) and collective actions, which implicates professionals, associations, NGOs, and international organisations in the need to commit jointly to promoting social justice and sustainable development (Carosin et al., 2021).

Macro-level actions may be taken to develop new employment and social policies and legislative responses. Such actions may concern, for example, nonstandard, nondeclared, or informal employment (ILO, 2016), the development of lifelong learning and guidance (Rossier et al., 2020a), measures that support older workers' reentry to the labour market (Oesch, 2020), or measures specifically devoted to overcoming specific crises. A few examples of specific crises and associated measures include climate change—with the *Green New Deal* or the *Climate Bonds Initiative*—or the COVID-19 crisis—with the bridge credits for companies in need, measures for the partially unemployed, or support for the self-employed. Macro-level actions have to be implemented at the meso level with organisations' policies and procedures or community action programs to promote well-being, inclusion, or reciprocal support. The highly positive impact of social resources as social support is well documented and has also been seen as a powerful factor at this level (e.g., Wang et al., 2003). At the micro level, we need to be able to provide effective support and guidance for all, considering a diversity of needs (Sampaio et al., 2021). Helping a highly skilled professional, an older jobseeker, or a young NEET person may require quite different measures or interventions. For this reason, we need to develop contextualised interventions. Moreover, career interventions have to increase counselees' reflexivity (need for meaning), intentionality (need for continuity), and agency

(resources) (Rossier, 2015). Developing people's resources allows them to exert a stronger impact on their environment (adaptability and crafting resources) and be agents of change. Considering specific resources, such as career adaptability or character strengths, might offer an important starting point for practical applications. Both might be considered when identifying at-risk groups in selection decisions for increasing person-job fit (e.g., Gander et al., 2020; Urbanaviciute et al., 2020) and may provide a starting point for deliberate interventions (e.g., Harzer & Ruch, 2016). Overall, numerous resources that accompany better psychological adjustment at the micro, meso, and macro levels have been identified in recent years and might be used in a variety of ways to prevent vulnerabilities and promote thriving.

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# On the Sociohistorical Construction of Social and Economic Reserves Across the Life Course and on Their Use in Old Age

*Michel Oris, Marie Baeriswyl, Aline Duvoisin,  
Rainer Gabriel, Myriam Girardin, Julia Henke,  
Barbara Masotti, Aude Tholomier, and Eric Widmer*

From 2010 onwards, a line of research emerged within the LIVES project (see Spini & Widmer, 2022) that focused on older adults and emphasised the dynamic relationships between progress and inequality. This research was based on the main hypothesis of a growing divide between a majority who benefit from better health and living conditions in old age and a

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M. Oris (✉)

Center for the Interdisciplinary Study of Gerontology and Vulnerability,  
University of Geneva, Geneva, Switzerland  
e-mail: [michel.oris@unige.ch](mailto:michel.oris@unige.ch)

M. Baeriswyl

University of Geneva, Geneva, Switzerland  
e-mail: [marie.baeriswyl@unige.ch](mailto:marie.baeriswyl@unige.ch)

marginalised minority of vulnerable elderly people who do not (Oris et al., 2016). Over the following decade, numerous analyses were added to this line of research that document how, throughout their life courses, individuals construct social and economic reserves that they can use in their old age to maintain a sense of self (Spini & Jopp, 2014) and well-being (Oris, 2020). This newly developed concept of reserves is especially fruitful for the study of old-age vulnerabilities since it refers to resources that are not required for immediate use but that, if accumulated to a sufficient extent, allow individuals to recover from accidents, face stressors, or manage difficult transitions (Cullati et al., 2018), such as growing old.

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A. Duvoisin

Department of Psychology, Center for the Interdisciplinary Study of Gerontology and Vulnerability, University of Geneva, Geneva, Switzerland  
e-mail: [aline.duvoisin@hetsl.ch](mailto:aline.duvoisin@hetsl.ch)

R. Gabriel

Institute of Diversity and Social Integration, Zurich University of Applied Sciences (ZHAW), Zurich, Switzerland  
e-mail: [rainer.gabriel@zhaw.ch](mailto:rainer.gabriel@zhaw.ch)

M. Girardin

Faculty of Social Sciences, Institute of Demography and Socioeconomic, University of Geneva, Geneva, Switzerland  
e-mail: [myriam.girardin@unige.ch](mailto:myriam.girardin@unige.ch)

J. Henke

Life in Abundance, Bern, Switzerland  
e-mail: [juliahenke@lifeinabundance.org](mailto:juliahenke@lifeinabundance.org)

B. Masotti

University of Applied Sciences and Arts of Southern Switzerland, Manno, Switzerland  
e-mail: [barbara.masotti@supsi.ch](mailto:barbara.masotti@supsi.ch)

A. Tholomier

Institution Genevoise de Maintien à Domicile, Geneva, Switzerland  
e-mail: [aude.tholomier@imad-ge.ch](mailto:aude.tholomier@imad-ge.ch)

E. Widmer

Department of Sociology, Faculty of Social Sciences, University of Geneva, Geneva, Switzerland  
e-mail: [eric.widmer@unige.ch](mailto:eric.widmer@unige.ch)

The foundation for our empirical work is the CIGEV-LIVES *Vivre-Leben-Vivere* survey (VLV) (Oris et al., 2016). It focuses on the health and living conditions of older adults born between 1911 and 1946 living in Switzerland. The first wave of VLV, conducted in 2011–12, was specifically constructed to promote a fair inclusion of vulnerable individuals—those living in poverty, social isolation, depression or those physically dependent on external care. A total of 3080 individuals without major cognitive impairments aged 65–102 were included in the survey via a two-step procedure. First, they completed a self-administered questionnaire that included a retrospective life calendar covering their family, work and residential trajectories from their birth until the date of the survey (Morselli et al., 2016). Following this, they participated in a computer-assisted personal interview. A total of 555 individuals with neuropsychiatric or major physical impairments were added via a simplified procedure (Oris et al., 2016). All coauthors of this chapter were actively involved in this data collection. A second wave of the VLV survey was carried out in 2016–17 (see Ihle et al., 2020). The chapter by Andreas Ihle and colleagues (this book) addresses a full branch of research on the interdisciplinary understanding of cognitive and relational reserves in old age based on VLV data. This chapter focuses on social and economic reserves. In the first part, we provide a synthesis of how the dynamics of these reserves are constituted across people’s lives. Following the LIVES vulnerability framework (Spini et al., 2017), individual life trajectories are considered in their sociohistorical contexts. Cohort membership bridges micro- and macrohistories. In the second part, the use and depletion of accumulated reserves in old age are discussed.

### THE SOCIOHISTORICAL CONSTRUCTION OF OLDER ADULTS’ SOCIAL AND ECONOMIC RESERVES

We studied individuals who have been socialised, roughly, between 1910 and 1965, a period marked by major economic, social and institutional changes, a historical transition from highly prevalent poverty to a middle-class consumer society. Across history and throughout each individual’s life, reserves have been unevenly constructed. The acquisition of a certain level of education is foundational and illustrates the reserve concept well, i.e., a latent capability that can be mobilised when needed (Cullati et al., 2018). In Switzerland, free compulsory primary school and child labour prohibition were established as early as the 1870s. In the twentieth



century, the Swiss educational system offered increasing opportunities. In 1930, the landmark institutionalisation of vocational training occurred, with the aim of training skilled workers and ensuring socioeconomic stability in Swiss society. In doing so, Switzerland adopted a system that is largely specific to German-speaking countries, where this type of professional training is highly valued (Allmendinger & Leibfried, 2003). Overall, the Swiss educational system promoted social reproduction until the early 1960s. The expansion of secondary and tertiary degrees is reflected in the changes in the composition of the elderly population. In 1979, 66 percent of those aged 65 and older had completed only the compulsory level of education or less; in 2011, this was the case for only 18 percent of that population. The proportion of the older population with an average level of education (mainly apprenticeship) grew from 23 to 50 percent (Oris et al., 2017).

Schools acted as phasing institutions (Levy & Bühlmann, 2016) that facilitated the transition from education to the labour market. Analysis of the VLV life calendars revealed four typical professional trajectories: full employment, quasi full employment, stop and restart, and start and stop. In the aforementioned birth cohorts, men predominantly experienced the first two trajectories, whereas women predominantly experienced the latter (Gabriel et al., 2015). A biographical mixed-methods approach that combined quantitative analysis of VLV data with interviews of a subsample confirmed that women had been socialised to adopt the stereotypical female role of spouse, mother, and housewife (Duvoisin & Oris, 2019). Similarly, a gendered attribution of skills framed school programs, with girls being constrained to studying the domestic economy (Baeriswyl, 2016, p. 106). As will be discussed below, such limitations held tremendous implications for the constitution of women's reserves and their use later in life.

In the context of improvements in the standard of living after World War II, a postcompulsory diploma offered a stable professional career and the corresponding financial income to sustain a middle-class lifestyle, which also promoted a normative model of the family: a nuclear household with a male breadwinner and a woman acting as mother and housewife (Baeriswyl, 2016). Neither in Switzerland nor in the rest of the Western world has marriage been as frequent, early and long-lasting as among the parents of the baby boomers, parents who now constitute the VLV sample. Analyses that simultaneously consider familial and professional trajectories have, however, shown that not one but several

trajectories led to this rise in fertility. Although interviews have confirmed the weight of gendered social norms, real diversity was created by social position, life experiences and agency (Duvoisin, 2020; Duvoisin & Oris, 2019).

Nevertheless, it must be emphasised that many members of the birth cohorts studied in VLV (1911–1946) have experienced standardised life trajectories, which is due largely to the institutionalisation of the life course following WWII, defined in three stages: childhood, adulthood, and old age (Kohli, 2007). After the first stage, the transition to adulthood followed a clear sequence of events (typically, first job, leaving parental home, first marriage, first child) (Duvoisin, 2020). To support the next life stage, Swiss Old Age and Survivors' Insurance (AVS), which was supposed to guarantee a minimum pension to all Swiss residents, was instituted in 1948, thus fixing retirement and the transition to old age at the age of 63 for women and 65 for men. The AVS was only supplemented by an occupational pension system in 1985 (Gabriel et al., 2015). Both programmes aimed to secure material security in old age through the constitution of a life course financial reserve accumulated across one's working life. Since women's professional trajectories were much shorter, interrupted and part-time compared to men, this system made married women highly dependent on their husband's incomes (Oris et al., 2017).

Globally, such processes created what Levy and Widmer (2013) have rightly called gendered life courses, with a differential accumulation of reserves to face old age. Striking intercohort differences in available income were another result of the aforementioned dynamics. In the wealthy country of Switzerland, income poverty affected 51% of residents aged 65+ in 1979, but this proportion had decreased to 21% by 2011/12 (Gabriel et al., 2015). Although the gender gap declined after 1979, in 2011/12, women were still clearly more often poor, as were members of the older cohorts (born before 1926). A series of analyses revealed that those disadvantages in old age are accounted for by the level of education (Gabriel et al., 2015; Oris et al., 2017). For the elderly who were studied both in 1979 and in 2011, a low level of education multiplied the risk of income-poverty in old age by a factor of 2.5 compared to an average level of education, indicating that most of the social inequalities in early life are transferred into old age. This trait is common in so-called Bismarckian (conservative) welfare states (see Esping-Andersen, 1990; van der Linden et al., 2020). Accordingly, the historical expansion of education was the main driver of the decrease in old age poverty and of upward social

mobility, two processes that were crucial for the improved accumulation of economic reserves across cohorts (Oris et al., 2017).

Matching those empirical results with theoretical explanations, the long-term influence of early life conditions on old age reserves is clear. Our results strengthen the international consensus regarding this point (Oris et al., 2021). According to the theory of cumulative (dis)advantage, early interindividual differences should increase over time, at least until old age (Spini et al., 2017; Spini & Widmer, 2022). Nonetheless, while according to Dale Dannefer (2020, p. 1), ‘Over recent decades, evidence supporting cumulative dis/advantage (CDA) as a cohort-based process that produces inequalities on a range of life-course outcomes has steadily increased’, we join Glen Elder and his colleagues (2015, p. 23) in being more sceptical about CDA. Our research on Switzerland has suggested that the accumulation of disadvantages and the accumulation of advantages are not symmetric. Indeed, the welfare regime has limited the triggering processes associated with low education (Oris et al., 2021). A modest safety net prevented the elderly from falling into precarity and instead resulted in a low-level ‘cumulative continuity’ (Elder et al., 2015, p. 23). Conversely, those with a middle or high education level had much better life chances later on. Such results support the approach of scholars who have investigated ‘how welfare states shape age-graded life courses and, next to social classes, generate “welfare classes” of life-stage specific benefit recipients, including retirees, children or widowed’ (Fasang & Mayer, 2020, p. 23). From that perspective, the Swiss welfare regime combines elements of the conservative model—especially for occupational insurance, which has been built on the male breadwinner model—and of the liberal model, particularly in the central role of individual responsibility and the prioritisation of private initiatives over state interventions (Baeriswyl et al., 2021). Such a structure is why older adults’ personal networks of support are crucial reserves for dealing with ageing in the Swiss context.

Such networks include groups of kin, of which the size and composition naturally depend on past family life (Widmer, 2016). As a result of the dynamics previously discussed and of the spectacular rise of longevity, the verticalisation of structures of kinship observed everywhere in Europe is reflected in the personal networks of people aged 65+ living in Switzerland; this is especially demonstrated by the increase, from 1979 until 2011, of those who have children and grandchildren as well as a living partner (Baeriswyl, 2016, p. 114). However, these structural changes do not tell

us much about how people actually pursue relationships. In a series of VLV papers, ‘family’ was defined by older adults who identified themselves their most relevant connections. Six types of family networks were identified, with an unequal emphasis on partners, children, siblings, blood relatives, and friends, indicating that older adults develop a diversity of family networks beyond spouses and children. Approximately one in five respondents appeared to have no or very few significant family members (Girardin & Widmer, 2015).

While the discourse on postmodern societies has frequently assumed a decline in ascribed family ties and a growth of elective ties, it appears that among older adults, having a close friend represents a relational reserve that grew between 1979 and 2011 while not competing with family relationships (Baeriswyl & Oris, 2021). The increasing presence of close friends in the personal networks of the elderly from 1979 to 2011 was part of a broader lifestyle change observable after retirement that involved increasing social engagement (see below). Such change particularly benefited educated older adults (Baeriswyl, 2016). These results on both family networks and friendship supported our initial hypothesis that intercohort progress drastically changes the composition of the retiree population, with a majority of active, healthy older adults contrasting with a minority of vulnerable individuals who accumulate penalties (Oris, 2020).

### USES OF ACCUMULATED RESERVES AND THEIR DEPLETION IN OLD AGE

This uneven distribution of a variety of reserves is crucial to understanding how older adults face the many challenges of life after retirement, a period of life that has been greatly extended in all wealthy countries in recent decades; in Switzerland in 2018/19, life expectancy at 65 reached 20 years for males and 22.7 for females (Oris, 2020). The growing gap between biological ageing and the institutional threshold defining old age explains the development, from the 1980s onwards, of influential international models that associated successful ageing with active ageing, viewing activity as a source of health and well-being (Bülow & Söderqvist, 2014). These discourses resonated with the rise of social participation (broadly defined as an individual’s activities involving interaction with others) and with the emergence of a lifestyle oriented towards social life beyond the household (Ang, 2019). In Switzerland, the number of social participations of home-dwelling older adults rose from 3.4 in 1979 to 4.3 in 2011.

Only a small minority developed no social participation at all and appeared truly excluded from social life (5% in 1979, 3% in 2011) (Baeriswyl, 2017). Although the difference between women and men shrank between 1979 and 2011, gendered life courses continued to be reflected in men's tendency to be more present in the public sphere compared to women's higher involvement in private relations. Moreover, women need higher educational reserves than men to access similar levels of public engagement and even more to reach positions of power (Baeriswyl, 2018). In regard to life satisfaction, there is evidence for the importance of multiple types of participation, with some types being particularly meaningful: involvement in an association, visiting family or friends and church attendance. Multiple types of participation, associative involvement and friendship are more frequent among the upper social strata. In contrast, family and religious participation—which may be regarded as traditional modes of integration—have emerged as important practices for those with greater exposure to risks and stresses because they have fewer reserves, for instance, in terms of health and income. This is especially the case for less-educated older adults and for very old women (Baeriswyl, 2018; Oris et al., 2017).

Several LIVES empirical studies have demonstrated that models of active ageing are implicitly class-driven and gender-blind (Oris, 2020). Social class and gender are crucial since they impact not only economic and social reserves but also how family reserves are used to preserve inter-generational relationships. Older parents use their own financial reserves to help their children during the transition to adulthood (which has become more challenging than their own experience) or when their children face life accidents (which, again, is more frequent than in previous generations) (Widmer & Ritschard, 2009). Older parents' propensity to provide financial support primarily depends on their wealth, thus leading to increasing social inequalities. Monetary transfers are also associated with relational reserves, particularly regarding the frequency of exchange of practical help within the family for men and for women with the position and the role they play within their family configuration (Baeriswyl et al., 2021). Distinct family configurations are associated with a variety of relational reserves with various issues for individuals. Relational reserves featuring a large density of interactions increase the family protection of older adults in need (Girardin & Widmer, 2015). As long as they can, and within the limits of their various and unequal economic and health reserves, older adults actively shape their relational reserves in ways that

help them avoid conflict and stress to increase their positive interactions with others (Girardin et al., 2018; Widmer et al., 2018).

While socioeconomic inequalities differentiate individual positions in social circles and personal networks, old age does not appear to level out social inequality (Fasang & Mayer, 2020, p. 25). Instead, the accumulation of disadvantages, which, as we have seen above, was not obvious during their adulthood, emerged in our sample of older adults and exacerbated the long-term impact of early-life conditions and intergenerational reproduction. The follow-up of the VLV survey in 2017, six years after the first wave, showed considerable volatility in old-age poverty. In 2011, blue-collar workers were at greater risk of being income-poor and of feeling poor (subjective assessment), but they were also more prone to falling into poverty while ageing (becoming income-poor and beginning to have difficulties in making ends meet) (Gabriel et al., 2021). Blue-collar life after retirement appeared to be marked by the depletion of their limited financial reserves, with limited capacities to rebuild them. Such economic inequalities translate into life expectancy differentials. Drawing on a national database that links population censuses, death certificates, and Swiss Health Surveys, (Remund et al., 2019) showed that in Switzerland, a country that competes with Japan for the highest life expectancy in the world, life expectancy in good health of those with low educational attainment has been stagnating since 2000, resulting in an expansion of their morbidity.

The concept of frailty, however, bridges the perspectives of social and medical sciences on ageing more fruitfully than morbidity. As a phenotype, frailty expresses a decrease in functional ability that makes it difficult to manage daily activities and social interactions, threatening but not abolishing autonomy. With the expansion of longevity, the prevalence of frailty has grown during recent decades and has become part of a large majority of the oldest people's ageing trajectories (Spini et al., 2007). In Switzerland, the VLV survey showed that among those aged 80+, 28% of the women were independent, 48% were frail, and 24% were dependent; among men, those figures were 42%, 41% and 17%, respectively (Tholomier, 2017). Frailty is an illustration of 'the lack of reserves [which] is synonymous of vulnerability, when decreasing reserves meet a threshold, which may be defined as individuals being unable to restore a normal state of agency in the pursuit of their life' (Cullati et al., 2018).

If vulnerability of the frail elderly is obvious when their survival is threatened during heat waves or the COVID-19 pandemic (Oris et al.,

2020), in normal times, their mastery of life is shaped—either favoured or hindered—by institutional and social support systems and by a complex network of actors within a policy framework that encourages the elderly to stay at home (Masotti, 2018). Staying at home is important for many older adults since the ability to preserve one's personal identity and personal networks in old age can be challenging. Even when professional caregivers step into their private sphere, older adults use all their remaining reserves. They struggle to preserve a sense of control over their lives, bargain their care trajectories, cope with constraints to preserve acceptable living conditions, and contest situations when they do not obtain what they believe is right (Masotti, 2018). Other modes of coping with low and/or decreasing reserves and managing downward adaptations have been identified in research on the subjective experience of economic vulnerability in old age. Julia Henke's results have supported the idea that 'older adults increasingly see finances as a means to an end rather than an end in itself and that their judgement of financial adequacy may be more strongly influenced by questions of adequacy and a fair and just treatment than by objective resources' (Henke, 2020, p. 305). Wisdom and stoicism are further reserves that have been built up throughout a life course marked by sociohistorical experiences shared across the same birth cohorts: those who faced economic crises in the 1920s and the 1930s and WWII. The memory of past is the basis for an intrabiographical referencing (Henke, 2020, p. 313) that Masotti (2018, p. 92) also observed in her interviews of care receivers, who did not want 'to let themselves go'. As expected, these values are clearly more present among the oldest cohorts than among the younger cohorts.

This desire to maintain a sense of mastery over their lives plays a decisive role in the ability of the oldest old people to cope with declining reserves while maintaining their level of well-being. Among the 3080 individuals who were cognitively able to respond themselves to the VLV questionnaires, life satisfaction was high on average (between 26 and 28 on the Diener et al. (1985) scale, which has a maximum score of 35) and was similar for the young old and the oldest old (until age 90+). However, when also considering those VLV participants suffering from cognitive impairments, the picture is less rosy: Among the oldest old, there was an increase in difficulty with age, for example, in the ability to follow a conversation or in personal care (31% of women and 22% of men aged 80+),

as well as a high prevalence of physical disorders and multimorbidity. As the norm of the autonomous individual largely dominates in Swiss society, when illnesses no longer allow people to control their lives or to take care of themselves, it is not surprising that depression arises (Tholomier, 2017). Some individuals then reach ‘thresholds [of reserves] below which functioning becomes highly challenging’ (Cullati et al., 2018, p. 551). Such results highlight the importance of data collection, such as VLV, that meets the challenge of including the most vulnerable.

## CONCLUSION

The story of the Swiss birth cohorts 1911–1946 is largely similar to that of other Western Europeans from the same generations. The development of reserves and their use and depletion were embedded in multidimensional lives in which family, social relations and participations and professional careers interacted to create relatively standardised and clearly gendered life courses. Switzerland’s uniqueness is the result of a mixture of a conservative and a liberal ethos that has structured the historical developments of education and the welfare regime. Both have strongly impacted the individual life courses of men and women, leading to predominantly stable social trajectories from childhood to old age. The influence of the school system has been decisive, since inequalities early in life are still clearly present half a century later in postretirement life. Such inequalities have affected both the availability of reserves and their preservation, with older adults with low education being more often poor and more at risk of becoming poor while ageing. Alternatively, in a context of economic growth, the extension of the available education has impressively transformed cohort composition, individual life chances and the sociohistorical development of reserves. Health and living conditions have improved, and gender inequalities have decreased. Such progress has supported the growth of social participation, a more active citizen life, and an increase in relational reserves, although within the context of diversification of the family configurations. Nevertheless, in Switzerland, one of the wealthiest countries in the world, one in five older adults are still affected by poverty; the same proportion has no personal network; and frailty, multimorbidity or depression are highly prevalent among the oldest old. Old-age vulnerabilities remain a crucial issue for social cohesion and citizenship.



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# Life Trajectories as Products and Determinants of Social Vulnerability

*Jacques-Antoine Gauthier and Gaëlle Aeby*

## INTRODUCTION

This chapter aims to show how the notion of life trajectories, considered empirically as sequential processes, enables us to uncover the dynamics of resources, reserves and stressors that correlate with social vulnerability. The life trajectory represents an overarching notion that combines three components (phases, events, transitions) influencing such dynamics (Levy and the Pavie Team, 2005). Indeed, while life phases are associated with specific resource and reserve opportunities, events and transitions challenge these opportunities and bring changes in one direction (i.e., accumulation) or the other (i.e., loss). In this chapter, a special focus is placed

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J.-A. Gauthier (✉)

Faculty of Social and Political Sciences, Institute of Social Sciences, University of Lausanne, Lausanne, Switzerland

e-mail: [jacques-antoine.gauthier@unil.ch](mailto:jacques-antoine.gauthier@unil.ch)

G. Aeby

Faculty of Social Sciences, Institute for Sociological Research, University of Geneva, Geneva, Switzerland

e-mail: [Gaelle.Aeby@unige.ch](mailto:Gaelle.Aeby@unige.ch)

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285

on life trajectories that deviate from the existing dominant patterns, as they may be linked to a higher level of vulnerability. Additionally, a selection of ascribed attributes such as sex, socioeconomic background and family configuration of origin is considered to understand their buffering or exacerbating impact on the link between life trajectories and vulnerability. Finally, we discuss the role of interpersonal relationships and how such relationships and life trajectories may be viewed as two overlapping representations of the same process, the former from a synchronic perspective and the latter from a diachronic perspective. Their mutual variations are an indicator of the reserves at hand—i.e., the level of resources that may be mobilised when needed—and hence of the individual's overall vulnerability (Cullati et al., 2018).

The chapter is structured in two main parts. The first part, *Life courses and trajectories*, presents a formal conceptualisation of these two notions, followed by an overview of their main structuring factors and their link to resource availability, reserve building and the associated stressors that may lead to vulnerability processes (cf. Chap. 2, this volume). After a brief overview of how to operationalise life trajectories into empirical sequences, the second part, *Dynamics of life trajectories in context*, is organised around the transition to, maintenance during and exit from adulthood and presents a series of research findings based on the Swiss context and focusing on family and occupation, as these are two central and interdependent life domains in which specific types of trajectories may be found. They serve as examples in the empirical discussion of the link between individual trajectories and vulnerability presented in the first part.

### *Life Courses and Trajectories*

Formally, an individual life course may be viewed as the variation over time of a series of social statuses and roles in a three-dimensional space (cf. Chap. 2, this volume; Spini et al., 2017; Levy, 2013). Its first dimension describes the different societal systemic levels of their occurrence (i.e., micro, meso and macro), the second distinguishes the life domains in which individuals are integrated (e.g., family and occupation), and the third considers the main chronological phases of life (e.g., education, production and retirement).

## A FORMALISED INTERDISCIPLINARY PERSPECTIVE

The multidimensionality of the life course has prompted scholars from various disciplines to find a common terminology to describe it as comprising four components: phases, events, transitions and trajectories (Levy and The Pave Team, 2005). A *phase* describes a steady life period regarding an individual's social integration, characterised by stable statuses and roles (e.g., being a childless single with a full-time job or a married parent with a part-time job). A given phase is thus associated with specific relational and material resources and with particular options to accumulate them. An *event* occurs at a certain time and is given meaning by individuals. It can be normative and therefore socially anticipated, as is the case for marriage, or nonnormative and often feared, such as death or job loss. Meaningful events are sources of stress with varying intensity (Rosino, 2016) that, accordingly, challenge the functional balance of existing interpersonal dynamics (Olson, 2000). The changes associated with an event (addition or subtraction of network members, status modification, contextual change) often trigger life *transitions*, which are characterised by a swift transformation of the structure of an individual's roles. Transitions open to a new phase of life and offer a specific amount of resources that may or may not be accumulated (e.g., when becoming a graduate, parent, unemployed or divorced). *Trajectory* represents the overarching notion combining the three aforementioned components, namely, 'long-term patterns of stability and change, often including multiple transitions' (George, 1993, p. 358).

Although the idea of process has been central to many social sciences from their origin, it has been radically challenged in the wake of the twentieth century. During that time, the transformations associated with industrial and political revolutions triggered enduring adaptive challenges to be faced by most women and men. Such changes have increasingly drawn scholars' attention to conceptualising the unfolding of individual lives as 'temporal patterns of reciprocal determination' (Abbott, 1997, p. 1156). Elder et al. (2003) stated that the notion of the life course may be parsimoniously framed by using the following five key principles. *Time and place* draw attention to the importance of historical and geographical contexts to assessing the specific constraints weighing on individual lives. *Linked lives* refers to the notion of personal networks and underlines that life trajectories should be understood as constantly interacting with those of others. The notion of *timing* serves to differentiate the influence of an

event depending on whether it occurs early, on time or late against a given normative background (cf. pregnancy). Paying attention to *agency* allows us to understand how choices may lead to different outcomes when comparable individuals are facing a similar situation. Finally, *lifelong development* is what imbues the notion of trajectory with sociological meaning as a process that is never fully predictable until it has come to its end. From this perspective, individual life courses unfold within a multidimensional web of constraints and opportunities that structure them in a limited number of ways, each of them being associated with specific resources and reserve opportunities.

### LIFE STRUCTURING PROCESSES

One may consider here three main theses regarding how individual lives are structured (Levy, 2013), each of them shedding a different light on which resources are available and whether they can be accumulated. First, to what degree are individual lives standardised by the triple action of surrounding institutions, which contributes to (1) *phasing* the course of lives (e.g., by regulating entry into and exit from the labour market through an age-graded system); (2) *relating* individual lives (e.g., creating parent-child or partner dependence by establishing legal rights and duties); and (3) *supporting* them (e.g., taking over certain family tasks by providing childcare facilities)? Second, are they mainly gendered, which is different for women and men? Third, are they individualised, reflecting the changes associated with the second modernity (Beck & Beck-Gernsheim, 2001)? The most influential in this regard are the increases in birth control and divorce rates, along with the recognition of alternative family forms and the diminishing influence of the welfare state, the military and the church on the ways to live in society.

The institutionalisation of the life course lays the foundation for a possibly steady process of change in various contexts. The nature, direction and magnitude thereof are dependent upon endogenous and exogenous influences. Successive changes in the life course of individuals, for instance, in the spheres of family and/or occupation, are often associated with some upward or downward mobility (O’Rand, 2006) that modifies the resources and reserves available to them. Spini et al. (2017) therefore proposed considering vulnerability not only as an individual or collective static attribute associated with poverty, risk or insecurity but also as a process characterised by exposure to stress as well as the ability to cope with it and to



recover from it, thereby making the life course and vulnerability almost synonymous (see Chap. 2, this volume). This approach makes it possible to consider the amount of resources and reserves available to individuals over time as a dynamic, cumulative process by which certain distinctive features (ascribed or achieved) generate advantages regarding, for instance, wealth and well-being that accumulate over time, such as being a man, coming from a wealthy family, working continuously full time, having an educational degree or being born in 1940 rather than in 1920. The absence of these features tends to produce the opposite effect (Dannefer, 2003).

The following section uses the various conceptual elements presented to evaluate how social inequalities impact the unfolding of life trajectories in various life spheres, particularly regarding the resources available to individuals. It also seeks to help assess whether these inequalities are associated with a process of differential vulnerability, by which those with fewer resources are more likely to suffer more from stressors than others (cf. Chap. 2, this book).

### *Dynamics of Life Trajectories in Context*

In this section, we present a series of empirical studies, notably from the LIVES program, that have used individual life trajectories to identify the dynamics of resource availability, reserve building, and the associated vulnerability processes (Cullati et al., 2018; Spini et al., 2017). This section is organised around the transition to, maintenance during and exit from adulthood. Indeed, adulthood as a phase of life encompasses a series of role transitions in major life spheres and, hence, is a central and multidimensional marker of social integration (George, 1993; Shanahan, 2000). To better understand how individual lives are structured over time, different systemic levels (micro, meso, macro) and life domains (family and occupation) are considered jointly with indicators of social position.

The data presented here relate to the Swiss context. Switzerland is a small and wealthy federal state in the middle of Europe without being part of the European Union and is characterised by linguistic diversity, an important share of its population stemming from migration, and its low and stable level of unemployment. The welfare regime of Switzerland has been qualified as hybrid regarding the structure of its social insurance system, as it incorporates components of the conservative-corporatist and liberal models (Arts & Gelissen, 2002). For instance, work-family

conciliation is seen mainly as a private matter, as family policies tend to be comparatively weaker than in other European countries.

Finally, the empirical findings presented in this section are based mainly on sequence analysis. One difficulty associated with the analysis of life trajectories is the need to consider simultaneously the timing, order and duration of their components. Formally, it is possible to associate a sequence of states with any individual life trajectory, which is considered a chronological succession of statuses in one or several life domains. For instance, from age 20 to 35, the trajectory of an individual who lived five years with status ‘A’, three years with status ‘B’ and eight years with status ‘C’ may be expressed as  $T=\{AAAAABBBCCCCCCC\}$  or represented as the sixth sequence of the individual sequences of states presented in Fig. 18.1. There are many ways to deal statistically with sequences of states (e.g., Aisenbrey & Fasang, 2010; Studer, Gauthier and Le Goff, this volume), but let us briefly describe the core program of sequence analysis (Gauthier et al., 2014).

Once individual sequences are created, the next step is to evaluate how (dis)similar they are. This is performed by using, e.g., *optimal matching*, an algorithm that allows the quantification of the minimum number of elementary operations of insertion, deletion or substitution—called distance—that are needed to transform a source sequence into a target sequence. The larger this number is, the more dissimilar the sequences. In the third step, cluster analysis is applied to the matrix of all pairwise

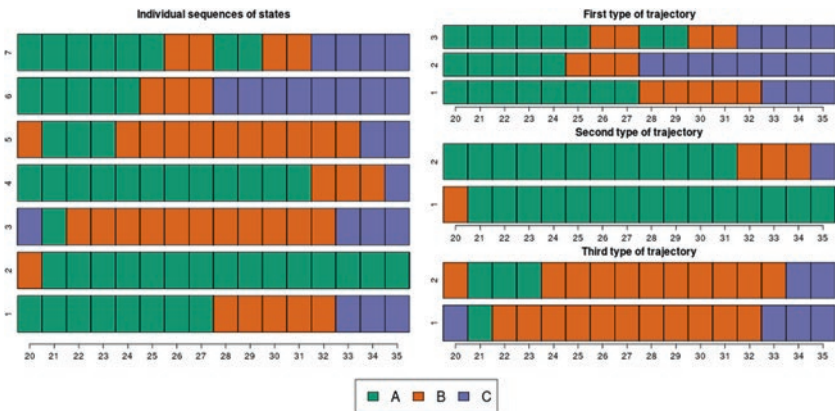


Fig. 18.1 From individual sequences of states to types of trajectory

distances to group together similar sequences, thereby forming a typology of sequences. Figure 18.1 presents, on the left, the initial seven individual sequences, which are gathered, on the right, into a three-type trajectory typology. Ultimately, the analysis aims to contextualise these types by using them as categorical variables in multivariate statistical procedures (e.g., logistic regressions).

## TRANSITION TO ADULTHOOD

The transition to adulthood is a period of life characterised by crucial transitions in family and occupational domains (Buchmann & Kriesi, 2011). During this transition, the socioeconomic status of origin, which may be considered an initial reserve of resources, will strongly influence the ways in which individuals acquire first academic credentials and then occupational positions (Bourdieu, 1975). Nevertheless, other factors also exert a critical impact on this transition, such as the family configuration of origin and gender. In this section, we focus on three key dimensions of this phase of life: early family trajectories, school-to-work trajectories, and self-esteem trajectories.

### *Leaving the Parental Home*

At a mesosociological level, one central issue regarding the transition to adulthood concerns the departure from the parental home (Gillespie et al., 2020), a process in which the role played by sibling presence and interactions remains largely underexplored (Conger & Little, 2010). For Déchaux (2007), the tie between siblings is a ‘derived link’ whose quality depends on the intervention of the parents, or at least the mother, thereby making it ambivalent and lifelong. In terms of social capital, sibling dyads are configurations characterised by a certain level of trust that is associated with cooperation and competition to access scarce resources within the family (De Carlo & Widmer, 2011). These interactions exert a specific influence on the way siblings will experience most of their life transitions within the spheres of family and occupation (Conger & Little, 2010) and therefore on their opportunities to build potential resources and reserves. Rossignon et al. (2018) used sequence history analysis (SHA, see Studer, Gauthier and Le Goff, this volume) to assess the influence of childhood coresidence trajectories on the likelihood of leaving the parental home in Switzerland. They produced eight types of family trajectories preceding

parental home departure, which are structured by the stability of the parental union, the birth rank of the respondent, the presence of siblings, the order of departure of siblings and the timing of birth and departure, as follows: (1) *Both parents and siblings* (40.5%); (2) *Early arrival of siblings* (28.7%); (3) *Both parents to one parent (with siblings)* (10.4%); (4) *Early arrival of siblings and parental separation* (6.2%); (5) *Both parents to one parent (without siblings)* (4.5%); (6) *Both parents* (4.1%); (7) *Late departure of siblings* (3.1%); and (8) *One parent to both parents (with siblings)* (2.5%). This typology reveals the presence of a dominant pattern (childhood spent in an intact family with at least one older or younger sibling) along with alternative models characterised by parental separation, family recomposition, and the arrival and departure of siblings. Interestingly, the *patterns* of family trajectories characterised by these events are significantly associated with leaving home early, which is not true when they are used as single, independent indicators. This difference shows that leaving home is sensitive to the occurrence, timing and ordering of events. An early departure from a parental home is a situation that may have consequences for subsequent transitions, accentuate resource deficits (Amato, 2010), reduce accumulation opportunities and favour vulnerability later in life.

### *Entering the Labour Market*

At a macrosociological level, Laganà et al. (2014) considered the transition from education to employment through the lens of citizenship and migration statuses to better understand the dynamics at play in (dis)advantaging second-generation migrants. In Switzerland, a large share of these transitions occur through the dual-track education system, which is characterised by an institutionalised alternation of in-school and in-enterprise components. Using a sequence analysis approach, the authors created a typology describing the seven years following the end of compulsory education in Switzerland, a crucial period regarding future educational and occupational attainment. The trajectories were constructed according to the domain of activity (education or occupation) and the hierarchy of activities (low and high vocational tracks, general education, low and high positions in manual or nonmanual occupations). Analyses evidenced five patterns of early social integration: (1) *General education to university* (32.9%); (2) *Upwards educational mobility* (16.3%); (3) *Atypical educational trajectories* (25.5%); (4) *From low vocational education into labour*

market (24.0%); (5) *From low vocational into 'Not in Education, Employment, or Training'* (NEET) (1.8%). The results showed that second-generation migrants were more likely to follow early transitions to low vocational tracks into the labour market or to NEET, a social integration associated with lower economic resources, fewer opportunities for saving and, thus, higher vulnerability. Moreover, compared to second-generation migrants originating from countries associated mainly with low-skilled migration, those coming from countries with higher-skilled migrants tended to follow more rewarding trajectories. Although upward mobility trajectories did take place among second-generation migrants, their socioeconomic background, which was considered an initial reserve, constituted a strong predictor of their school-to-work trajectory.

### *Interplay of Institutional and Psychosocial Trajectories*

At the intersection of micro- and macrosociological levels, the issue of gender is central to explaining another aspect of the differences in the school-to-work transition, as we can consider it both a socially structured and a structuring attribute (Risman, 2004). Using longitudinal data following the dual-track education system from age 16 to 23 in Switzerland, Gauthier and Gianettoni (2013) combined sociopsychological and socio-structural indicators to highlight how the structure of individual life courses reflects the influence of institutionalised gender-related norms. In Switzerland, where most mothers living in couples work part-time, women are predominantly associated with the domestic sphere and men with the public domain (Levy, 2013). The results showed that vocational tracks are gendered, with clear-cut male- and female-dominated pathways. They also indicated the hierarchical nature of these tracks, with the longer (4-year) tracks being male dominated, more prestigious and leading to better paid positions than the shorter (2- to 3-year) tracks. The combination of these two dimensions revealed that the wages of men following the 3- to 4-year tracks are higher than those of all other apprentices and that the income of women after a 2-year track is the lowest. As this transition occurs during a period of social integration and of (gendered) identity formation, the authors hypothesised a dynamic link between psychosocial indicators (e.g., the variation of self-esteem over time) and the institutional framework within which individuals are integrated. Three types of self-esteem trajectories were evidenced through sequence analysis: (1) *Moderate and stable self-esteem* (46.9%); (2) *High and increasing self-esteem* (30.7%); (3) *Low*

*and stable self-esteem* (22.5%). These trajectories were then used as a dependent variable in a logistic regression model in which sex and track duration were the explanatory variables. Compared to men, women were five times more likely to follow a *low and stable self-esteem* trajectory. However, among women, only those engaged in the 4-year, male-dominated tracks had the same chance as men to follow a *high and increasing self-esteem* trajectory. Among men, however, only those following a 2-year track were marginally at risk of having durably low self-esteem. This finding is relevant as low self-esteem is correlated with lower academic achievements and with nonfunctional coping strategies, two factors that increase vulnerability.

### ADULTHOOD: MAINTENANCE DURING AND EXIT FROM

Adulthood is a period of life in which boundaries are blurry, as the transition to adulthood has become longer and more diversified in recent decades (Antonucci et al., 2014). Such changes have resulted at least partly from a postponement of traditional transition markers and a greater age variation in the timing of upcoming events (Buchmann & Kriesi, 2011). Adulthood is conventionally related to settling into work and family roles that, for many, do not happen until their 30s (Wong, 2018). Retirement is another milestone as it is associated with withdrawal from the labour market. Between those two main transitions, individuals are differently active within various social spheres, which results in contrasting life trajectories and, correlatively, more or less resource availability and reserve-building opportunities. In this section, we address the impact of family and occupational trajectories in dynamically handling the challenges of this period of life regarding female and male occupational trajectories, retirement age, and the development of personal networks.

#### *Standardised and Individualised Trajectories*

Reflecting on the three macroscopic structuring processes of standardisation, gendering and individualisation described above, Levy et al. (2013) constructed types of individual occupational trajectories of individuals aged between age 16 and 65 and residing in Switzerland. The results revealed that men's trajectories were largely the standardised type (education followed by uninterrupted full-time occupation and retirement), whereas those of women were more diverse and sensitive to

sociostructural attributes. Four female types of occupational trajectories were uncovered. First, a *Housewife* type (13%, the functional complement of the statistically dominant male type) was characterised by a complete and definitive withdrawal from the labour market from the mid-twenties onward. This type was more frequent among married mothers born in the 1940s with lower educational credentials. Two types were more frequent among the younger generations and those with higher educational levels: the standardised *full-time* type (34%, similar to the male type) or the *part-time* type (23%, the only difference being the level of occupational activity). The former more often had no children or only one child, whereas the latter had fewer than three children. A further type of trajectory, labelled *Return* (30%), was characterised by a part-time return to the labour market following a period exclusively at home. This last type was more likely to be found by middle-educated women belonging to the younger generation.

This diversity of women's trajectories reflects their greater implication in both domestic and occupational spheres in Switzerland. The dynamics underlying their shape have specific, long-term consequences for resource and reserve acquisition and therefore for vulnerability. Reducing one's participation in the labour market exerts a direct impact on pension savings and, consequently, on the expected benefits after retirement (see below). Similarly, the onset of a divorce may have the same consequences for those who exited the employment market or significantly reduced their occupational activity, as it eliminates the financial contribution of the former spouse. This effect is accentuated by the comparatively greater difficulty in reintegrating into the labour market after an interruption/reduction in occupational activity, making such individuals, for instance, more likely to accept a position that is less advantageous in terms of income and/or social protection than those they could have aspired to occupy when working continuously full-time.

### *Late Adulthood and Retirement*

The income associated with an occupation is a quantifiable resource, the level of which varies according to the level of qualification, the position held and, often, the skills acquired over the years. Occupational trajectories are hence the epitome of a resource- and reserve-building process. During the period of professional activity, if the salary is sufficiently high, personal savings can be accumulated and used to buffer unexpected

expenses. However, income is also directly linked to vulnerability in the longer term, a fact that is evidenced when focusing on the transition to retirement and on whether people invested over their life course uniquely in the basic public pension fund called *Old age and survivors' insurance* (BASIC) or in other pension funds to complement the basic one (PLUS).<sup>1</sup> In Switzerland, the level and continuity of the contribution to one or several pension funds over the occupational life course directly determine an individual's income after her or his retirement; the higher the income was and the more uninterrupted the career, the higher the benefits. Until 1985, the PLUS option was available only to higher-level occupations,<sup>2</sup> and it is still conditioned to a minimum income per year (21,510.- in 2021).<sup>3</sup> Using multidimensional sequence analysis, Madero-Cabib, Gauthier and Le Goff (2016) constructed six types of joint family and occupational trajectories of individuals aged between 20 and 57 in Switzerland as predictors of retirement timing (the first part of the name describes the type of occupational trajectory along with the pension type, and the second part identifies the type of family trajectory): (1) *At home or Part-time and PLUS/children family* (27.5%); (2) *Full-time and PLUS/children family* (28.6%); (3) *Full-time and BASIC/children family* (16.8%); (4) *Full- or Part-time and BASIC/divorced* (7.7%); (5) *Full-time and PLUS/divorced* (7.4%); and (6) *Full-time and PLUS/Single* (12.0%). The results showed, on the one hand, that limited opportunities to build reserves, due to insufficient income and/or insurance benefits, hamper an early exit from the labour market and may lead to increased vulnerability in older age, particularly regarding financial security. Such limitations can be due to nonstandard, interrupted occupational trajectories associated with commitment to domestic tasks or to a pension fund restricted to the sole mandatory public pension fund (BASIC), relational scarcity (divorced or single individuals) and financial difficulties. On the other hand, standard, uninterrupted occupational (typically male) careers and high academic credentials make a late exit from the labour market less likely, allowing for the accumulation of a sufficient amount of economic resources and reserve.

<sup>1</sup> For the sake of simplicity, PLUS refers here to the most widespread complementary pension fund, called the "second pillar".

<sup>2</sup> <https://www.historyofsocialsecurity.ch/institutions/insurance-funds/pension-funds>.

<sup>3</sup> <https://www.bsv.admin.ch/bsv/en/home/social-insurance/bv/grundlagen-und-gesetze/grundlagen/organisation-und-finanzierung.html>.



### *Life Trajectories and Personal Networks*

Finally, taking a microsociological perspective on relationships reveals that the unfolding of life trajectories and the development of personal networks are dynamic and intertwined processes. The boundaries of a personal network change with events and transitions that occur throughout the life course (Bidart & Lavenu, 2005). While some transitions, such as becoming a parent, may direct the focus to the family of procreation (partners and children), other transitions, such as leaving the parental nest, may represent a shift away from the family of origin (parents and siblings). Using life history calendars along with network data, Aeby et al. (2019) created a typology of five family and occupation trajectories between age 20 and 40 for individuals born between 1970 and 1975: (1) *Double investment* (24%); (2) *Family-focused* (20%); (3) *(Work-family) Conciliation* (13%); (4) *Conjugal/full-time* (24%); and (5) *(Work-family) Preparation* (19%). They then investigated the association between those different types of trajectories and the personal networks that individuals had developed over time. The results showed that the diversity of personal networks was characterised by the provision of more or less material and emotional resources by their members and by the potential reserve that their structure provides, for instance, depending on whether they are of the bounding or of the bridging type (Aeby et al., 2019). This diversity is accounted for by trajectories that deviate from the standard type of family trajectory, characterised by a transition to parenthood followed by a long stage spent in a household composed of a couple with children. Such a network, encompassing individuals who assume different, often complementary roles, is likely to favour relational stability and to ease access to various types of resources. The solidarity principle prevalent in most families constitutes a potential reserve that may be used when facing a stressor event (Aeby & Gauthier, 2021). From this perspective, life trajectories may be considered dynamic relational structures that exert specific influence on an individual's social capital, defined as the types and amount of resources available to her through the web of her social relations. Thus, family trajectories characterised by the experience of growing up in a one- or two-parent household, leaving the parental nest early or late, cohabiting with a partner, living alone, becoming a parent, or divorcing differentially influence the development of one's relationships and the relational resources available, thereby generating vulnerability for socially isolated individuals. A similar link between trajectories and networks was found in Portugal

and Lithuania (Gauthier et al., 2018). The fact that each type of trajectory is associated with specific resources and reserve acquisition opportunities underlines the key role of the broader institutional context in understanding the dynamics of vulnerability as a feature of life trajectories.

## CONCLUSION

The research outcomes presented in this chapter shed light on how individuals' vulnerability is structured over the life course as a process that is largely cumulative. Situating this process within a three-dimensional space (cf. Chap. 2, this volume and Spini et al., 2017) reveals patterns of vulnerability at various systemic levels (i.e., micro, meso and macro), different phases of life (youth and adulthood up to retirement) and in various life domains and their combination (e.g., family and occupation). Nonetheless, life trajectories are context dependent and are therefore sensitive to welfare regimes, economic conditions and political climate. Although globally comparable to most Western societies, Switzerland also has some structural and cultural particularities regarding, e.g., education, family policies, labour market dynamics and pension scheme availability that eventually delineate specific ways to access resources and accumulate reserves over one's lifetime. Empirical results have shown that ascribed attributes, such as sex, age and socioeconomic background, play a significant role in making individuals more or less vulnerable. On average, compared with men with similar profiles, women have lower wages and occupy less prestigious positions, more often on a part-time basis, a situation that influences their well-being. Such situations exert a direct impact on their potential resource and reserve acquisition. Age is also influential, as working during a historical period in which complementary pension funds are mandatory or not exerts a direct impact on the level of resources at retirement and on its timing. Similarly, socioeconomic background is a robust predictor of academic achievement and hence of future salary, as well as of the pension scheme associated with the pursued occupation. However, considering life courses as processes provides additional and more accurate information by considering the order and timing of life events and transitions along with the duration of the phases they delineate. While life phases are associated with specific resources and reserve opportunities, events and transitions challenge them and bring changes in one direction or another. Trajectories that deviate from standard patterns are frequently linked with a higher level of vulnerability (Widmer & Spini, 2017). This is particularly the case

for women, who are more likely than men to reduce or interrupt their occupational activity and therefore to lose the advantages associated with working full time (such as income and pension levels). Other trajectories, such as educational tracks, are not only gendered but also associated with lower wages and well-being in the long term. In many situations, ascribed characteristics and processual factors are linked but may produce buffering or amplifying effects, as, for instance, in the case of a woman socialised in a more or less gendered family and/or occupational environment, of an older person having had the opportunity to contribute to a complementary pension fund, or of a lone parent having or not having inherited personal wealth and/or a dense, supportive relational network.

Thinking in terms of trajectories offers a fruitful way to examine vulnerability as it allows us to consider holistically how stressor events, resources and reserves combine and evolve over time. For instance, an occupational trajectory clearly documents the variation of the resources produced by labour market integration over an individual's lifetime, which events are associated with that variation and how this cumulative process influences the later timing of retirement. Similarly, a family trajectory reveals which relational resources are available, at which time points and for how long. The composition of the personal network at some point of the trajectories can be considered a proxy for the selection process (inclusion and/or exclusion of relational resources), and hence serves as an indicator of the type of reserve available or conceivable. Those results thus invite us to promote public policies that target critical transitions and life events (e.g., the birth of a child, a divorce, an episode of unemployment or an accident) and that are able to adjust dynamically to the specific needs of each individual at a certain point in time while giving special attention to certain categories (e.g., women, migrants, those from poorer socioeconomic backgrounds). Early intervention may prevent the onset of vulnerability processes when individuals are still of working age but also long after retirement. Finally, such a preventive approach may also contribute to lower strain on social relationships and therefore help avoid processes of social exclusion (e.g., through divorce and separation). Further research on life trajectories should aim to provide a more integrated view of the multifactor, multilevel and multidimensional dynamics underlying them by using targeted measuring instruments and by developing adequate methodological tools.

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# Synthesis: Overcoming Vulnerability? The Constitution and Activation of Reserves throughout Life Trajectories

*Eric D. Widmer, Marie Baeriswyl, and Olga Ganjour*

Research on human development has stressed the importance of resources to account for the multifaceted nature of ontogenesis. Resources are at the cornerstone of the processes implied by individuals coping with ‘life changes’, whether positive or negative, such as stressful life transitions, adverse events, and hazards. Resources have been conceptualised by former publications, especially in sociology and economics, in reference to various forms of ‘capital’ (Bourdieu, 1985; Dannefer, 2003; O’Rand, 2006). While the focus on capital has helped sensitise scholars to the importance of resources for developmental outcomes, such discussion has

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E. D. Widmer (✉)  
Faculty of Social Sciences, Department of Sociology, University of Geneva,  
Geneva, Switzerland  
e-mail: [eric.widmer@unige.ch](mailto:eric.widmer@unige.ch)

M. Baeriswyl • O. Ganjour  
Centre for the Interdisciplinary Study of Gerontology and Vulnerability,  
University of Geneva, Geneva, Switzerland  
e-mail: [Marie.Baeriswyl@unige.ch](mailto:Marie.Baeriswyl@unige.ch); [Olga.Ganjour@unige.ch](mailto:Olga.Ganjour@unige.ch)

remained focused on the unequal acquisition of advantages and positive development over life and has somewhat disregarded the protective function of resources. It has also largely conceptualised temporal processes in terms of the continuous accumulation of advantages or disadvantages (DiPrete & Eirich, 2006). An alternative concept may provide a complementary look at the factors that enable individuals and societies to overcome vulnerability in life trajectories. This section of the book has proposed a variety of empirical results that support a reserve perspective on vulnerability in the life course. This chapter briefly summarizes some critical results of this section, illustrating the potential of the reserve perspective for life course research.

### THE RESERVE PERSPECTIVE

Originally, reserves were defined in relation to protection granted by resources against clinical manifestations of neurological damage. In the field of ageing, the notion of cognitive reserve has been developed to support the hypothesis that cognitively stimulating activities in childhood and young adulthood and across the life course will contribute to maintaining or improving cognitive functioning and delay its decline in older age (see also the chapter by Ihle et al.). One remarkable example is the Nun study, in which older individuals were observed to demonstrate perfectly (age-adequate) independent everyday functioning despite their brains showing severe evidence of neurological signs of Alzheimer's disease (Riley et al., 2005). Their cognitive reserve somehow protected these individuals from being affected in their outcome behaviour.

The dimensions and perspective proposed by such early work on reserves in the field of neuroscience and ageing can be extended to resources beyond cognitive decline to critical life domains such as psychological traits, education, health, family and social integration. The concept of reserves adds to the literature on vulnerability over the life course a systematic consideration of the time span or dynamic dimension of resources, either in their constitution or their depletion, as well as the presence of resource thresholds below which individuals cannot function at societal standards. It also stresses that resources have a protective function against life hazards and thus should not only be interpreted as pathways to productive investments. The reserve perspective argues that human development implies the formation, activation, maintenance and reactivation of resources over the life course, be they biological,



physiological, cognitive, emotional, economic or relational (Cullati et al., 2018). ‘Reserves’ refers to means that are not needed for immediate use but that, when accumulated in sufficient manner, help individuals weather shocks and adversity and that delay or modify the processes of decline in well-being, health, wealth and social life throughout ageing. In other words, reserves are resources that have been sufficiently accumulated across the life course and are available when facing life shocks and adversity, social or economic stressors, or periods of collective or individual stress (Cullati et al., 2018). With respect to vulnerability, defined in life course studies as a lack of resources that makes it more likely that critical events will occur and more difficult to recover from such events (Spini et al., 2017), reserve constitution and activation represent the protective dimension of this process; in other words, the dynamics that contribute to avoiding, coping with or recovering from various stressors.

To summarise, four temporal dimensions are considered paramount in the reserve perspective: their build-up, their activation and depletion in the face of a critical life event, and their potential replenishment in the months or years following that event. Several processes are relevant: First, reserves are resources that take time to accumulate and therefore should not be spent in daily life. Second, a low level of reserves weakens individuals’ ability to adapt to life changes and shocks. Below a certain threshold, returning to a functional level of reserves is unlikely, if not impossible, due to the processes of accumulating disadvantage (Dannefer et al., 2018).

### THE IMPORTANCE OF RESERVES

Chapters in this section have stressed the importance of reserve constitution and reconstitution in addressing vulnerability issues. The chapter by Ihle and colleagues based on VLV data showed the direct association between cognitive health in old age and cognitive and relational reserves constructed at early stages of the life course, especially through the practice of leisure activities. The authors highlighted the processual constitution of cognitive reserves across the life course, which surpasses the influence of initial cognitive performance on cognitive health later in life. It is important to stress that the impact of processual factors on cognitive ability in old age is stronger in the case of initially disadvantaged individuals, who had low educational and professional capacities in midlife. Although the results showed that social characteristics, such as sex, age and educational level, were associated with limits on the accumulation of

relational and cognitive reserves over time, the agency of individuals remains important for the constitution of such reserves. One important finding revealed the reciprocal link between cognitive and relational reserves, which do not follow the same pace in their constitution but nevertheless interact to limit cognitive decline in old age.

The chapter by Oris et al. showed that the constitution of economic and social reserves has been strongly unequal for the cohort reaching old age in the 2010s, as it depended heavily on individuals' initial social characteristics. Those with a lower level of education have had fewer chances to occupy advantageous social positions and be part of generous pension schemes than individuals who had higher levels of education. Accordingly, the former have quickly exhausted their economic reserves after the transition to retirement. Similarly, highly educated older adults appear to have developed and maintained a more diverse set of relational reserves, including in their personal networks not only family members but also friends as well as members of associations (Baeriswyl, 2017). These results stressed the interrelation of education, economic, and social reserves. Interestingly, Oris et al. also stressed that intergenerational financial transfers constitute a main depletion of economic reserves among old adults. Consequently, such transfers provide unequal access to the accumulation of financial reserves by individuals from the younger generation. Such an inequality is an example of the spillover effects among various reserve sets and an illustration of the linked lives principle (Elder, 1995).

The study by Cullati and colleagues confirmed the impact of social stratification on reserve constitution by showing that childhood socioeconomic disadvantages were associated with consequent problems in functional and mental health in older age. In particular, the decline in mental and physical health in old age was strongly associated with the cultural reserves accumulated during childhood, as revealed by the number of books available in the parental household. Thus, the initial lack of cultural reserves in early childhood could be critical for health problems in later adulthood, and it is difficult for social benefits to correct this deficit over time. Furthermore, Cullati et al. stressed the gender-biased impact of reserves on these subjective health trajectories. Indeed, some acquired benefits, such as the level of education or successful professional careers, mitigated the lack of initial reserves for men but not for women. This gender-biased impact of childhood reserves on health in later adulthood

was accounted for by the limited access to education and professional careers for women of the generations considered in the study.

The chapter by Gauthier and Aeby focused on the processual perspective of reserves accumulation and critically examined the timing and chronological order of life events that are linked in typical patterns, which LIVES research has greatly contributed to discovering (see Chapter by Studer & Gauthier). The constitution of educational, financial and relational reserves depends on processual factors that unfold over time, such as the possibility for individuals to remain in full-time employment throughout their careers, the presence of a stable partnership (as indicated by marriage) or the number of parenthood experiences that one has had. As in Oris's and Cullati's chapters, however, initial social characteristics, such as nationality, country of origin and sex, were shown to exert a strong impact on reserves constitution. An unstandardised trajectory with an early transition from low vocational education to employment or periods of unemployment stems from a migration background, especially from low-skilled migration countries, for young adults. Females more than males show limited educational reserves, with subsequently more unstable professional trajectories that are characterised by more interruptions in full-time employment, part-time employment or unemployment after childbearing. Thus, the accumulation of educational, financial and relational reserves over the life course is highly unequal across individuals.

While those chapters stressed the links among various areas of reserves, and especially a lack of educational reserves implying decreasing levels of economic and relational reserves later in life, none of the chapters found strong evidence in support of the hypothesised systematic bias towards the accumulation of advantages and disadvantages across the life course or the fact that early interindividual differences increase over ageing (Dannefer, 2021). Cullati et al., for instance, stressed that individual health trajectories in different childhood socioeconomic groups ran mostly parallel throughout ageing; in other words, early differences in health problems did not increase over the life course due to unequal reserves constitution and activation. Similarly, Oris et al. preferred to use the term 'cumulative continuity', borrowed from Elder et al. (2015, p. 23), to summarise their results about the economic conditions of retired Swiss people and the long-term influence of the lack of educational reserves on the risk of precarity and poverty.

In particular, Oris et al. stressed that the accumulation of disadvantages and advantages is not symmetric because welfare regimes have helped limit

the impact of the lack of reserves for the most disadvantaged. Indeed, insufficient accumulation of individual reserves can—to some extent—be compensated for by social policy programs, which may account for the minimal evidence supporting the thesis of disadvantage accumulation in LIVES research. For instance, concerning health inequalities, Cullati et al. stressed that a universalist welfare state, such as those found in northern countries, is particularly effective in mitigating the long-term impact of childhood disadvantages on health outcomes. Relational reserves, particularly family support, constitute another reserves area mentioned by both Oris et al. and Cullati et al. as an important resources pool to deal with ageing and eventually attenuate earlier disadvantages, particularly when welfare provisions away from this role.

### THE ACTIVE VS. PASSIVE CONSTITUTION OF RESERVES

Another critical dimension of reserves throughout the life course concerns their passive versus active acquisition. A passive model of reserves assumes that they are acquired by the action of others, generally early in life, and in line with social inequality. In contrast, an active model of reserves underlines that life trajectories may be altered through being activated by the personal agency of individuals as a capacity to invest in strategic activities over their life course. To some extent, such reserves can also be activated by external actors, and the literature suggests targeted interventions. The importance of stimulation to maintain functioning is a human process that is applicable to many life domains, such as cognitive functioning, but also to social interactions and participation in the labour market. The chapter by Rossier et al. showed that such agency, defined as individuals' ability to actively constitute and reconstitute reserves, may be measured empirically, thereby suggesting that 'adaptability', as a kind of psychological reserve, is a key feature for career development. The main life transitions, such as the transition from education to employment, and the involuntary career changes associated with negative events such as accidents, health problems, or unemployment, are vulnerabilising experiences for career development and individual well-being. When individuals encounter such critical events, increased adaptability enables reserve reconstitution through psychosocial tools such as the 'career adaptability' tool for managing work-related tasks, traumas, and transitions. Adaptability can be considered an individual reserve that is 'dormant' in usual conditions but can be activated under the influence of stressful

factors such as limited career opportunities and career changes. Adaptability becomes paramount in times of collective uncertainty and global turmoil.

### RESERVES THRESHOLDS

A central dimension of the reserves concept is that it necessitates the consideration of functional thresholds. Reserves are sufficient if they help the individual (1) not experience a stressful event because they have sufficient resources to avoid exposure to it, such as when individuals use their social networks and reputation to obtain a new job right before being dismissed or to solve intimate issues and prevent divorce; (2) cope effectively with nonnormative stress, for instance, by using their social networks to support them when they become sick or to draw from their savings when they become unemployed; and (3) swiftly recover from the nonnormative event, for instance, by paying for advanced onerous medical treatment to recover or by moving out of their home in the case of family violence by paying for an expensive rental.

One critical finding by Cullati and colleagues in their chapter was that individuals who grew up in advantaged households had stronger declines in verbal fluency (an indicator of cognitive function) than disadvantaged participants, but this decline began at a later age and from a higher level of fluency. In other words, the threshold at which decline becomes apparent was reached at different ages, probably because the accumulated reserves made it possible for the advantaged to deal in their daily life with the shortcomings imposed by their cognitive decline.

Ihle and colleagues also showed that individuals with low educational resources at an early stage of their life course were more likely to benefit from late-life leisure activity engagement. Moreover, adequate cognitive functioning predicted a smaller subsequent decline in well-being only for young-old adults and not for the oldest adults. The authors stressed that as soon as individuals' functional abilities break down and fall below a critical threshold, decline can no longer be compensated for because reserves are no longer effective. These results showed that thresholds may depend on individual positions within social structures and the life course, as such positions influence reserve composition. As such, thresholds also include gender issues, and indeed, thresholds for activating educational reserves in life appear to be higher for women. The chapter by Gauthier and Aebly stressed that women are globally at a disadvantage regarding their self-esteem trajectories, except for those who have a high vocational

track. Oris et al. stressed that having a tertiary education is more determinant for older women's propensity to access public participation, in particular activities involving decision making. Accumulating educational reserves thus appears especially important for women's life course.

### PERIOD EFFECTS

Because of the importance of historical influences on personal trajectories (e.g., Elder, 2018), reserves have a distinct set of attributes and meanings across historical periods. The chapter of Oris and colleagues revealed the crucial importance of cohorts to the constitution of reserves. Individuals in Switzerland born between 1911 and 1946 developed continuous occupational trajectories within a context of socioeconomic growth. At the same time, the development of a retirement system—based on standardised occupational trajectories (Kohli, 2007)—institutionalised the constitution of a certain amount of economic reserves to secure material conditions in older age. Greater access to higher education and its influence on individual careers tend to explain the decrease in poverty in old age. In these cohorts, more generally, educational reserve and resulting occupational trajectories also offered access to middle-class lifestyles associated with the institution of the nuclear family, which constituted the main relational reserves in this period (Rusterholz, 2017; Segalen, 1981). However, these trajectories also relied on a gendered model of labour division according to which men were the only breadwinners and women were the housekeepers. Thus, (married) women's occupational trajectories were more likely to be shorter, interrupted and part-time employed compared to men, and women were mainly socioeconomically dependent on their husband's reserves (education, income) in this very specific birth cohort. Individuals from previous and subsequent birth cohorts reached old age with very different prospects in terms of reserve acquisition and therefore faced different levels and types of vulnerability. In terms of economic situation in old age, for instance, the movement towards a greater destandardisation of the life course (Kohli, 2007)—involving, in particular, greater instability and plurality in family trajectories but also in occupational trajectories (see Chapter by Rossier et al.) and a decline in the gendered division of labour—have challenged the retirement system, which was built on the continuous and upward occupational trajectories of men and the stability of the nuclear family.

In addition to the issue of reserve constitution, historical context influences the activation of reserves across the life course. Indeed, for the cohorts mentioned above, nonnormative events were rare, and the activation of reserves accumulated over their standardised (and gendered) life course remained limited to a few, mainly normative transitions (education, adulthood, retirement). As stressed by Rossier et al., the destandardisation of occupational trajectories increases the number and complexity of transitions, the risk of marginalisation, and the importance of personal resources such as adaptability in facing such challenges. In other words, the destandardisation of the life course—which occurs in all areas (work, family) and stages (childhood, adulthood, old age) of the life course—tends to make the accumulation and activation of reserves particularly acute. In this context, the increasing role of individual agency in life course management refers to the importance of individual (or psychosocial) reserves such as adaptability (chapter by Rossier et al.) and to the constitution of educational, relational or economic reserves. Indeed, the constitution of such reserves has become less secured by the life course institutions (typically, the educational system, the nuclear family and the job market) and has been continuously challenged by increasing discontinuity and diversity, as shown by the longitudinal study of life trajectories (e.g., chapter by Gauthier & Aeby). For instance, education trajectories have become less linear and more individualised, which includes increasing breaks, discontinuities and possibilities of reorientation (Meyer, 2018), and lifelong learning has become crucial in educational reserve dynamics (i.e., constitution, maintenance, reconstitution) (chapter by Rossier et al.; see also Bertozzi et al. 2005; von Erlach, 2018).

Furthermore, the COVID-19 period has proven the importance of reserves in critical times. Indeed, it is in periods of collective crisis that the effect of reserves is the greatest, yet it is also in these periods that their accumulation becomes most problematic (Widmer, forthcoming). During the COVID-19 crisis period, many inequalities in the reserves available to individuals shaped their situations. A few such examples include the following: Some were able to rely on their villas or second homes, the results of the accumulation of economic reserves (sometimes over several generations), to escape the radical conditions of urban apartment confinement; others were able to mobilise their relational reserves to cope with illness or loneliness; some were able to invest their cultural reserves, accumulated during long studies, in home-schooling their children; others were able to rely on their employer's loyalty to them, the logical outcome

of stable and cumulative occupational trajectories. The fact remains that a large number of individuals, without reserves in any area, found themselves naked in the face of the vagaries of the crisis and dependent on social programs or private initiatives that were limited in both time and coverage. The effect of reserves will not end with the end of the health crisis. Individuals who have accumulated economic reserves (savings, property) in their previous trajectories will probably be able to cope better with the economic crisis that follows. Note that reserves can be individual or collective. Countries or regions may have accumulated reserves in various areas that made it easier to manage the crisis situation. Such a situation was observed during the pandemic period, when some countries had stocks of masks and respirators available as well as health systems capable of coping, while others found themselves partially or completely deprived. Obviously, this availability is related to the wealth of individuals and nations, but some countries or individuals may have many resources without necessarily having them as reserves, given the low stocks they have at their disposal. Typically, the health system of Switzerland is well-resourced, with excellent professional and medical devices. However, it has shown certain limits in terms of reserves during the COVID-19 pandemic, with intensive care units being quasi-saturated several times. The importance of reserves for coping with crises therefore concerns both individuals and the social systems of which they are part.

## CONCLUSION

The chapters in this section have stressed the critical importance of reserves as deterrents of vulnerability checks over the life course. The LIVES theoretical model stresses that a reserves perspective on resources may help research move forward in understanding temporal processes associated with vulnerability issues. It should be noted that this perspective complements other understandings of the unfolding of social inequalities throughout life trajectories. For gender inequalities, the chapters in this section, for instance, showed that there is an ongoing process of economic reserves throughout career development that accounts for much of the difference in the economic vulnerability of men and women after retirement. Interestingly, childhood socioeconomic disadvantages were associated with problems in physical and mental health in later adulthood for women but not for men, whereas some leisure activity—in particular, the use of the internet—reduced cognitive decline in old age among men



but not among women. Fascinating gendered processes occur throughout the life course that place individuals at risk later on by depleting the reserves available to them when life shocks happen, thereby making a recovery very unlikely for individuals from some social groups, whereas individuals from other groups may easily recuperate. Thresholds are important because they change individual agency and the response of institutions that deal with individual vulnerability. Such considerations are obviously especially important in historical periods of crisis, where the availability of collective support may be depleted, and the challenges facing individuals may be much greater than in peaceful times. In any case, there is a need for much more empirical research to be conducted in the future on the unfolding and use of resources over the life course and in specific locations. The reserves approach may obtain critical traction for understanding such issues in economies and societies in crisis.

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PART IV

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Combining Methods to Study  
Vulnerability Processes



## Life Calendars for the Collection of Life Course Data

*Davide Morselli and André Berchtold*

Life course studies need to use longitudinal data and focusing on vulnerability processes that unfold in the medium or long term only reinforces this need by requiring very long data sequences. For example, the quality of a person's educational trajectory may be considered a resource or a reserve (Cullati et al., 2018) that could be used later to help cope with adverse events such as health issues (see Chap. 14). Therefore, complete data sequences are often required to fully study life course trajectories, ideally starting at birth.

Most commonly, life course research relies on data from panel surveys that do not always collect detailed data on periods of time preceding the start of the survey. For example, if data are collected only among the elderly, researchers may only know the level of education ultimately achieved but not the entire educational trajectory. Hence, complete data regarding all domains of the life course and vulnerability processes are often unavailable. A few birth cohort studies, such as the British Cohort

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D. Morselli (✉) • A. Berchtold  
Faculty of Social and Political Sciences, Institute of Social Sciences, University of  
Lausanne, Lausanne, Switzerland  
e-mail: [davide.morselli@unil.ch](mailto:davide.morselli@unil.ch); [andre.berchtold@unil.ch](mailto:andre.berchtold@unil.ch)

Study (e.g., Elliott & Shepherd, 2006), have been created to overcome this gap, collecting data on the respondents from birth to present. However, this type of study is quite rare, and their use in terms of cross-country comparisons or target-population studies (e.g., on migrants) is limited. Moreover, such prospective surveys are very costly, both in terms of time and money, and complete data sequences become available only several decades after the start of the survey.

Given the difficulties of collecting long sequences of data prospectively, this chapter considers the possibility of collecting data retrospectively instead of or complementarily to prospective collection, and it draws on research with life calendars performed within the NCCR LIVES research program. We show that life calendars are able to capture accurate retrospective data and that this method can be used in a variety of modes, including web surveys. We provide a reflection, and some guidelines, on critical points that researchers should consider either when designing a retrospective survey or when analysing this type of data.

## RETROSPECTIVE DATA

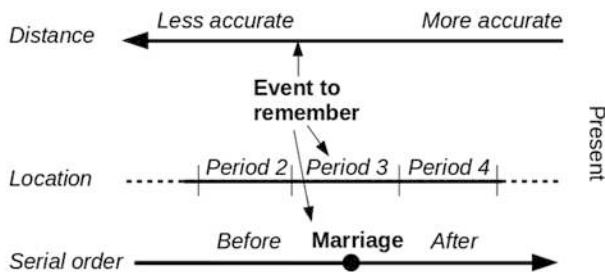
An alternative to prospective research designs is to collect data retrospectively (Scott & Alwin, 1998). This approach can be used to complete the portion of the life course that is not covered by a prospective survey. The advantages of retrospective designs are obvious: All past information can be collected at once, saving both time and funding, and the exploitation of the data can begin very quickly. It also implies a lower long-term burden for the interviewees and eliminates the risk of attrition often encountered in prospective designs (e.g., Drasch & Matthes, 2013; Assaad et al., 2018).

Because retrospective data strongly depend on the respondent's ability to recollect events, they have often been accused of being less accurate than prospective data, and for this reason, they are sometimes considered a sort of B-class data (e.g., Nagurney et al., 2005; Pina-Sánchez et al., 2014; Song & Mare, 2015). However, even with a prospective approach, most of the data collected are still partially retrospective in nature, since they usually cover the year or month prior to the survey. Nevertheless, we can argue that it is easier to remember what happened over a short period of time rather than over several years or decades, with more remote events and conditions being more difficult to remember. This characteristic is even more relevant in subjective aspects such as health, well-being or

mood, for which recollecting experiences might be severely imprecise. Therefore, the quality of retrospective and prospective data is likely not the same.

Retrospective data collection does depend on memory and related cognitive processes. For instance, the so-called telescoping effect observed in retrospective data collection is a tendency to perceive old events as having occurred more recently and recent events as having occurred more remotely (e.g., Bradburn et al., 1994; Sudman & Bradburn, 1973). In addition, the respondents' current situation when completing a survey is likely to influence their recall of the past, whether in terms of the number of events recalled, the interpretation of events (good or bad) or the exact moment of their occurrence (e.g., Couppié & Demazière, 1995). The collection of accurate retrospective data thus requires the use of specially designed survey tools and checking procedures to boost memory recollection and data accuracy. To attain this goal, researchers must first understand which mnemonic processes are at play in the recollection of a specific event.

Friedman (1993) argued that cognitive theories on memory recollection have highlighted three different memory types or retrieval mechanisms (Fig. 20.1). The *distance mechanism* focuses on the perceived relative distance of an event and demonstrates that episodes of which people have more accurate knowledge are remembered as more recent (Brown et al., 1985; Hinrichs, 1970). *Location mechanisms* show that an event is placed within a larger time period, which is used to recollect the date. Finally, *serial order memory* stresses the sequential aspect of the retrieval



**Fig. 20.1** The three kinds of retrieval mechanisms. Better-remembered events are considered more recent. An event is first assigned to a time period and then compared to well-known events (e.g., a marriage)

mechanism, illustrating that people use anchoring points to orient themselves in time to judge whether the event happened before or after such points. Research has shown that instead of relying on a single mechanism, people use a combination of them to date events (e.g., Betz & Skowronski, 1997; Janssen et al., 2006; Shimojima, 2002). Conway (2001) argued that these mechanisms operate simultaneously when reconstructing autobiographical memories and life-course trajectories. In particular, Conway has stressed that people simultaneously employ top-down (from general periods and life domains to single events), sequential (the order of different events within the same life domain) and parallel (in relation to events in other life domains) mechanisms to remember when something has occurred. In the last three decades, survey methodology has integrated this research to maximise data quality in retrospective survey designs (Auriat, 1992; Belli, 1998; Tourangeau et al., 2000; Van der Vaart, 2004).

To date, two main approaches have been developed to collect retrospective data in surveys. The first involves the use of a question list of biographical events, such as that used for the first two samples of the Swiss Household Panel (Scherpenzeel et al., 2002). In these questionnaires, respondents are asked to answer a series of questions about their personal history to provide information about several domains, such as employment history, family events, or places of residence. Such questioning is usually conducted by applying a sequential approach in which respondents report events from the most recent to the most remote, or vice versa, and treat each life domain in succession. Although this method might offer some advantages, as it is easy to design and implement, it strongly limits the use of some retrieval mechanisms. For instance, it limits the possibility of establishing links among domains (parallel processing) that could help the respondent remember more events or better date them.

To overcome this limitation, in recent decades, the *life history calendar* (LHC), also known as the *event history calendar* method, has progressively become more popular among survey researchers. The LHC (Fig. 20.2) is a specially designed tool for the collection of retrospective data (Freedman et al., 1988). It consists of a diary in grid form with, generally, different rows that each correspond to a specific time unit (e.g., a year, a trimester or a month) and different columns that each correspond to a different life domain (e.g., place of residence, family events, education, professional life). A set of predefined information, or cues, can also appear on the calendar. Respondents are asked to indicate all the events that happened in these different domains, the idea being that the recall of events in one








Time reference			Milestones in the society	Moving	Education	Cultural, sports, political and associative activities
<p>In the "Age" column, find out when you last had your birthday and note the age you have reached.</p> <p>Then note in the corresponding boxes the age you reached on each of your previous birthdays.</p>			<p>This column indicates a number of events that have occurred around the world since 2010.</p> 	<p>Indicate each of your moves with a dot and write the name of the commune to which you have moved (or the name of the country if the move took place outside Switzerland).</p> <p>If several moves took place in the same quarter, put as many dots as necessary in the same box.</p> 	<p>Mention the different stages of your educational path (school and/or vocational training).</p> <p>Indicate each period with a vertical line and describe this period in a few words next to the line (compulsory school, apprenticeship, gymnasium, university, ...)</p> 	<p>Indicate with a vertical line the periods during which you have had a cultural, sporting, political or associative activity, and then describe this activity using a maximum of three words.</p> <p>Draw a separate line for each different activity, even if you had, for example, had sports activities in the same period.</p>  
Year	Quarter	Age				
2020	October-December					
	July-September					
	April-June	28	Start of the Covid-19 pandemic			ICE HOCKEY
2019	January-March					
	October-December					
	July-September		Women's strike in Switzerland	• BUSY	HIGH SCHOOL	VOLUNTEER
2018	January-March	17	Elections of Viola Amherd and Karin Keller-Sutter to the Federal Council			
	October-December					
	July-September					
2017	January-March	16	Beginning of the Weinstein case, Jacques Dubochet wins the Nobel Prize	• MORGES		ACTING CLASSES
	October-December					
	July-September					
2016	January-March	15	Election of Donald Trump		MANDATORY SCHOOL	
	October-December					
	July-September		Brexit is decided by referendum			
2015	January-March	14	Death of David Bowie			

Fig. 20.2 Example of a paper-and-pencil LHC (Berchtold, Wicht, & Rohrer, 2021)

specific domain should trigger the recall of events in the other domains, thereby maximising the complimentary use of top-down, parallel, and sequential mechanisms (Belli, 1998; Caspi et al., 1996). Punctual events as well as events extending over a more or less long period of time can be easily recorded through this method. Figure 20.2 provides an example of a completed paper-and-pencil LHC.

### OVERALL DESIGN OF A LIFE HISTORY CALENDAR

The goal of an LHC, compared to biographical question lists, is to improve respondents' accuracy by relying on various retrieval mechanisms to elicit information recall from several life domains. To do so, the LHC structure needs to facilitate links among the events and answers provided by the respondents. For instance, if the LHC is administered by an interviewer, the interviewing protocol and information technology interface should help the interviewer detect incoherence between answers or to highlight missing information. Similarly, in self-administered designs, the graphical layout of the LHC is pivotal to give respondents an overview of their previous answers and their overall life trajectory. Therefore, the graphic design

of the calendar tool is crucial, which is even more true if the LHC is to be used in a self-administered mode, as in the case of online surveys.

Regardless of the substantive data that need to be collected with the LHC, researchers and (survey) designers should focus on at least three aspects: the general layout of the different parts of the calendar (e.g., time dimension from top to bottom, bottom to top, or left to right; order of the different life domains); the number, location, and types of cues appearing on the calendar (e.g., age of the respondent, year of measurement, seasons, important public events, events specific to the respondents); and the instructions provided on how to fill in the calendar (e.g., directly on the calendar or on a different sheet, written or orally). Although these aspects are independent of the substantive issue, they are not trivial because they exert a strong impact on data quality. For instance, a selection of meaningful cues such as major political or cultural events will help respondents date their own life events (*serial order memory* mechanism), and ordering life domains from the simplest to the most difficult will decrease participants' stress in completing them. Researchers should thus be aware that, as this method is becoming more common in surveys, data collected with calendars with very different designs may lack comparability.

The overall design of the calendar can be considered in different ways. For instance, research within the LIVES research program has shown that reliable data can be collected with self-administered LHCs if respondents are provided with detailed instructions, thereby considerably reducing the costs and disadvantages of face-to-face interviews (Morselli et al., 2019). Self-administered LHCs have been used to collect data from large samples, such as the third sample of the Swiss Household Panel (N = 6090) and the LIVES-FORS Cohort Survey (N = 1691; Spini et al., 2019), for which face-to-face methods would have been prohibitively expensive. Moreover, with the advent of online data collection, the possibility of replacing paper-and-pencil life calendars with web-based calendars, in addition to making them self-administered, could greatly increase the applicability of LHC methods. Given events such as the COVID-19 pandemic, it is becoming vital to offer such new approaches for the collection of retrospective data because direct contact with some categories of people might be diminished or become impossible. Therefore, it is crucial to develop life calendars that are suitable to many substantive areas and to ensure and demonstrate the accuracy of the resulting data.

### IMPROVING MEMORY WITH CUES

The LHC makes it easier to recall the exact time of occurrence of different events and to track inconsistencies in respondents' answers. Specific cues can also be added to an LHC to further enhance memory recall. The most common memory cue is the respondent's age at each calendar period. It is also possible to indicate important cues at the international, national, or regional level as an additional means to anchor one's life events. Such cues can also be respondent-specific, for example, by inviting respondents to provide a set of personal landmarks at the beginning of the LHC.

Traditionally, LHCs are offered in a paper-and-pencil format and are answered in the presence of a trained interviewer who can assist the respondents or even trigger the recollection of additional events. However, LHCs are not a fixed tool, and many developments are still desirable. For instance, the kinds of cues that are most efficient in triggering memories of past events remain a matter of debate. Some studies have shown important differences in the representation of collective and historical events across cohorts (e.g., Martenot & Cavalli, 2014; Dasoki et al., 2016) and genders (e.g., Dasoki et al., 2018). Indeed, the choice of cue events may be helpful for some respondents but neutral or even detrimental for others, which might be particularly true when investigating vulnerable populations. For instance, cues referring to traumatic or politically connoted events might induce cognitive closure, thereby making the respondents less cooperative or misdirecting their focus. Collective memories often have group-specific meanings that are entangled with relationships among social groups, historical narratives, and political manifolds. The type of cues indicated in a questionnaire and how they are mentioned colour the respondents' information in the research and can make them more cooperative or reluctant to answer or can even direct the recollection process. For instance, while the 1967 Six-Day War in the Gaza Strip is referred to as a 'settlement' by Israel, for Palestinians, it is an 'occupation'. Choosing either of the terms to refer to the event on the questionnaire would prime the researcher's favouritism for one of the two groups and potentially make the respondent reluctant to answer. Indeed, pilot research using LHCs in postconflict regions has shown that collective events are not neutral but burdened with historical and political meanings that could trigger adverse reactions from respondents and, consequently, affect their reporting of events (Spini et al., 2011).

Furthermore, cognitive research on memory has shown that priming positive events might inhibit the recollection of negative events, and vice versa (e.g., Barnier et al., 2004; García-Bajos & Migueles, 2017; Harris et al., 2010). Cognitive processes reduce the accessibility of negative experiences, thereby preventing negative events from coming to mind through bias (Anderson & Hanslmayr, 2014). Such processes can be triggered by priming positive memories or as blocking responses to offensive memories (Pica et al., 2016).

Along these lines, we conducted an experiment regarding the use of public vs. private cues using a paper-and-pencil setting with a time accuracy of one trimester. One hundred and four students answered a self-administered LHC about information over the previous ten years in five different domains (moving, education, holidays, activities (cultural, sports, political and associative), and employment). We implemented four different conditions, each prompted by the type of cues that we provided in the LHC. In addition to the year of occurrence (printed on the calendar) and the respondents' age in each year (written by the respondents themselves), condition 1 included a list of public events (Fukushima nuclear accident, Donald Trump elected President of the United States, ...), condition 2 asked the respondents to recall their own important personal events, condition 3 combined the cues of the first two conditions, and condition 4 provided no cues at all. The results indicated that public events used as cues are much less useful to recall events compared to personal events provided by respondents themselves, with the difference being significant both among all respondents and among condition 3 respondents who accessed both types of cues simultaneously (Berchtold et al., 2021).

Thus, in many contexts, using personal, respondent-chosen cues may be an easier and safer choice when designing an LHC. However, little research has been conducted on the data quality of the answers given by respondents that indicate some categories of cues (e.g., family related, such as marriage and child births) instead of others (e.g., socially or job related, such as promotions or social events). Further research should deepen the understanding between respondent-driven cues and the quality of their answers. For instance, reporting some cues (e.g., child births, deaths in the family) might prime some life domains (e.g., family) over others (e.g., occupational trajectory). Such influence could bias the data in the sense that the absence of reported events in some life domains may not indicate that the event did not happen but that the recollection process

was overfocused on a different life domain. We would thus like to stress the importance of this aspect and how it should be thoughtfully handled by survey designers.

### ONLINE LIFE HISTORY CALENDARS

In recent years, the general trend in social sciences data collection has been to ‘go online,’ and this tendency has also affected the assessment of retrospective data. Only a few years ago, web-based LHCs seemed too complex to be put into practice. Thus, survey agencies generally opted for face-to-face (e.g., SHARELIFE, Börsch-Supan, 2019), telephone interviews (e.g., Panel Study of Income Dynamics, Beaulé et al., 2007), or the classic self-administered paper-and-pencil format (e.g., Swiss Household Panel III, Tillmann et al., 2016; LIVES-FORS cohort survey, Spini et al., 2019). Recently, more affordable and modern online LHC formats have been proposed, but in addition to considering cues, layout/usability, and instructions as carefully as in paper-and-pencil LHCs, they must also consider the constant evolution of software development and the change of technical aspects over time.

The easiest solution for online LHCs at the time of writing consists of a fully self-administered web-based tool. This approach requires considerable thought about the layout and usability of the tool, via, for instance, graphical user interfaces (GUIs), as well as clear and detailed instructions on how to complete the questionnaire. To the greatest extent possible, the instructions should be included in the GUI, for instance, through contextual tooltips, rather than buried in a long, external document. In collaboration with the research group on adolescent health (GRSA) of the Lausanne University Hospital, the LIVES research program developed an online LHC for the ‘Sexual health and behaviour of young people in Switzerland’ study (Barrense-Dias et al., 2018). The results from a pilot study comparing data from the LHC with data from a traditional questionnaire indicated that the two methods were able to collect similar amounts of both sensitive and nonsensitive information. More importantly, data obtained through the LHC were shown to be more consistent than those from the traditional questionnaire (Morselli et al., 2016). Two main design features can explain these results. First, the GUI was designed to be not only clear but also captivating for the target population. Unlike other implementations of online LHCs (e.g., Glasner et al., 2015; Sage

et al., 2013; Wieczorek et al., 2020), we used icon marking events to facilitate the visualisation of the respondents' life trajectory at a single glance (Fig. 20.3). The idea was to improve the visual appeal of the LHC

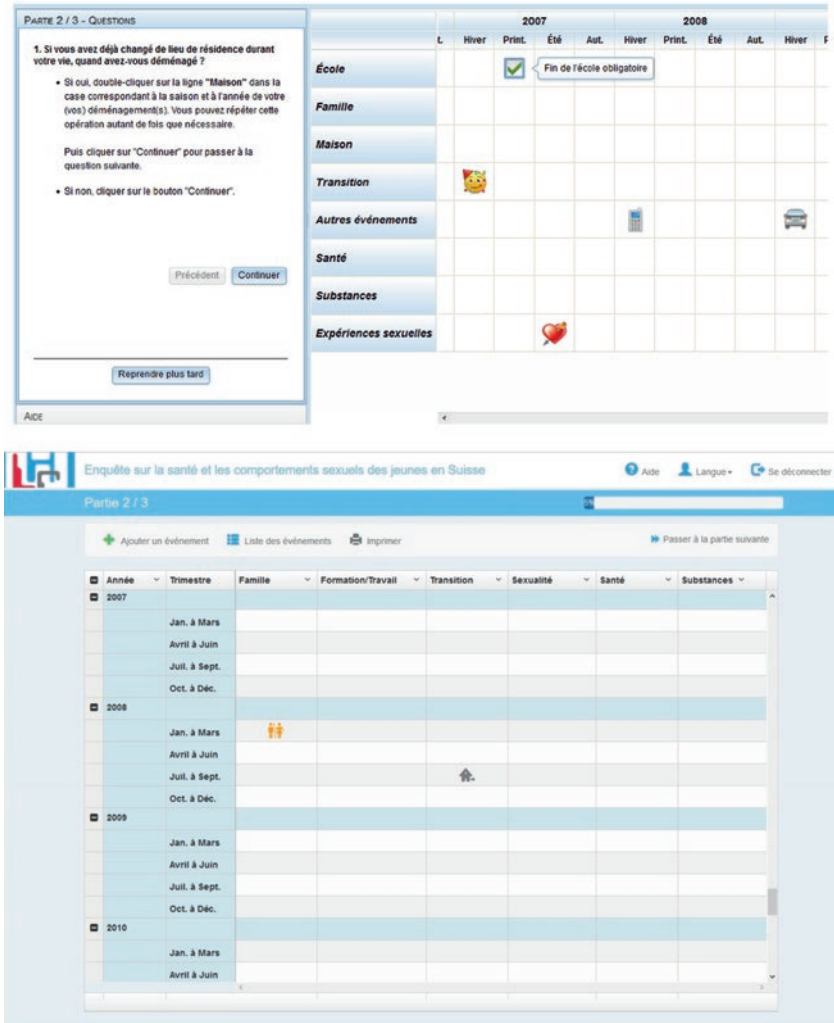


Fig. 20.3 Pilot (top) and final (bottom) versions of the online LHC used for the 'Sexual health and behaviour of young people in Switzerland' study

to increase associations among life domains and to rely on the reported events to trigger the recollection of new ones. These icons allowed respondents to view all life domains and events at a single glance and to enter new events in their preferred, rather than a predefined, order. Second, the GUI also facilitated the editing of reported events by allowing respondents to delete and modify any event or date. The online format also allowed us to analyse the respondents' behaviour during the LHC thanks to the automatically recorded log data. These analyses showed that the GUI features were effectively used by the respondents, thereby increasing the overall data accuracy.

Improved versions of this first online LHC were also used in two further LIVES studies, 'A retrospective look at your career path' (2019–2020) and 'The long-term consequences of mass layoffs' (2020). The most important change was the possibility for the respondents to enter events extending over a period of time in addition to punctual events (Fig. 20.4).

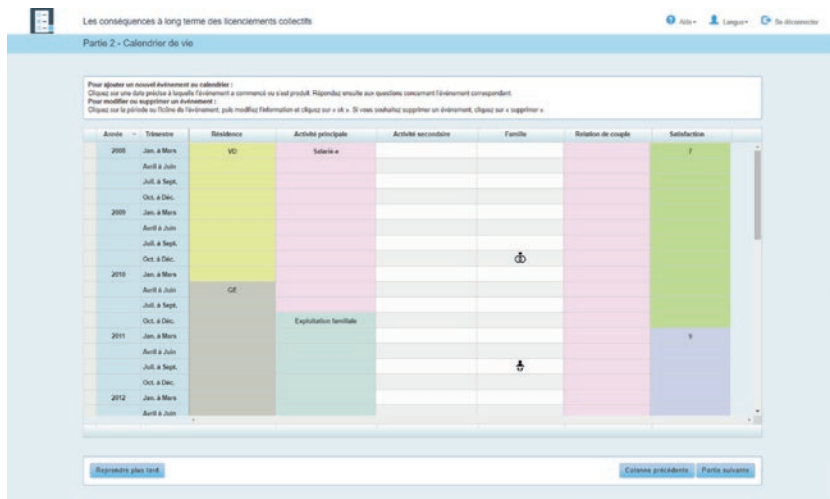


Fig. 20.4 Online LHC with the possibility of indicating both punctual events (represented by icons) and time periods (represented in colours)

## MISSING DATA IN LIFE HISTORY CALENDARS

Thus far, we have stressed several aspects that should be considered when designing an LHC to boost and facilitate recollection processes, such as an effective visual layout of the LHC, the use of cues, and the possibility to edit answers. Further reflection is needed on data quality, and in particular missingness, in LHCs, as some measures can be implemented to either prevent or check it.

The quality of retrospective data can be conceptualised not only in terms of the quantity and time accuracy of collected information but also in terms of missing data. In particular, missing data in LHCs must be evaluated differently than in traditional questionnaires, where an answer to each question is expected, and therefore, the precise amount of missing information can be estimated. With an LHC, on the one hand, researchers are able to collect a more exhaustive amount of information or events because there is no such limit as the number of asked questions, but on the other hand, we cannot generally know for sure whether all events experienced by the respondent were reported. This is particularly true for self-administered questionnaires for which there is an interviewer intervening to help respondents remember their past.

In some situations, it is possible to identify missing data by considering the mandatory chronology of specific events (e.g., before becoming a widow, one must have been married) or when information takes the form of successive periods (e.g., a temporal gap in the different places of residence). In these circumstances, online modes offer a critical advantage over paper-and-pencil self-administered LHCs. The GUI interface can be developed to include instant checks for gaps and to warn the respondent of a possible mistake. However, not all life-history events can be checked for missingness. For instance, a romantic relationship can be missing without the possibility for the researcher to determine such. In other words, an empty cell in an LHC grid may often mean either a correct nonoccurrence of an event or the omission of an event that actually occurred.

To perform a missing data analysis on LHCs for the ‘Sexual health and behaviour of young people in Switzerland’ project, we asked participants the age at which different events occurred twice: once in an online LHC and once using a traditional questionnaire. We thus could compare both answers and evaluate their quality (Berchtold et al., 2021). Although our results confirmed that accurate data can be obtained when using an online LHC, we found that data quality was quite variable across respondents.



Women were more consistent in their answers than men, in particular with regard to the time at which an event occurred. More generally, it was less difficult for participants to remember the occurrence of an event than its exact timing. Recollecting an event did not imply that its time of occurrence was also correctly remembered.

Although data consistency of some sequential events can be ensured during collection, especially in web modes, these other types of checks are only possible if a series of questions are repeated in the questionnaire, thereby raising concerns about questionnaire length and redundancy. In our experience, it is worth introducing even a limited number of these checks to allow for the assessment of data quality. Other complementary solutions can also reduce missingness when collecting data. For instance, in an online survey, the GUI can ask for confirmation of the columns in the calendar in which there are no or few reported events, or it can ask the respondent to indicate a nonresponse option. Although this measure does not ensure the completeness of the data, it stresses to the respondents the importance of double checking their answer, thereby possibly increasing data quality.

## CONCLUSIONS AND RECOMMENDATIONS

Whether paper-and-pencil or online, the LHC is a cost-effective method to collect complete life course data in the social sciences. This is especially true in the context of vulnerability: Respondents can use the nonstructured approach of the LHC (compared to a standard list of questions) to report events that otherwise could go unnoticed because the researcher would not think to ask the right question.

In this chapter, we underscored two important aspects of the LHC, and retrospective surveys in general, that researchers should keep in mind when designing this kind of tool. First, we considered mnemonic and cognitive processes before designing data collection tools. It is important that the tool be adapted to the target population. For instance, younger respondents may use different cognitive mechanisms than elderly respondents, and memory can be boosted by specific features of the questionnaire. Similarly, the recollection of some type of events (e.g., traumatic events) may require particular attention because they may be facilitated by some cognitive mechanisms while being obstructed by others. For instance, happy events can induce a bias towards positive memories, while negative events may trigger other negative memories. In addition, the

same event can have different connotations for different people. Marriage (but also the birth of a child or divorce) can be a positive memory for some and very negative for others. Along these lines, the cues or anchoring points that can be primed to facilitate recollection should be carefully evaluated. Interdisciplinary research between social and cognitive scientists would help further develop these aspects.

Second, we urge researchers to carefully design the visual layout and instructions to be implemented in an LHC. In social research, LHCs are most often self-administered, meaning that the respondents cannot rely on external help. Hence, researchers should consider the visual features of the tool (or of its interface) and how they may influence mnemonic processes. Ultimately, given the different cognitive styles and mnemonic mechanisms that shape the recollection of one's life events, the flexibility of the LHC, especially when implemented online, makes it a powerful tool to shed light on the complexity of idiosyncratic life trajectories. Moreover, LHCs allow respondents to cross-link events from different life domains and to edit and modify their answers.

The constant technical advancement in the field of informatics opens new possibilities for collecting retrospective data via LHC methods. Developments in artificial intelligence and natural language processing may open new scenarios for implementing LHC interviews online with fully automated assistance. Similarly, the availability of open-source packages (e.g., Wieczorek et al., 2020) may greatly facilitate the implementation of LHC in web surveys. Nevertheless, we insist that technological developments should not supersede a thorough examination of the specific mnemonic processes, supporting memory cues, flexibility and clarity of the user interface, and measures for limiting or checking missingness. On the contrary, these aspects are key to ensuring good data quality in life course research.

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## Mixed Method Approaches for Data Collection in Hard-to-reach Populations

### The Musicians LIVES Survey as an Instructive Case Example

*Marc Perrenoud, Pierre Bataille, and Guy Elcheroth*

From a methodological perspective, working with the concept of vulnerability represents a double challenge. First, it requires finding the right indicators to capture vulnerable persons and/or the situations that make them vulnerable. Vulnerable populations are often described as ‘hard to

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M. Perrenoud (✉)

Faculty of Social and Political Sciences, Institute of Social Sciences, University of  
Lausanne, Lausanne, Switzerland

e-mail: [marc.perrenoud@unil.ch](mailto:marc.perrenoud@unil.ch)

P. Bataille

Department of Educational Sciences, University of Grenoble Alpes,  
Grenoble, France

e-mail: [pierre.bataille@univ-grenoble-alpes.fr](mailto:pierre.bataille@univ-grenoble-alpes.fr)

G. Elcheroth

Faculty of Social and Political Sciences, Institute of Psychology, University of  
Lausanne, Lausanne, Switzerland

e-mail: [Guy.Elcheroth@unil.ch](mailto:Guy.Elcheroth@unil.ch)

reach'. There is an obvious link among precariousness, vulnerability, and disappearance from the statistics of the large surveys addressing the whole population of any country, even a rather small one such as Switzerland. For instance, illegal migrants are among the most fragile populations, not only due to their often dramatic life course but also because they do not have an official existence and cannot access basic social rights and social protection. Second, as highlighted in the introduction to this book, vulnerability also has political and ethical dimensions. Thus, working on vulnerability implies being sensitive to its various meanings that are relevant to research participants and being reflexive regarding the assumptions about vulnerability that guide us as researchers. For instance, people working in an informally regulated sector of activity are generally marked as a 'vulnerable population'. Such is the case of most musicians, who, far from the large, steady classical orchestras, have to live day by day in an uncertain job market. Often, a part of their income is undeclared, and their total revenue is typically considerably below the national median level.

However, many musicians do not *feel* vulnerable—they do not view their position as critical, nor do they see a need to mobilise resources to escape from it as soon as possible. If not always chosen, their precarious position can be interpreted as a sign of their commitment to the artistic-romantic ethic of not 'selling out'. Bohemianism, which may seem a vector of vulnerability from many points of view, is a lifestyle that is positively identified with 'true' artist life (see Bourdieu, 1975). Vulnerability is thus also difficult to grasp in this context because 'objective' criteria are not sufficient to define it: Considering subjectivity is thus almost a prerequisite to guarantee data quality and avoid misinterpretations. To grasp the two sides of vulnerability, building fine-grained datasets that contain robust information on both 'objective' and 'subjective' elements that frame individual life courses is necessary. Mixed method research designs can be of great help in reaching these aims, as we will present below.

In this chapter, we illustrate how we developed a mixed methods research design to survey 'ordinary musicians' living in French-speaking Switzerland. The project, supported by the LIVES research program, was entitled Musicians LIVES. We first seek to clarify our own working definition of 'mixed methods', its roots in a pragmatic approach to knowledge generation and research methodology, and why we see mixed methods research as a promising avenue to engage differently with populations that are reputedly hard to reach for research purposes. We then explain why and how two of us (Perrenoud and Bataille) developed the Musicians



LIVES survey and how we designed our sampling strategy. Next, we present the data collection process, combining quantitative and qualitative approaches with a specific set of tools built around our main investigation instrument, the life calendar. In the final part of the chapter, we show how these concerns address several classic issues related to fieldwork among vulnerable, stigmatised or hidden populations and then discuss the broader relevance of mixed methods in large-scale research projects in social sciences aiming to engage with such populations.

### WHAT ARE MIXED METHODS, AND HOW CAN THEY FACILITATE RESEARCH WITH HARD-TO-REACH POPULATIONS?

Some years ago, Perrigo Pelto (2015) discovered with surprise that mixed methods were being presented as a new development in the social sciences, with ‘some writers stat(ing) that this methodological approach only got going approximately 25 or 30 years ago’ (p. 734). Pelto himself had spent his long career blending numbers, texts and direct observations and, as early as 1970, had published a methodology textbook for anthropologists in which he presented numerous examples of previous studies taking similar approaches dating back another four decades. However, none of these earlier studies specifically referred to their methodology as ‘mixed’. Why not? According to Pelto, ‘the “qual/quant distinction” was generally not significant or special. They were all doing “science”, in which some phenomena should be counted, and others simply described without any numerical treatment’ (p. 741). Before perceiving the practice of mixing methods across research paradigms as noteworthy, social scientists first had to perceive paradigms that associated particular methods with different epistemological assumptions as meaningful realities. Pelto temporally situated the rise of such a perception within the last decades of the twentieth century.

Aiming to overcome the resulting binary opposition between quantitative and qualitative research orientations, Biesta (2010) discussed the possibilities of *pragmatism*, a notion that can be read both in its everyday meaning and in its more specific philosophical understanding. In its everyday sense, pragmatism suggests that researchers flexibly opt for the specific methodological tools that are most apt to answering their concrete research questions, rather than for a research paradigm as a package tied to

abstract worldviews. It follows that more complex sets of questions sometimes require more diversified toolboxes. Philosophical pragmatism adds an epistemological foundation that views knowledge as neither objective nor subjective but—in a tradition of thought stretching back to William James (1907) and John Dewey (1929)—as grounded in the way we experience the consequences of our actions and are able to reflect on these consequences. For epistemological pragmatists, it is impossible to study the world from a spectator perspective: ‘If we want to know the world, we *must* interact, and as result, we will know the world only in the way in which it responds to us’ (Biesta, 2010, p. 19).

This focus on knowledge-generating social interactions is of particular relevance in regard to the study of social phenomena, or populations, that are traditionally viewed as ‘hard to reach’. In a thought-provoking discussion, Hardy and Chakraborti (2020) wondered whether these populations might not be described more accurately as ‘easy to ignore’ (from the perspective of established knowledge builders). This is certainly true of informal workers, as studied here, who tend to be invisible to public administrations, official statistics and GDP-type approaches to public wealth and productivity. Hardy and Chakraborti hence problematised the idea that certain groups are *inherently* hard to reach and argued instead that ‘reach’ and ‘access’ characterise social relations, not individuals. Consequently, transforming the social relationship between a research team and specific groups in society will alter the former’s impression of the latter’s reachability. To those researchers willing to circumvent common gatekeepers and directly ‘connect with and capture the lived reality of diverse communities’, Hardy and Chakraborti promised to eventually ‘recognize that the “hard to reach” are, in fact, eminently reachable’ (p. 52).

If entire communities can be ‘easy to ignore’ or ‘eminently reachable’ depending on the particular social relations established with them, a similar point can be made about the individuals composing these communities and—to disaggregate even further—about specific moments in the lives of these individuals. A typical shortcoming of quantitative approaches is that the requirement to work with samples prone to statistical treatment necessarily leads to some form of aggregating individual situations and hence bears the risk of overriding relevant variability across cases. As noted by Verd and Lopez Andreu (2011), a critical advantage of mixed methods designs is therefore that they allow for complementing the

‘variable-centred approach’ that is characteristic of quantitative analyses with a ‘case-centred approach’ through rich qualitative contextualisation of individual situations.

More specifically, Verd and Lopez Andreu (2011) advanced two types of arguments, of particular relevance for the present discussion, for adopting mixing methods from a *life course* perspective. First, from a life course perspective, ‘outcomes’ are always time-bound. A combination of life event surveys and life story interviews is ideally suited to reconstituting particular sequences of events that lead into and out of temporary states of, for example, well-being or vulnerability. Second, whether a given person is vulnerable at a given moment in time depends not only on a stock of resources objectively available to that person at that moment but also on the *conversion factors* ‘that can hinder or facilitate the transformation of resources—understood as means—into effective freedom’ (p. 7), as well as on the personal and collective *values* according to which certain ends are desirable. A lack of means to attain these factors and values represents a meaningful restriction of freedom. Both values and conversion factors (which include factors as diverse as, for example, personal knowledge, social norms or local infrastructures, p. 11) can be difficult to grasp with survey data or qualitative observations alone, as they typically span multiple scales and require a more holistic understanding of the contexts of individual and community lives.

In the present contribution, we follow the call to ‘do mixed methods research pragmatically’ and try to remember what Feilzer (2010) called researchers’ “‘duty” to be curious and adaptive’ (p. 14). As we view the projection of too much epistemological meaning onto the ‘quantitative/qualitative’ binary as adding more confusion than clarity to current methodological debates, we prefer to approach mixed methods simply as the particular subcase of multimethods research (Anguera et al., 2018) that involves both numeric and nonnumeric tools to exploit a diversified set of research material. In line with the pragmatic approach that guides us, the remainder of this chapter gives due space to a detailed description of specific research practices that are aimed to answer concrete questions within a particular social setting. We then discuss some potentially transferrable suggestions for using mixed methods to facilitate research with hard-to-reach/easy-to-ignore populations that can be derived from a reflection on these practices.

## SAMPLING A HARD-TO-REACH POPULATION: THE ‘ORDINARY MUSICIANS’

### *Ordinary Musicians as a Vulnerable and Hard-to-reach Population*

When we started the Musicians LIVES project in 2012, our idea was to survey the work, employment and living conditions of those we call ‘ordinary musicians’. The notion comes from Perrenoud’s former ethnographic work in France (Perrenoud, 2007), and in many ways, Musicians LIVES was a development of this first approach. Ordinary musicians constitute the overwhelming majority of the people who try to make a living from their musical activities but are neither rich nor famous. This is the most common case, as only an infinitesimal minority of artists reach large commercial success or cultural consecration (Perrenoud & Bois, 2017). This kind of musician mostly plays ‘popular music’ such as jazz, rock, pop, or songs, but some also play ‘classical’ music; however, they do not have a permanent job in an orchestra. These musicians are seldom intermittent wage earners, but most of them live as independent workers who are self-employed.

We started from the idea that ordinary musicians had ‘vulnerable’ careers, in the material as well as in the symbolic sense. Indeed, the results of the ethnography in France during the early 2000s and the international literature (Thomson, 2013; Throsby & Hollister, 2003; Webster et al., 2018) have shown that musicians’ income is generally lower than that of the average population, highly variable from one year to another and even from one month to another, and often at least partially undeclared. Ordinary musicians’ material work conditions are often tough: night work, gear handling, car or truck driving to go home after the gig, etc. In addition, musicians’ employment status is often ambivalent, as they can be intermittent wage earners or self-employed. In a typical situation, the bar owner who hires a band for a night can be seen as both the employer and the client of the band. Symbolically, in most of the entertainment gigs that musicians obtain, they are often caught in an unclear work relationship ‘between arts and craft’ in which they have to manage professional identities as both an ‘artist’ and a ‘service provider’ at the same time (Perrenoud, 2006, 2007; Perrenoud & Bois, 2017). Their material difficulties also often lead musicians to hold daytime jobs, mostly part-time, which emphasises the difficulty of perceiving them(selves) as ‘professionals’. These

material and symbolic forms of uncertainty make ordinary musicians vulnerable. However, such uncertainties do not imply that musicians are equally vulnerable at different moments of their careers, nor that every musician necessarily passes through phases of strong vulnerability. Nor do they imply that life configurations that might be characterised from the outside as vulnerable are necessarily experienced as such by the musicians themselves. The study therefore notably aimed to clarify how inherited and acquired resources filtered the experience of unsteady careers across a diverse range of musicians and how material and symbolic factors interacted to make the precariousness more or less bearable, if not almost appealing, for musicians from different backgrounds.

As evoked in the introduction to this chapter, the link between vulnerability and hard-to-reachness has been clearly established. Ordinary musicians, who are too few in number to appear as an occupational group in large surveys such as the Swiss Household Panel, do not have a single and steady employment status, need no licence to work (Hughes, 1996), are accustomed to undeclared revenues, and work at night in entertainment places such as bars, clubs, and restaurants. Thus, the occupational group boundaries are very difficult to draw: There are no lists or repertoires of ordinary musicians; consequently, our first issue was to circumscribe our population.

### *Starting from a Definition: What is a Musician?*

For the reasons mentioned above, we chose to build our own sample. As Musicians LIVES started with an ethnographic phase of observation and informal interviews in 2012 and 2013, we could rely on the findings from this first step. This qualitative fieldwork clearly showed that defining someone as a ‘musician’ was not directly linked to income issues. ‘Professional’ musicians are not just those who earn their whole living by playing music. The individuals defined as ‘musicians’ by most of the people we met during this ethnographic work are, foremost, those who play and collaborate with other musicians through projects—such as playing in the same band or recording an album together. Therefore, in line with the interactionist tradition in the sociology of work and professional groups (Hughes, 1996; Becker, 1963), we decided to base our sampling strategy on a simple ‘relational’ definition because it seemed to be the one that makes sense for individuals of our target population: A musician is someone who is seen as

such by his or her peers, someone to contract and play with and who is embedded within a larger musical collaboration network.

### *Online Network and Respondent-Driven Sampling: Two Approaches Yielding Contrasting Results*

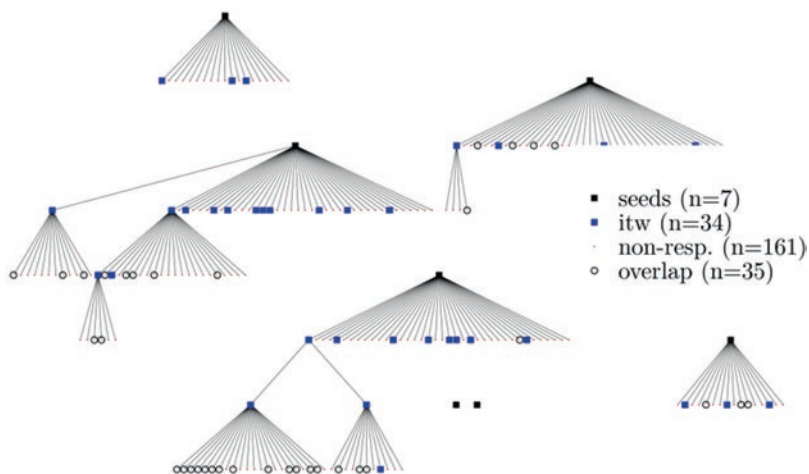
From this starting point, using a standard random sampling method was not feasible, if only because there was no pre-existing sampling frame from which ‘ordinary musicians’ could be drawn. Therefore, we decided to experiment with alternative sampling methods, especially different network sampling strategies. Network sampling methods comprise a set of different methodological approaches (see Heckathorn & Cameron, 2017), all of which are underpinned by a simple idea: There is a finite and small number of links between every individual of the same society (Forsé, 2012). Thus, if you ask somebody to ask somebody to ask somebody to place you in touch with one of the people whom he or she knows, you will be able to potentially reach any person, from any starting point, through only a few iterations. Could such a process thus be referred to as snowball sampling?

We started a first sampling trial following this idea. We selected seven people among those we met during the ethnographic survey (cf. Fig. 21.1). These people (or ‘seeds’, represented by a black square in Fig. 21.1) were meant to be as diverse as possible.

We sent these seven people an online questionnaire that asked them to make a list of the musicians with whom they had played for pay during the last 12 months. To grow our snowball sample, we needed several personal contacts for each of these people. The very first persons we had met—the ‘seeds’—agreed to do so. Therefore, we had a highly satisfying first iteration that resulted in dozens of new contacts. However, we had never met these new contacts. Therefore, when these people received an e-mail from the university asking them to contribute to a survey, giving them a link to a questionnaire in which they were asked to give the names and contacts of all the people with whom they had played during the year, most of them refused. The majority did not click on the link, some clicked but did not complete the questionnaire, and at least one of them was so upset that he sent us an insulting letter asking how we could dare to be so intrusive.

Consequently, we decided to adapt our sampling strategy to make it ‘respondent-driven’ (see Heckathorn, 1997; Salganik & Heckathorn, 2004). This time, we asked our seven ‘seeds’ to contact *themselves* three

## A. Web survey



## B. RDS survey

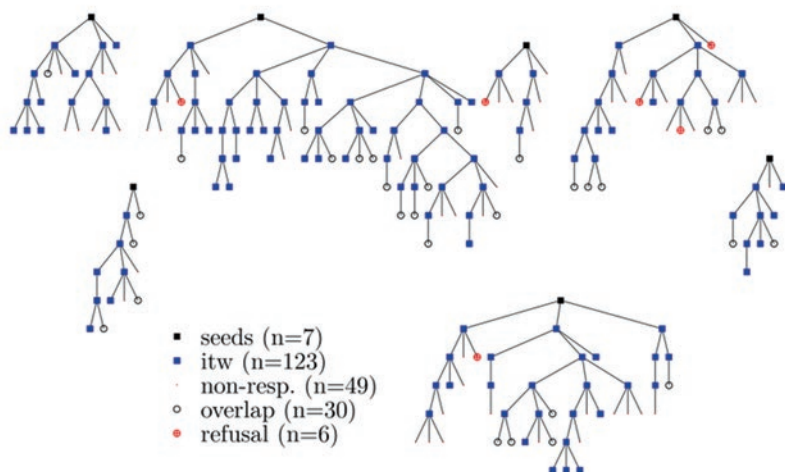


Fig. 21.1 Web and RDS diffusion trees

people in their network, with whom they had played for money during the last 12 months, and to ask them if they would agree to meet a member of our research team. Seeds were selected for their durable integration into

the musical professional space and their various profiles, from the specialists in private parties or corporate events to the regulars of avant-garde venues, from the punk-rock singer to the Baroque flute player, from the baby-boomers to the millennials—but all made a living by playing music. This strong integration of our ‘seeds’ within their professional networks was needed to launch the first recruitment waves optimally at the core of the professional space. As shown in Fig. 21.1, this approach was much more fruitful than online sampling. Only 34 interviewees (represented by a blue square in Fig. 21.1) were recruited through the online survey. The recruitment chains were very short (only one or two iterations). There was a wide majority of nonrespondents ( $N = 161$ , represented by a red spot in Fig. 21.1). Comparatively, the respondent driven sampling (RDS) survey met with considerably more positive response, and we ultimately gathered 123 completed questionnaires through 3 to 8 waves of recruitment. A more detailed presentation and discussion of our sampling method can be found in Bataille et al. (2018).

### *When Ethnography Helps Keep the Sample Diversified*

Network sampling is typically used to study populations of which the size or social composition are not well known in advance. Deep ethnographic fieldwork can be of great help to obtain a better idea of the inner partitioning of the targeted population (McCreesh et al., 2012) and thus help the researcher make better-informed choices, particularly regarding the selection of the seed respondents. In the present case, unlike, for example, most studies using respondent-driven sampling in a public health context, we did not seek to create a sample that was *statistically* representative of the reference population but that adequately reflected the diversification of social situations experienced by ordinary musicians in Switzerland. It was therefore critical, regarding our respondents’ social background, to carefully check that the seeds represented a large diversity of profiles. Nonetheless, seed selection was only the starting point of a dynamic process during which the sample composition evolved, and it was equally critical to monitor that social diversity was not lost in this process. We knew from our ethnographic work in France and Switzerland that ‘ordinary musicians’ are rarely recruited among the top of the upper class or the more ideotypically working class families, instead coming most of the time from the various fractions of the middle class. The main internal variation comes from their greater endowment of symbolic



resources—especially diplomas. Figure 21.2 represents the rate of women (A) and respondents regarding their social background (B) recruited at each wave of the RDS recruitment process, with a 0.9 confidence interval. These results indicate that people with an upper-class social background were cited more often and were more inclined to answer our survey

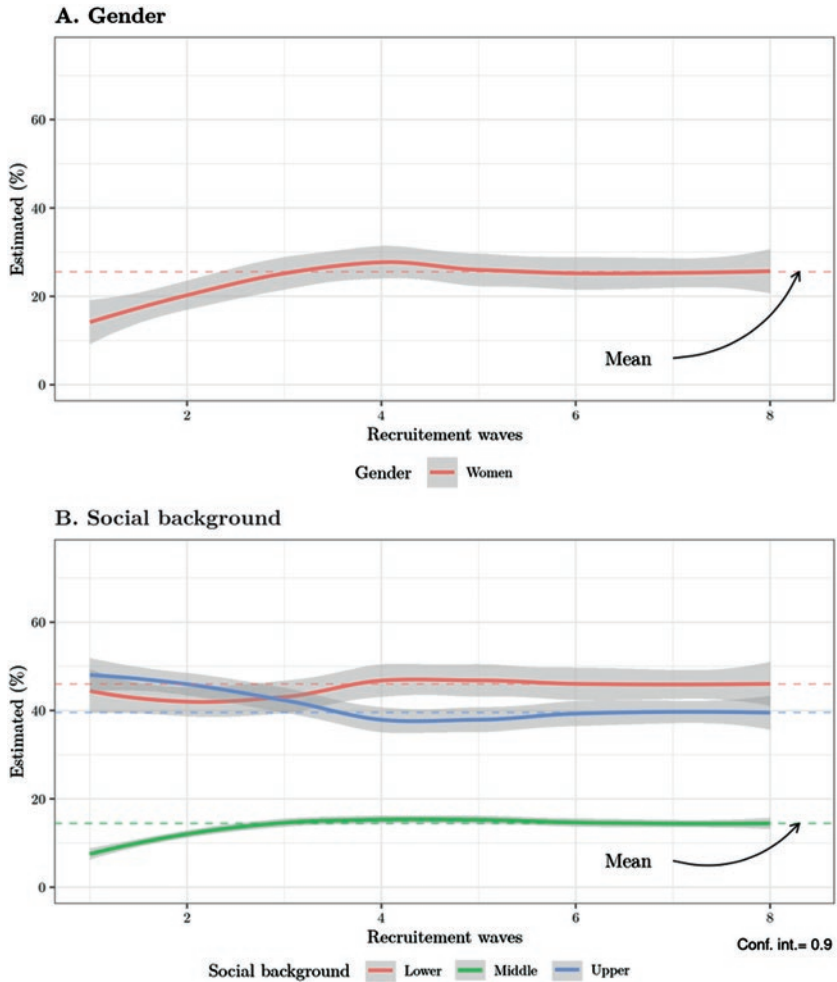


Fig. 21.2 Recruitment dynamics regarding gender and social background

during the first two waves. Interestingly, however, in the fourth wave and after, our respondents' social background again became increasingly diverse. In other words, continuing recruitment beyond the second of three iterations turned out to be a decisive factor in reaching a sufficiently diverse range of social situations, which matched our research objectives.

Combining qualitative and quantitative methods hence allowed us to design an effective sampling strategy. However, the use of mixed methods was also our main approach for the data collection about musicians' lives, occupational activities, careers and lifestyles.

## A MIXED METHODS SURVEY COMBINING ETHNOGRAPHY AND STATISTICS

### *The Fieldwork Protocol*

Establishing a constant protocol for each of the six people who performed the fieldwork was a long and difficult part of the project. Perrenoud and Bataille supervised the process and conducted approximately a dozen interviews each, but four assistants were hired to reach a total of 123 interviews in the year between 2014 and 2015 (Perrenoud & Bataille, 2019).

At first, we hoped that the self-completed online questionnaire would work as a sampling tool and that we could, at a second timepoint, meet some of our respondents for in-depth interviewing. As online sampling failed, we rapidly abandoned that idea. We nevertheless aimed for a protocol that could allow us to obtain accurate standardised data and to conduct rich interviews. To do so, we decided to develop a life calendar that would work as a real mixed methods research device.

The calendar was printed on an A3-size sheet that we then placed on the table to share with the interviewee. On the X axis (see Fig. 21.3), a double timeline showed the respondent's age and years as a musician. On the Y (idem) axis were several thematic sections regarding the respondent's musical career and life course in general (especially bands in which the person had played; musical and nonmusical education and training; musical jobs as performer, composer, teacher, etc.; employment outside the music business; biographical landmarks such as getting married or the birth of a child). The interviewer and the interviewee each had a pencil and could fill in the calendar while they chatted. For the bands in which the interviewee had played, we had a chart on which we could precisely

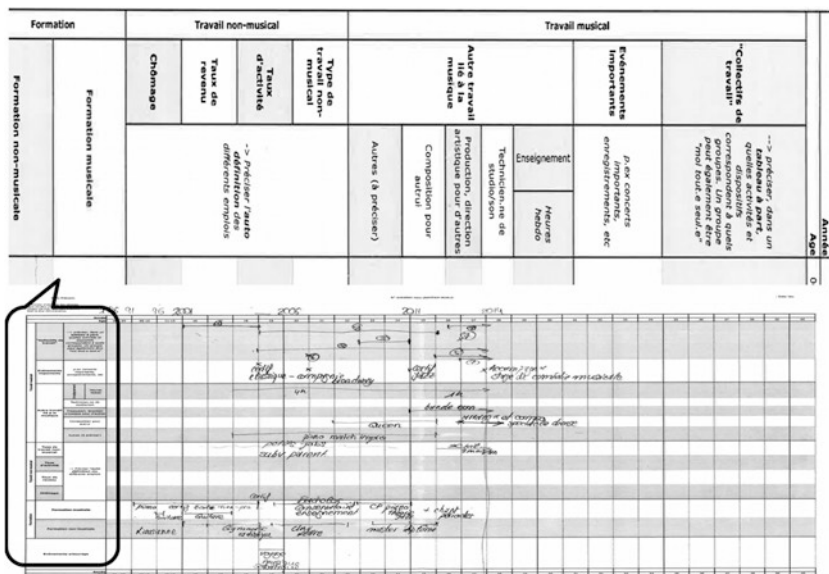


Fig. 21.3 A filled Musicians LIVES life calendar

note information such as the name of each band, the type of repertoire (original compositions or covers), the type of venues where it played (for instance, concerts in halls, entertainment in bars, or as anonymous background music for commercial animations), the musical style, the band lineup, and the average number of gigs per year (see Fig. 21.3). At the end of the interview, we had some complementary tools, such as a short sociodemographic questionnaire to ensure the collection of certain basic information that could have been forgotten during the interview and a dynamic revenue bar chart on which the interviewee could trace with a marker the composition of his or her musical revenue (gigs, studio sessions, teaching, royalties, merchandising, etc.) at different sequences throughout his or her career. Then, we finished with the networking portion, first asking the interviewee the names of the people with whom he or she had played during the 12 past months (ultimately obtaining a 1300-person network) and then asking them to contact three people in this network to ask them to be part of the survey.

Therefore, our life calendar essentially functioned both as a device for obtaining standardised data for quantitative analysis and as an elicitation tool for the semistructured interviews, each of which lasted approximately two hours and was recorded. It took approximately two months for the team to develop a cautious and precise protocol for using this life calendar and complementary tools. The four people who were hired were master's students in the social sciences and musicians, mostly with a certain experience of the trade (as for both Perrenoud and Bataille), so we tested our survey protocol on one another until we reached a satisfying routine, which proved to be efficient in the first musician interviews. We rapidly obtained results regarding the main characteristics of musical work and the different types of musical careers in the Swiss context (Perrenoud & Bataille, 2017, 2019; Bataille & Perrenoud, 2021) that we could further compare to patterns found in previous work, especially in France (Perrenoud, 2007).

### *Beyond General Social Characteristics: Analysing Variability and Subjectivity*

Over the course of approximately one year, six of us conducted 125 interviews with musicians in French-speaking Switzerland. At the end of each interview, we completed an input mask on LimeSurvey to obtain all the standardised data concerning the social background, career and network of each interviewee. We did not have the means to transcribe all the interviews, but each interviewer had the sound files that he or she had recorded and could transcribe whole interviews in some cases and specific parts in others.

Standardised quantitative data were analysed with R software and the extension for sequence analysis, TraMinR. In our first approach, these analyses allowed us to highlight that, when considered as one group, the ordinary musicians who took part in our study displayed distinct social characteristics: Compared to the larger Swiss population (as reflected in the Swiss Household Panel), they tended to have a higher educational level and a lower income than the average. Regarding gender, we also found—as expected—a vast majority of male musicians. Flat sorting to perform such descriptive work was straightforward, and we could quite clearly characterise different types of social conditions among the ordinary musicians included in our study. Nevertheless, understanding the meaning of some objective disparities within the group and illustrating the different

types of musical careers and the stratification among the diverse ways to 'be a musician' became far more complex. To accomplish these goals, we had to obtain the meaning of some variations from one individual case to another, which required an understanding of the occupational culture. To obtain such an understanding, we needed a qualitative approach.

For instance, we clearly found that ordinary musicians frequently had several sources of income from their musical activities. Musicians can be paid to play in public but also to record in the studio, to give music lessons or to conduct a choir; they can also earn royalties through copyrights or selling merchandise. We observed cases of extreme contrast: Some people made a living almost exclusively through public gigs throughout their entire career, while others had various revenue sources such as frequent studio sessions, some copyrights, and perhaps music lessons. Some people had 'daytime jobs' in addition to the music business, and others earned a living almost exclusively by teaching music throughout their career, with fewer onstage musical activities. Those different profiles appeared to be largely determined by the social class fraction of origin and the ensuing cumulative advantages or disadvantages: owning a cheap or expensive instrument, having studied composition or not, having the idea and the desire to compose music or not, pairing with well-known musicians or with local fellows, receiving a parental grant during the long and uncertain beginning years of the career or having to work to earn a living, etc. However, they were also partially dependent on experiences and events encountered across the life course, for example, dedicating oneself exclusively to music after a negative event in the nonmusical professional sphere or deciding to turn mostly towards music teaching after having a first child.

Among those different profiles, types of musical activities, and income sources, we sought to determine which were the most attractive and the most aspirational for musicians. An objective analysis in terms of employment quality (UNECE, 2015) would assume that musical teaching is more steady, more often officially declared, and with a higher minimum wage than what can be found on the more-or-less underground trail of the musical bars. Such an assumption has even been a source of misunderstanding for some colleagues who, as sociologists of work, found that musical teaching was much more suitable and enjoyable than spending a life on the road travelling from gig to gig.

However, with our data collection design, we were able to move between statistics and individual cases and to 'zoom in' on respondents' comments regarding their objective bundle of tasks and the way they were

making a living at different moments of their career. The subjective comments were unequivocal: Teaching music was a second-choice activity that was less prestigious than playing onstage. The stage is the place where the musicians' professional identity is stated and asserted by the interaction with an audience. Whatever the musical genre or style, we found quotes in the interviews that expressed, about a given period of time on the life calendar, sentiments such as 'It's sad, in that period I only have teaching activities', or 'At that time, we didn't get as many gigs, I had to take more teaching hours'.

This complementarity of quantitative and qualitative approaches allowed us to show that, in contrast to common ways of evaluating employment quality, the occupational group we studied was marked by a peculiar professional culture inherited from the romantic Bohemian mythology. In that specific ideology, vulnerability was seen as the normal state of the 'artist', who is never certain of what will come next in terms of ideas, work, and income. However, as atypical as it may seem, this kind of romanticisation of social vulnerability was previously described by Boltanski and Chiapello (1999) as a major part of the 'new spirit of capitalism' and seems today to extend to all sectors of the labour market (Menger, 2002; Perrenoud & Bois, 2017; Bataille et al., 2020). The ideological advent of the 'entrepreneur' as a new and hegemonic anthropological paradigm in ultraliberal societies relies on that romanticisation of vulnerability: On online service job platforms, for example, everyone is supposed to commit to the 'adventure' of 'independent' work to 'be creative' and self-motivated in a general context of increasing precarity.

#### DISCUSSION: LEARNING TO MIX METHODS TO UNLEARN THAT CERTAIN GROUPS ARE EASY TO IGNORE

Research methodology is inherently about inclusion and exclusion: Choosing a specific method, often unwittingly, implies the acceptance of ignoring certain facets of the social world that might have become visible with other methods. In our view, mixed methods open fruitful avenues for research practices that include a broader range of perspectives (see Elcheroth et al., 2019) when constructing the 'intersubjective worlds' that pragmatist epistemologists see as the foundation of all relevant knowledge generation (Biesta, 2010). There are direct and indirect reasons for this. As with other types of multimethod designs, mixed methods are likely to

make visible phenomena that would have gone unnoticed within a single-method design. Moreover, they add an element of flexibility and adaptability to the research process, which can be a critical indirect benefit when the aim is to reach populations that are reputedly hard to reach with standard procedures (see Laganà et al., 2013).

We have illustrated here how these different aspects can be combined in a study designed to make visible a population of ‘ordinary musicians’ that typically remains hidden in the social landscapes described by social statistics. This experience showed that being ‘hard to reach’ is not an inherent characteristic of the target population but depends on the concrete social relations between (professional) researchers and (professional) musicians. Just as informal work is ‘easier to ignore’ (to rephrase Hardy & Chakraborti, 2020) from the perspective of public administrations than for the thousands or millions of people whose livings depend on it and whose lived worlds are shaped by it, ‘ordinary musicians’ might be harder to reach from our university offices than with the help of peer musicians in the field. Consequently, the status of being ‘hard to reach’ can change when the relevant social relations change. In the present case, adaptive elements of the research design, such as integrating qualitative elements into survey interviews (i.e., allowing for open-ended elaborations on relevant topics) or cooperating with earlier research participants to identify further participants, changed the climate of individual interactions with participants, as well as the perceived meaningfulness of the study within a closely connected community. These changing social relations eventually opened doors that appeared closed during earlier stages of fieldwork.

This example shows how the functions of a classic sampling procedure in ethnography—here, snowball sampling—can be creatively expanded for old and new purposes. Here, it allowed the creation of a diversified sample that reflected a relatively broad range of social realities experienced by musicians in Switzerland. While certain accounts proved useful in describing variable social conditions within this sample, they were not designed with the primary aim of making quantified inferences to a broader reference population. When such inferences are a research objective, other ingenious variants of network sampling can help bridge the type of aims described here with those of classic probability sampling. In the context of the LIVES program, for example, *controlled network sampling* allowed for the creation of a representative cohort sample with an oversample of the (statistically) hidden population of second-generation immigrants (Spini et al., 2019). In that study, network sampling generated further benefits:

It allowed us to diminish attrition in subsequent waves in comparison with research participants recruited through classic random sampling (Brändle et al., 2017) and to exploit the tie structure used to generate the sample to describe different configurations of social capital in the reference population (Guarin, 2020).

To conclude, we hope that our contribution helps clarify, first, why it is important to denaturalise and disaggregate ‘hard-to-reach’ populations and, second, how mixed methods designs can help reach these aims. *Denaturalising* hard-to-reach populations implies thinking more in terms of connecting social relations between researchers and research participants rather than in terms of certain populations being more or less reachable *per se*. It also means considering the temporality of social phenomena, which is central in the life course perspective: A person or a group can be ‘easy to ignore’ at one moment and ‘eminently reachable’ at a different stage of their personal or collective trajectory. For instance, a musician can experience a humble and marginal beginning, then have some success and become more visible at a point of his or her career, before perhaps becoming old-fashioned and disappearing again from the limelight. The pragmatic orientation underlying mixed methods research provides the necessary flexibility to adjust methods to accommodate concrete research goals and to create research designs that facilitate the social relations necessary to connect with specific target groups at specific moments in time.

*Disaggregating* ‘hard-to-reach’ populations implies being precise about concrete types of reasons that can make it more difficult to create these connections. Ellard-Gray et al. (2015) distinguished among remoteness, vulnerability or invisibility by calling for different types of responses. When remoteness is the main hurdle, cooperating with social actors who are closer to the target group can help overcome it. When groups are particularly sensitive to stigma or other potential harm, a clear ethical orientation and the capacity to convey it in a meaningful way will be an essential foundation of relationship building. When the group is ‘hidden’—i.e., difficult to identify—the key effort demanded might lie in constructing new frames to find and recognise group members. In practice, the three types of reasons can overlap but frequently do so in unequal proportions. In the present example, the creation of a new knowledge map to delineate a fuzzily defined social group was the main focus, but connecting with concrete group members also required sensitivity to sometimes precarious social conditions as well as specific social skills to bridge different cultural or organisational environments.



Tackling these challenges required methodological creativity, but eventually, it also reified the underlying conceptualisation of vulnerability that oriented the study. The mixed methods design notably allowed the description of professional ethos among many musicians that positively connoted situations that sociologists of work would describe as precarious. If we want to avoid naturalising certain values—say, the values that prioritise full and continuous participation in consumer society—we need to take seriously the plurality of values revealed in this way while still contextualising their emergence and maintenance. Such an approach might eventually lead us to wonder to what extent vulnerability stems from *inconsistencies* between specific values and opportunities rather than simply from limited resources to reach self-evident ends.

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# Combining Data Collection Modes in Longitudinal Studies

*Caroline Roberts and Marieke Voorpostel*

## INTRODUCTION

A multidimensional, multilevel and multidirectional perspective on vulnerability across the life course, capable of shedding light on the dynamic interplay among stressors, resources, and reserves for different subgroups at different moments (Spini & Widmer, this book/[this volume](#)), carries with it a number of methodological imperatives. First, it implies the need for empirical research based on rich longitudinal data and methods sensitive to processes, which, in turn, make it possible to draw inferences to wider populations of interest. This capability is key to deepening understanding of the common processes that govern vulnerability dynamics and ensuring the possibility of supporting positive changes in people's lives.

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C. Roberts (✉)

Institute of Social Sciences, Faculty of Social and Political Sciences, University of Lausanne, Lausanne, Switzerland

e-mail: [caroline.roberts@unil.ch](mailto:caroline.roberts@unil.ch)

M. Voorpostel

FORS, Swiss Centre of Expertise in the Social Sciences, Lausanne, Switzerland

e-mail: [marieke.voorpostel@fors.unil.ch](mailto:marieke.voorpostel@fors.unil.ch)

Second, a consideration of the quality of the data analysed and what can compromise comparability across different temporal and geographic contexts and population subgroups is paramount for ensuring the validity and utility of research findings. In this endeavour, survey research plays a central role, and research in the field of survey methodology is indispensable to those concerned with the substantive objectives of life course research (Oris et al., 2016).

One of the determining factors affecting the quality of survey data is the method by which participants respond to questionnaires—referred to as the *mode* of data collection. Mode can affect data quality by determining *who* is able and willing to respond to a survey and *how* they respond (i.e., the answers they give). Important developments in internet-based data collection technologies in recent years, combined with pressure to reduce fieldwork costs, have resulted in the growing use of ‘mixed mode’ designs, which use a combination of methods for administering questionnaires to members of the same sample. The use of multiple modes can affect the comparability of data gathered in different groups and in a longitudinal setting at different points in time. As an increasing number of longitudinal surveys begin to combine modes in the production of life course data (Voorpostel, Lipps, & Roberts, 2021), accounting for mode(s) in the analysis and interpretation of that data is becoming increasingly necessary in quantitative research on vulnerability.

In this chapter, we discuss some of the key challenges that mixed mode designs entail, particularly in longitudinal surveys, and illustrate them with a synthesis of findings from our own research relating to (1) the effects of combining modes on response rates and the *representativeness* of survey samples and (2) effects for *measurement* comparability. First, we describe some of the motivations for mixing survey modes and specific issues relevant in longitudinal studies.

### MOTIVATIONS FOR COMBINING DATA COLLECTION MODES

In response to growing challenges associated with interviewer modes—notably, a deterioration of data quality and rising (often prohibitive) costs due to declining response rates (Groves, 2011)—researchers have been increasingly turning to mixed mode data collection protocols (De Leeuw, 2018). While web-based surveys have begun to predominate, they often suffer from even lower response rates than surveys conducted in interviewer modes (p. 55) and still exclude the part of the general population

without internet access (p. 35). As such, they remain, on their own, inadequate for achieving good representation in general population surveys. Mixed mode surveys provide a solution by using alternative modes of participation for different sample subgroups (Smyth et al., 2014).

From a survey methodological perspective, data quality is a function of two factors: (1) how well units of observation *represent* a population of interest and (2) how well variables *measure* attributes of the units of observation. With respect to coverage and representation, attention must be paid to *how* different modes are combined and with what goal in mind (De Leeuw, 2018; Gravem et al., 2014). For example, ‘push-to-web’ designs aim to maximise the proportion of the sample responding in the lowest-cost mode and hence the cost-saving benefits (Dillman, 2017). Alternative (more costly) modes are then offered *sequentially* to follow up nonrespondents. Modes can also be combined *concurrently* by offering respondents a choice (although evidence suggests this may be counterproductive (Tourangeau, 2017)) or by allocating preidentified sample subgroups to different modes (e.g., people with telephone numbers are interviewed by telephone). This approach offers the potential to optimise the survey design for harder-to-survey (often more vulnerable) subgroups, such as older adults (Oris et al., 2016) and national minorities (Herzing et al., 2019). The feasibility of such designs is greater in a longitudinal setting, in which data available from earlier survey waves can inform the fieldwork protocol used in later waves (Kaminska & Lynn, 2017).

Mixing modes has consequences for measurement because the answers people give to survey questions are influenced by mode characteristics such as the degree of perceived anonymity they offer and the amount of cognitive burden they place on respondents (Couper, 2011). These aspects can affect how respondents interpret questions and their ability and motivation to provide accurate and honest answers (Tourangeau et al., 2013). Therefore, mode choice should consider not only the characteristics of the target population but also the measurement goals of a survey (Dillman et al., 2014), especially where the goal is to measure sensitive subjective phenomena, as is often the case in vulnerability research.

Mixed mode designs can be effective in reducing representation errors in one mode (e.g., by increasing response rates or reducing coverage error). However, the decision to combine modes entails blending their different measurement properties, which can affect the accuracy of aggregate estimates, observed relationships between variables, and the equivalence of composite measures and can hinder comparisons between groups

of interest that are more or less likely to respond with one mode over another (Tourangeau, 2017). Before proceeding with substantive analyses of mixed mode data, therefore, researchers should first assess the extent of differential measurement errors across modes and, if needed, ideally adjust for them (Hox et al., 2017).

### CHALLENGES OF COMBINING MODES IN LONGITUDINAL SURVEYS

The decision to combine modes in a longitudinal survey setting involves additional complications (Jäckle et al., 2017). As with cross-sectional studies, the potential impact on data quality depends on which modes are combined and how. However, in cohort and panel studies, an additional consideration is *when* modes are combined. New longitudinal surveys may consider mixing modes from the outset, using a combination of modes for recruitment and/or interviewing at subsequent survey waves. Existing longitudinal studies may opt to switch modes from one wave to another for all sample members or transition from a single to a mixed mode design (e.g., to reduce fieldwork costs and mitigate nonresponse). A mode switch *between* waves could result in selective attrition, thereby affecting the representativeness of the remaining sample and comparisons over time. Timing is again likely to be key. For example, attrition is typically greatest between waves 1 and 2 of a longitudinal survey (De Leeuw & Lugtig, 2015), and particular subgroups—often those considered more vulnerable—are at greater risk of dropping out (e.g., young men, those with lower education, lower income or the unemployed) (e.g., Rothenbühler & Voorpostel, 2016; Lugtig, 2014). It is, therefore, of empirical interest to know whether a mode switch in the second wave will exert a more detrimental impact on sample composition than a switch later in the lifetime of the panel and, if so, which population subgroups will be most affected (Voorpostel, Roberts, & Goordhin, 2021).

Longitudinal surveys aim to produce data that are comparable over time to allow the measurement of change. Changing modes between waves could disrupt the continuity of measurement, leading to bias in such measures (Dillman, 2009). This bias is a particular concern in the study of vulnerability, which takes a special interest in evaluating the impact of life events that occur between survey waves. Switching to self-administered modes from interviewer modes, for example, can reduce errors resulting from social desirability bias (SDB). While measurement accuracy may

improve, however, it can be difficult to determine whether changes over time are due to the impact of critical life events, transitions or evolving trajectories or are simply a result of the mode switch. One advantage of mixed mode longitudinal studies is that questionnaire data collected in earlier waves can be used for the purposes of isolating and adjusting differential mode effects on selection and measurement within and across survey waves (Tourangeau, 2017). Similarly, a subsample that continues to respond in the initial mode can be ringfenced and used for adjustment purposes (see Burton & Jäckle, 2020).

As a result of the theoretical risks posed to the quality of longitudinal survey data by combining modes, until recently, relatively few major panel studies had implemented (and documented the effects of) such changes in design. However, many panel studies have started to implement mixed mode designs in recent years, yielding methodological insights into the consequences for response rates and sample composition, as well as apparent effects on measurement equivalence over time (for recent reviews, see Jäckle et al., 2017; Voorpostel, Lipps, & Roberts, 2021). Far less attention has been given, however, to the substantive implications of mixing modes in longitudinal surveys for the study of vulnerability processes. In the following, we draw some tentative conclusions based on a synthesis of our own research findings on this topic.

### EFFECTS OF MIXING MODES ON REPRESENTATION AND SELECTION ERROR

In a longitudinal setting, the main outcomes of interest when comparing single and mixed mode survey designs with respect to representation and selection error are initial response rates and the representativeness of the response sample at recruitment (because the sample recruited in the first wave of a panel must be sufficient to withstand the effects of attrition over time) and the extent and impact of subsequent attrition. The assessment of these outcomes is often hindered by a lack of data about the characteristics of nonrespondents. However, in our research, such an assessment was possible thanks to auxiliary sociodemographic data from population registers supplied with the samples (by the Swiss Federal Statistical Office).

In 2012–2013, we conducted a (cross-sectional) mode experiment in the French-speaking region of Switzerland designed to investigate the impact of mode on the measurement of subjective well-being and the experience of critical life events. Sampled individuals were randomly



assigned to either telephone, web or mail mode, and alternative modes were used to follow up nonrespondents. The results provided insight into how modes affect response rates and the representation of different sub-groups in survey data. In terms of response rates, the three modes varied significantly; they were lowest in the web group (44.5%) compared with the mail (65.4%) and telephone groups (60.7% when considering only those with telephone numbers; 35.7% when also considering those without), demonstrating their likely varied suitability for panel recruitment purposes. Using the sampling data, we assessed the extent of noncoverage error resulting from the exclusion of individuals/households without listed numbers in the telephone group. People without listed numbers differed from those with on several sociodemographic variables: they were more likely to be younger, foreign, unmarried, and living in single-person households in urban areas (Roberts et al., 2016). Their underrepresentation in telephone surveys could introduce bias in measures correlated with these variables (e.g., experiences of vulnerability specific to these sub-groups). Combining modes concurrently and sequentially was effective at increasing response rates and improving overall representativeness. For example, complementing the telephone survey with a concurrent mail survey for those without telephone numbers increased the response rate to 56.8%. Adding the mail mode sequentially as a follow-up for nonrespondents further increased the response rate to 66.2% (Roberts et al., 2016; Roberts & Vandenplas, 2017). We also evaluated a sequential 'push-to-web' design involving web plus mail plus telephone (for people with a listed telephone number) or web plus mail plus an in-person interview (for people without a listed number). Again, the sequencing of modes helped to increase response rates to 64.4% for web plus mail and further to 70.6% with the addition of telephone and face-to-face interviews for nonrespondents.

Nationality and migration background are often included in vulnerability research and deserve special mention here. We found different participation patterns by nationality for sample members with and without a telephone number. Among the non-Swiss sample members without a telephone number, mailed questionnaires worked better, while starting the survey with a request to respond by web resulted in a substantial bias on the nationality variable. We did not find the same pattern for foreigners *with* listed telephone numbers. Here, web mode appeared to work well for non-Swiss sample members from bordering countries (there being no language barrier for French nationals at least), and the use of the mail

follow-up corrected the initial underrepresentation of non-Swiss sample members from nonbordering countries. These findings underline the value of combining modes for reducing selection errors due to noncoverage and nonresponse in telephone or web-only surveys. They also point to the potential value of using a tailored fieldwork strategy for certain subpopulations to mitigate bias in the representation of foreigners.

In 2017–2018, we conducted a different mode experiment in the context of the Swiss Household Panel (SHP) to investigate the benefits of combining telephone interviews (the primary mode used in the SHP since its launch in 1999) with web-based questionnaires for recruiting and re-interviewing households in a panel setting (Voorpostel et al., 2020). In addition to being a longitudinal survey, the SHP has the added complication of having to administer both a household-level questionnaire (to a respondent referred to as the household reference person (HRP)) and then individual-level questionnaires to all other household members aged 14 and over. In preparation for the third refreshment sample, launched in 2020, the two-wave pilot study compared two alternatives to the standard design. The first was a *mixed mode* design in which the telephone (or face-to-face if no number was available, as in the standard design) mode was used to administer the household questionnaire to the HRP, and the individual questionnaires were administered by web (with a follow-up by telephone for nonrespondents where numbers were available). The second was a *web-only* design in which the HRP and the eligible household members were invited by mail to complete the questionnaires online, with a nonresponse follow-up by telephone if a number was available. In wave 2, all the groups were subject to the same protocols, except that half of the mixed mode group was randomly assigned to the web-only design.

The standard SHP (predominantly telephone-based) design generated the highest response rates in the first wave (53% of approached households completed the household questionnaire), compared to 52% in the mixed mode design and 47% in the web-only design (significantly different from the standard design). In the second wave, the differences in household response rates between the groups were smaller (between 74% and 77%) and not statistically significant. To assess the extent to which the sample that participated in the study represented the overall population, we compared the composition of the sample of household members *reported* (by the HRPs) to be living in participating households in wave 1 with the gross sample of individuals *documented* as living in sampled households according to the register data from the sampling frame. All designs

overrepresented married individuals and Swiss nationals and underrepresented individuals under the age of 30, highlighting generic nonresponse biases frequently observed in panel surveys (e.g., Lugtig, 2014). The telephone group also underrepresented household members who have never married and overrepresented older household members. Analysis of linked administrative data on income found that lower-income households were underrepresented in the web group, while no such difference was observed in the telephone group. Overall, attrition rates were comparable across designs, and most of the nonresponse biases observed were the result of selection in the first wave, with effects decreasing in the second wave (Voorpostel et al., 2020).

The preceding examples illustrate the effects of mixing modes when recruiting to a panel and on attrition between the first two waves. It is also important to consider the effects of switching modes in an existing panel, as this may be harmful to panel loyalty and have damaging effects on sample composition. In 2018, we conducted research into this issue in the context of the LIVES-FORS Cohort Study, a panel of young adults born between 1988 and 1997 who grew up in Switzerland (including an oversample of second-generation immigrants), which is conducted alongside the SHP (see Spini et al., 2019). The aim was to assess the likely impact of a mode switch to web on attrition and the proportion of the sample that might be restricted to participating on a mobile device, which may be suboptimal for the administration of the SHP/Cohort Study questionnaires, which were originally designed for the telephone (see Johnson, 2020). Most of the remaining cohort sample had access to and used the internet on multiple devices, both fixed and mobile, and, not surprisingly given their age, used smartphones for numerous activities on a daily basis, thereby implying that a switch to the web would, in principle, not prevent them from continuing to participate in the study. Indeed, a majority (close to 60%) of the sample said they would prefer to respond by web rather than a telephone interview. Nevertheless, 24% said they would be more willing to participate in the next wave via telephone than by web, placing approximately one quarter of the sample at increased risk of dropping out. The youngest (under 25 years), unmarried, male and Swiss participants still in education were significantly more likely to belong to this attrition risk group, meaning that existing sample selectivity resulting from attrition would likely be compounded by the mode switch.

## EFFECTS OF COMBINING MODES ON MEASUREMENT ERROR

Mixing modes to reduce costs and improve the representation of target populations entails a trade-off: the introduction of differential measurement errors (Roberts & Vandemplas, 2017). Two types of measurement error are particularly sensitive to mode characteristics: (1) SDB and (2) response effects associated with satisficing (Krosnick, 1991). SDB results from respondents' tendency to try to portray themselves to researchers in a more favourable light (e.g., by selecting the more socially desirable or acceptable response option or deciding not to report particularly personal experiences) and manifests as overestimates of socially desirable characteristics and underestimates of undesirable ones (Tourangeau & Yan, 2007). In research into vulnerability and resilience, key measures of interest—e.g., exposure to particular stressors or the presence or lack of certain resources or reserves (Widmer and Spini, Chap. 2, this volume)—are likely to be considered sensitive by some respondents and may, therefore, be particularly susceptible to SDB. Because of the presence of an interviewer (and sometimes of other household members) in telephone or face-to-face surveys, respondents are more likely to give socially desirable answers in interviewer modes (Couper, 2011), thereby posing problems for comparisons with data gathered in self-administered modes.

The term 'satisficing' in surveys refers to respondents reducing the effort needed to provide accurate and thoughtful answers to survey questions (Krosnick, 1991), resulting in a variety of response effects such as selecting the same scale point in lengthy batteries of items; providing 'acquiescent' responses to agree-disagree scale items; selecting the 'don't know' response; and providing shorter, less detailed answers to open-ended questions. In vulnerability research, such response effects are likely to be particularly damaging for long, multi-item scales measuring latent constructs, which are often favoured by psychologists. However, satisficing can also affect the accuracy of objective measures if reduced effort in responding affects recall and estimation accuracy, resulting in issues for retrospective measurement in general (Tourangeau et al., 2000). Depending on the nature of the effect, satisficing can introduce bias into estimates and increase measurement variance (Roberts, 2016). Different mode characteristics can affect response task difficulty (e.g., the faster pace of telephone interviews; the need to read self-administered questionnaires), meaning that the extent of measurement error due to satisficing also varies as a function of mode. Similar to mode differences in SDB, this

issue can confound comparisons across samples surveyed in different modes (Hox et al., 2017; Tourangeau, 2017).

A fundamental difficulty when trying to establish the effect of mode on measurement is that the selection effect induced by the mode can render the sample incomparable with samples surveyed in other modes. To detect differential measurement errors across modes, adjustments to balance the samples are needed (Hox et al., 2017). To complicate matters, mode characteristics can interact in complex and not entirely predictable ways with features of the questionnaire design and respondent characteristics to affect the answers given. This complexity means that mode effects can take different forms and may need to be investigated using different statistical methods depending on the type of survey question (Jäckle et al., 2010).

In our 2012–2013 mode experiment, we assessed mode effects on the measurement of subjective wellbeing (known to be susceptible to differential SDB by mode) (Dolan & Kavetsos, 2016). We used a variety of sample adjustment techniques to control differences in observed characteristics across samples responding in different modes and a mix of methods to assess measurement differences between modes (see Sánchez Tomé, 2018, pp. 86–90). A consistent pattern of results emerged that supported previous research findings: Telephone interviewing produced systematically higher mean estimates of wellbeing than mail and web questionnaires, even after controlling for sample differences (Sánchez Tomé, 2018, p. 94). The SHP pilot study produced similar results with respect to SDB: web respondents reported more health problems, more negative feelings, fewer positive feelings and lower satisfaction in almost all domains compared with telephone respondents (Voorpostel et al., 2020).

The 2012–2013 mode experiment asked respondents three open-ended questions about the critical life events that had most impacted their lives. Measurement quality for open-ended questions is often affected by item nonresponse due to the additional effort required to answer them, and where responses are recorded, they may vary by mode as a function of the length and richness of the answers given and the interpretability of the content. Comparing the answers given in different modes, we found that item nonresponse was indeed lower for telephone respondents than self-completion respondents for the first of the three items but increased for the subsequent items, and on average, the answers recorded verbatim by interviewers contained fewer words than responses in the self-completion modes. Furthermore, the impact of certain events (giving birth and

illness) was reported more positively by telephone respondents, presumably also due to SDB pressures when sharing answers with an interviewer (Sánchez Tomé, 2018, p. 150).

## CONCLUSIONS

In this chapter, we have described some of the benefits of combining modes of data collection, particularly in longitudinal surveys. However, we have also highlighted and illustrated some of the challenges involved, notably those associated with differential selection and measurement error across combined modes. The findings of these various Swiss studies contribute to a substantial international literature in support of the conclusion that the choice of survey mode has consequences for the response propensity of different population subgroups, with important implications for the overall representativeness of samples. The development and testing of ‘adaptive survey designs’ (Schouten et al., 2017), which involve tailoring modes to the characteristics of sample members, is recommended to ensure that the optimal and most efficient ways of mixing modes longitudinally are used to achieve a balanced sample that better represents the general population, particularly the potentially more vulnerable subgroups of interest (Kaminska & Lynn, 2017). This balance could be achieved by assigning modes based on predicted response propensities for different subgroups in different modes using available sample data (such as those analysed in our own research) or using data from prior survey waves (as in Johnson, 2020).

Combining modes offers a way to improve response rates and representation. However, if mode affects measurement, comparisons across groups responding in different modes may be compromised. Survey and statistical methodologists are still grappling with the practical implications of this challenge and developing ways for analysts to address it. From a purely statistical point of view, optimal strategies for adjusting mode effects entail a mix of complex experimental designs and model-based approaches to causal inference. Nonetheless, these approaches often rely on problematic assumptions and may externalise some of the cost savings of switching to cheaper modes to data analysts. Current and future research must, therefore, continue to tackle the thorny issue of how to evaluate the severity of mode effects and offer pragmatic recommendations for adjustment solutions that researchers can easily incorporate into their analyses of mixed mode data.

Finally, mode differences in measurement sometimes appear because of suboptimal or variant question formulations and formats used in different modes. Efforts to evaluate and improve questionnaire designs must be prioritised, therefore, with a view to harmonising the stimulus offered across modes and optimising the design for all modes (and response devices) in use (Dillman et al., 2014; Lugtig & Toepoel, 2016). Nevertheless, some measures are likely to remain especially sensitive to mode effects when combining interviewer- and self-administered modes. Life-course researchers interested in comparing groups across contexts and time should remain mindful of this risk in their analyses of mixed mode data and when interpreting their findings. Improving the dialogue between substantive experts in vulnerability across the life course and methodological experts in longitudinal research design, measurement and analysis is key in this endeavour.

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# Combining Event History and Sequence Analysis to Study Vulnerability over the Life Course

*Matthias Studer, Jacques-Antoine Gauthier,  
and Jean-Marie Le Goff*

## INTRODUCTION

Spini and Widmer (2022) identify three consecutive stages when studying vulnerability processes from a life-course perspective: before, during and after exposure to stressors and critical events. When considering the situation preceding the occurrence of stressors, research often focuses on the likelihood of their occurrence and on the available resources and reserves

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M. Studer (✉)

Faculty of Social Sciences, Institute of Demography and Socioeconomic,  
University of Geneva, Geneva, Switzerland

e-mail: [matthias.studer@unige.ch](mailto:matthias.studer@unige.ch)

J.-A. Gauthier • J.-M. Le Goff

Faculty of Social and Political Sciences, Institute of Social Sciences, University of  
Lausanne, Lausanne, Switzerland

e-mail: [Jacques-Antoine.Gauthier@unil.ch](mailto:Jacques-Antoine.Gauthier@unil.ch); [Jean-Marie.LeGoff@unil.ch](mailto:Jean-Marie.LeGoff@unil.ch)

that might prevent them from occurring (Cullati et al., 2018). At this stage, vulnerable people are those considered ‘at risk’.

In the second and third stages (during and after the onset of a stressor), research generally focuses on how people cope with the stressor and then on how they recover from it. Vulnerable people are those who experience difficulties either coping with or recovering from these situations. The amount of reserves accumulated before the occurrence of the stressor is considered a central explanatory factor of the vulnerability process.

These three stages are, however, not independent from one another. ‘At-risk’ individuals are often those with fewer resources or reserves to deal with stressors and therefore are also less likely to cope with or recover from them (Spini & Widmer, 2022). This dynamic view of vulnerability requires not only a longitudinal perspective, but also a precise understanding of the interdependencies linking the different stages of the process. These interdependencies call for designing and developing specific methods that can adequately meet these needs.

In this paper, we review two methodological developments aiming to tackle this issue by combining two frameworks that are often presented as opposed to each other: event history and sequence analyses. First, we present Sequence History Analysis (SHA, Rossignon et al., 2018), which focuses on the relationship between the unfolding of a trajectory and the occurrence of a subsequent disruptive event (e.g., stressor). Within SHA, Sequence Analysis (SA) is used to capture the pattern of the life trajectory preceding the onset of the stressor, whereas Event History Analysis (EHA) allows the assessment of the instantaneous risk of the occurrence of this event.

Second, we consider the Competing Trajectory Analysis (CTA; Studer, Liefbroer, & Mooyaart, 2018) and the Sequence Analysis Multistate Model (SAMM; Studer, Struffolino, & Fasang, 2018). Both methods aim to simultaneously study the occurrence of a disruptive event through EHA and the recovery trajectory following the event, using SA to summarise it. By jointly analysing the risk of the event and identifying the pattern of the following trajectory, this approach links these two stages of the vulnerability process.

This chapter is organised as follows. We start by introducing the EHA and SA methodological frameworks before presenting SHA and CTA/SAMM. We then highlight their added value for the study of vulnerability over the life course before concluding on how they might be combined in future studies.

## SHORT METHODS PRESENTATION

As noted by Billari (2005), SA and EHA were developed in two different research cultures and for different purposes (see Piccarreta & Studer, 2019 for a review). Rooted in exploratory data analysis, SA, often called optimal matching, aims to provide a holistic view of processes described as a sequence, i.e., a succession of states (Abbott, 1995). SA is based on the computation of distances between sequences of states (see Studer & Ritschard, 2016 for a review), which allows the comparison of sequences without making any assumptions about their underlying generating process.

Most often, these distances are used to create a typology of trajectories through cluster analysis (see, for instance, Studer, 2013). This method aims to identify recurrent patterns in the sequences or, in other words, typical successions of states through which the trajectories unfold. Individual sequences are often distinguished from one another by a multitude of small, sometimes meaningless, differences. The construction of a typology of sequences is designed to ignore such small differences, to identify types of trajectories that are homogeneous and distinct from one another. The types are then interpreted as describing the main processes or trajectories. The main strength of SA is, therefore, its ability to describe and summarise trajectories using only a few types.

In contrast, EHA is rooted in the statistical modelling approach. This stochastic framework gathers several methods for modelling the duration between two events, such as starting and stopping a period of employment, or similarly, the hazard of experiencing the second event once the first has occurred. One of the main advantages of EHA is that it handles (right- or left-)censored observations and thus allows for the inclusion of individuals whose trajectories are not fully observed. Furthermore, several methods within the EHA framework allow the estimation of the influence of possibly time-varying explanatory factors on the occurrence of a given event (e.g., Allison, 2014). In the social sciences, EHA has been primarily used to analyse the occurrence of normative and nonnormative events of the life course (e.g., marriage and birth but also divorce and health issues).

Many extensions of the EHA framework are of interest from a life-course perspective. Among others, multistate models represent an interesting attempt to study trajectories described as a succession of states (Therneau & Grambsch, 2000). Multistate models aim to analyse state sequences by focusing on the hazard of observing transitions between

states and the time spent in each state. More precisely, these models measure the chance to end a spell in a given state, considering each possible ‘destination’ state as a competing event. In a vulnerability framework, the main strength of EHA is therefore its ability to describe the factors associated with the occurrence of disruptive events or transitions.

### ESTIMATING THE EFFECT OF A PAST TRAJECTORY ON AN UPCOMING EVENT: RESOURCES AND RESERVES PRODUCED BY LIFE HISTORIES

The life course paradigm insists on the need to situate the study of any event within its unfolding trajectory. This necessity also applies to the study of disruptive events, as the past trajectory can often be considered a reserve, i.e., a process by which some resources accumulate (or not) over the life course. These reserves can then be mobilised either to avoid the occurrence of a stressor event or to prevent its damaging consequences (Cullati et al., 2018).

The study by Madero-Cabib et al. (2016) on retirement timing is an illustration of how a past trajectory can be interpreted as a reserve. This study used the joint family and occupational trajectory to capture how the patterns of accumulation of economic resources in the institutionalised pension system may protect against poverty after retirement, thereby helping explain its timing. These authors showed that in Switzerland, men tend to leave the labour market before the legal retirement age more often than women. One reason for this is that women are more likely to experience a discontinuous occupational career, with spells of part-time work or out of the labour market that are associated with family events. Consequently, women do not accumulate as much economic reserve in their pension fund as men, a large majority of whom are continuously full-time employed.

Aeby et al. (2019) offered another example of how reserves are linked with past trajectories in the family domain. They found that previous family and occupational trajectories are linked with the subsequent accumulated social capital in personal networks, which is known to be an efficient buffer of adverse conditions. They showed that nuclear family trajectories are more frequently associated with denser personal networks, which are known to be supportive and protective. In contrast, trajectories diverging from the normative family model (childlessness, separation or stepfamilies)

are associated with smaller personal networks, providing more autonomy but less protection (Widmer, 2016).

From a methodological point of view, the estimation of the link between a past trajectory and a subsequent (disruptive) event is generally estimated with one of the two following strategies. First, an EHA model might include indicators of a past trajectory, such as the time previously spent in education, to estimate its effect on the risk of experiencing the considered event. However, the chosen indicators might offer too crude an estimation of the effect of a past trajectory and fail to identify its key dimensions. Second, some studies have used SA to analyse the trajectories up to a given point and then used EHA to estimate the risk of experiencing the event starting at that point. For instance, Madero-Cabib et al. (2016) used SA to summarise individuals' past occupational trajectories until age 58 and then EHA for older ages. However, this strategy also has a considerable limitation. The subtrajectory occurring between age 58 and the event under consideration is not included in the model, as the past trajectory type is only built using information up to age 58.

To overcome these limitations, Rossignon et al. (2018) proposed the "Sequence History Analysis (SHA)," which aims to estimate the effect of the past trajectory on an upcoming event by combining SA and EHA. This procedure relies on SA to identify the type of past trajectory as a time-varying covariate and uses discrete-time EHA models to estimate its relationship with the upcoming event under consideration.

The procedure operates in three steps. First, it employs a discrete-time representation of the data, also known as a person-period file (Allison, 2014). In this format, one observation is generated for each individual  $i$  at each time point  $t$ . Let us illustrate how this procedure works with a small example taken from the study by Rossignon (2017) on the link between residence permit trajectory and obtaining a first job in Switzerland. The left-hand side table of Fig. 23.2 provides an example of such data for individual 1, who obtained his first job at age 19. He held a temporary permit until age 15, a permanent residence permit between ages 16 and 17, and then received Swiss nationality at age 18.

In the second step of the procedure, the *past* trajectory at each time point is coded as the sequence of states from the beginning ( $t = 1$  in our example) until the *previous* position  $t - 1$ . In Fig. 23.1, this corresponds to the column 'trajectory until  $t - 1$ ' of the person-period table. For instance, our illustrative individual had the following past trajectory when he was 16 years old: 'T/15', meaning that he had previously spent 15 years

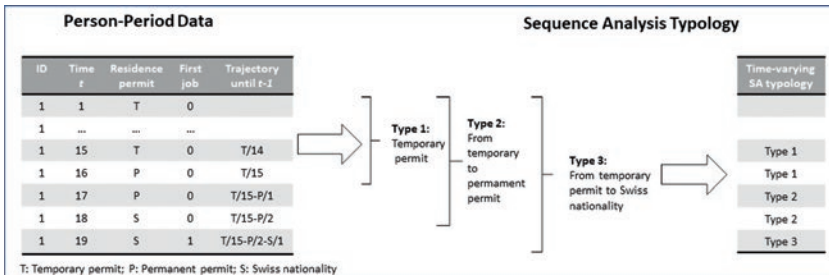


Fig. 23.1 Illustration of the sequence history analysis procedure

holding a temporary permit. Logically, this past trajectory changes as he grows older. At age 18, it is ‘T/15-P/2-S/1’, which corresponds to having a temporary permit for 15 years, then a permanent permit for two years, and then Swiss citizenship for one year.

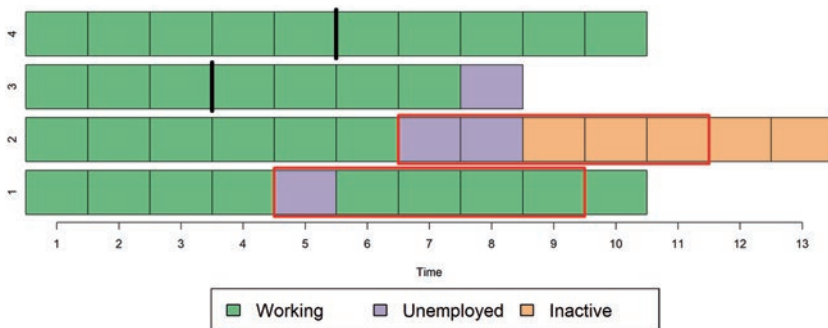
In the third step, a typology of the past trajectory is created with SA.<sup>1</sup> As a result, a new covariate coding the type of past trajectory is now available for subsequent analysis. Since we have several observations for each individual that are clustered separately, the same individual can switch from one type of past trajectory to another over time. In other words, the unfolding of the individual’s past trajectory is incrementally associated with a time-varying type of trajectory at each time  $t$ . Let us assume that the clustering of the previous residence permit trajectories of our example identified three types: ‘Temporary permit’ (type 1), ‘Transition from temporary to permanent permit’ (type 2) and ‘Transition from temporary permit to Swiss nationality’ (type 3). The result is shown on the right-hand side of Fig. 23.2. At age 15, the individual has the ‘past trajectory type 1’ (temporary permit), and at age 17, he has type 2, as his trajectory unfolds over time.

In the last step, the relationship between the past trajectory and the subsequent event is estimated with a discrete-time model, which includes the past trajectory type as a covariate. In this step, other covariates can be included as well (for detailed output, see Rossignon, 2017).

Using this methodology, Rossignon (2017) found that the residence permit trajectory can be considered a reserve because it is directly linked

<sup>1</sup>The past trajectories are of varying lengths but fully observed at each time point, i.e., there are no missing or censored data. For this reason, SA can be applied.





**Fig. 23.2** Illustration of the competing trajectory analysis procedure applied to job loss

not only to legal rights, such as the possibility to vote, but also to job opportunities. Six types of permit trajectories were identified and used as covariates in an EHA that modelled the likelihood of obtaining a first job according to its position within the Swiss social stratification (using a competing risk model). The results showed that the risk of obtaining a high position is lower for those who experienced a ‘Temporary to permanent’ type of trajectory, an observation that would not have been made with the standard EHA approach. Rossignon et al. (2018) empirically applied this method to study the relationship between past childhood coresidence patterns and the likelihood of leaving the parental home. Leaving home is a key step in understanding the transition to adulthood, as it is often a prerequisite for cohabitation, marriage and parenthood (Mulder, 2009). The results showed that ‘history matters’, as the occurrence, timing and order of events exert a statistically significant influence on the departure from the parental home. Even when controlling for the effect of simple indicators of the past trajectory, such as parental divorce or having a sibling, the effect of the past trajectory was significant and highlighted, for instance, the importance of siblings’ departure from the parental home.

This first attempt to estimate the relationship between a past trajectory and an upcoming event using SHA may be extended by considering more than one past trajectory. For instance, when studying academic careers from a gender perspective, one may want to record both the history of previous peer-reviewed publications and past family trajectories to predict the attainment of a professor position.

The SHA approach aims to study the period *before* the occurrence of a stressor and how the unfolding of the trajectory, and often the associated accumulation of reserves, might affect its occurrence. However, the vulnerability framework also stresses the importance of understanding what happens *after* the stressor, as some individuals might be more affected by it than others. This understanding is precisely the aim of the methods presented in the next section.

### THE SIMULTANEOUS STUDY OF RISK AND RECOVERY TRAJECTORIES

The Competing Trajectory Analysis (CTA) (Studer, Liefbroer, & Mooyaart, 2018) and the Sequence Analysis Multistate Model (SAMM) procedure (Studer, Struffolino, & Fasang, 2018) allow the simultaneous study of an event's occurrence and the trajectory following it. This is of special interest when the focus is not only on the event's occurrence but also its consequences over time.

Within the social sciences literature, the notion of 'vulnerability' over the life course is related to the occurrence of disruptive life events and their consequences. Such an event can be normative and socially anticipated (e.g., childbirth) or unexpected and most often negative (e.g., divorce). These events are considered stressors (Pearlin, 2010), as they are potentially associated with systemic disorder (e.g., in this case, within the work-family balance).

One may consider two intertwined definitions of vulnerability (Spini & Widmer, 2022). For some authors, 'vulnerable' people are those who are at greater risk of facing stressors (e.g., being poor, young, female, a foreigner). However, vulnerability further refers to the (in)ability of people to cope with disruptive events (Spini et al., 2017). From this perspective, the focus is thus on how people recover (or not) from the stressor, which can be described by the trajectory following the event. While some people might be barely affected by an event, others might face significant functional and/or structural changes. From a sociological perspective, the availability of resources and reserves (economic, cultural, social) explains much of this ability to deal with and to recover from disruptive events.

What does this perspective mean in methodological terms? On the one hand, as EHA aims at estimating the risk of occurrence of an event over time, it allows the analysis of exposure to a disruptive event. On the other

hand, SA can adequately capture how individuals recover from stressors by considering the timing, duration and order of situations taking place after their occurrence. However, exposure and recovery from disruptive events are most likely not independent from each other. Resources and reserves might help prevent the occurrence of disruptive events and help the individual cope with them if they occur (Spini & Widmer, 2022). Similarly, individuals expecting to experience only small consequences from a given event might not mobilise their resources or reserves to prevent it. This assessment calls for the joint analysis of these two elements of exposure and coping. The aim of the CTA approach, which simultaneously studies the occurrence of an event and the trajectory following it, satisfies this call.

More practically, the CTA approach operates in three steps. In the first step, the focus is on the recovery pattern from instantaneous stressor onset, i.e., on the trajectories following the event under investigation, only for those having experienced the event of interest. More formally, let  $t$  be the time of the event, and let  $\ell$  be the predefined time span of interest for studying the consequence of the event. We centre on the subsequences between positions  $t$  and  $t + 1$ . Figure 23.2 illustrates this process through a small example focusing on the trajectory following a job loss and distinguishing among three states: working, unemployed and inactive.

For instance, if we set  $\ell = 5$  time units, we extract the subsequence highlighted in red ('Unemployed/1—Working/4') from the first trajectory. In the second trajectory, we consider the subsequence 'Unemployed/2—Inactive/3' ranging from positions 7 to 11.

In this step, only fully observed subsequences of length  $\ell$  are considered. As a result, no subsequences are extracted from trajectories in which the event 'losing a job' did not occur, as exemplified in the fourth trajectory of Fig. 23.2. The same applies to sequences that have not been observed for  $\ell$  time units after this event (e.g., third trajectory in Fig. 23.2). In both cases, the recovery trajectory cannot be fully observed. However, these trajectories will be included in the third step of the analysis (EHA) as censored observations.

These subsequences are then clustered with SA to identify typical trajectories following the event under study. This step reduces the usually large number of distinct subsequences into a few types that describe the typical medium-term consequence of this event. Let us assume that two types, 'back to work' and 'leaving the workforce', were identified for our illustrative application. The subsequence extracted from sequence 1 would be clustered in the 'back to work' type, whereas that of sequence 2 would

be clustered in the ‘leaving the workforce’ type. These types would describe the typical expected trajectory following the event of losing a job.

The third step of the analysis is to simultaneously study the event’s occurrence and the trajectory following it. The risks of following any of these typical subsequences after the event are mutually exclusive, as a subsequence cannot be simultaneously clustered into two different types. We therefore estimate the risk of starting one of these typical subsequences by using a competing risk model, which allows us to study jointly the timing of the commencement of the transition and the type of process that follows. In our example, we consider that the type associated with the subsequence ‘Unemployed/1—Working/4’ occurs after 4 years (i.e., the time spent before the event). In a vulnerability framework, we therefore associate the study of the exposure to a (potentially stressful) event and the recovery trajectory that follows this event.

In the EHA procedure, censored trajectories can be included. However, the censoring time needs to be adjusted because a complete subsequence can only be observed if the event occurs  $\ell$  time units before the end of the trajectory. This limit, therefore, becomes our censoring time. More formally, let  $L$  be the length of the full sequence; then, the censoring time is  $L-\ell$ . This new censoring time is illustrated in Fig. 23.2 with a vertical bar.

The Sequence Analysis Multistate Model (SAMM; Studer, Struffolino, & Fasang, 2018) procedure extends CTA by considering *any* transition or event (e.g., marriage, childbirth, divorce) observed in the trajectories. As in CTA, the procedure consists of three steps. First, the subsequences over a given time span  $\ell$  following any transition in the trajectories are extracted. Then, these subsequences are clustered through SA to identify typical subsequences of medium-term changes. In the final step, the effect of covariates on the chances of initiating each kind of subsequence is estimated using a multilevel multistate model. This new procedure allows studying the time spent in each state as well as the patterns of medium-term changes occurring in trajectories.

Aside from the simultaneous study of the risk and the following recovery or coping trajectory, the combination of EHA and SA offers several advantages over the traditional use of SA alone. First, the use of EHA allows the inclusion of censored observations in the analysis, which is often not possible in traditional SA. Second, the combination of EHA and SA allows the inclusion of time-varying (micro- and macro-level) covariates. In traditional SA, only covariates measured at the beginning of the trajectory can be included to avoid explaining the first part of the trajectory by something

that happened later (also called anticipative analysis, see Hoem & Kreyenfeld, 2006). The handling of time-varying covariates is of special interest when studying vulnerability over the life course, as evolving resources or reserve accumulation can be considered. Third, the combination allows for a more precise study of the timing of the events (or transitions in SAMM) than traditional SA does. Indeed, in traditional SA, the distinction between those experiencing the event earlier or later is only possible by creating an additional type of trajectory. In some applications, this might be too crude an approximation to describe all the timing variations of the process. For instance, Studer, Liefbroer, and Mooyaart (2018) used CTA to estimate the relationship between transition into adulthood patterns and youth unemployment. They found that the start of the transition into adulthood is generally postponed and that fast demographic paths to fatherhood become less frequent in hard economic times. Finally, focusing on subsequences instead of full trajectories often reduces the complexity of the analysis, which often leads to considerably higher clustering quality in the SA step.

To date, several scholars have applied either the SAMM or the CTA approach. Studer, Liefbroer, and Mooyaart (2018) and Mooyaart (2019) used CTA to study the transition to adulthood in Europe. Studer, Struffolino, and Fasang (2018) relied on SAMM to study the effect of German reunification on the employment trajectories of women in East and West Germany. Among others, SAMM was able to capture the increase in the chances of following patterns of short-term employment in East Germany after the reunification, an effect of the reunification that had not been captured by a traditional multistate model. Struffolino and Van Winkle (2019) applied SAMM to study pathways out of the working poor status in the US. Among others, their results highlighted that these pathways are more frequently temporary for people with a disadvantaged background.

## SOFTWARE

These approaches combining EHA and SA can be implemented in any software providing both methods, such as R or Stata. Indeed, these approaches only require reformatting the data and sequentially applying each method.

In R (R Core Team, 2021), the TraMineRextras R package (Ritschard et al., 2021) provides functions to make these operations easier. More specifically, the function `seqsha` helps format the data for the SHA

(Sequence History Analysis) approach. The function `seqcta` is designed to apply the CTA (Competing Trajectory Approach) and `seqsamm` the SAMM (Sequence Analysis Multistate Model) procedure. The associated help pages (accessible in R by using `?seqsamm`, for instance) further propose a step-by-step example of performing each of the approaches.

## CONCLUSION

We presented two approaches combining EHA and SA to study vulnerability over the life course. SHA aims to shed light on the relationship between an unfolding trajectory and a subsequent event. When studying vulnerability, SHA might capture the role of resources and reserve accumulation during the past trajectory on the risk of experiencing disruptive events. It is therefore centred on the period *before* the occurrence of a stressor event (Spini & Widmer, 2022). For instance, in Rossignon's (2017) study on professional integration of children of migrants, SHA showed that the history of residence permit explains more than the current permit status alone.

In contrast, CTA and SAMM aim to simultaneously study the occurrence of an event and the following trajectory, which can shed light on how people cope with and recover from potentially disruptive events. Furthermore, CTA and SAMM can be used to understand the relationship between exposure to stressors and their potential negative consequences over a medium-term period. From a vulnerability perspective, CTA and SAMM are centred on the description of the period *after* stressor exposure.

Although a combination has not yet been attempted, the two approaches can be combined to understand how the unfolding of a trajectory affects both the risk of a disruptive event and the trajectory following it. We think that such a combined approach would prove very useful to understand the temporal interdependencies and the dynamics of vulnerability from a life-course perspective.

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## Joint Longitudinal and Survival Models to Study Vulnerability Processes

*Emilie Joly-Burra, Sezen Cekic, and Paolo Ghisletta*

In the field of vulnerability studies, researchers traditionally use static statistical models to explain the occurrence of events of interest, but these models unfortunately do not consider the dynamic nature of life trajectories. Researchers often investigate whether social or psychological resources at a given point in time influence the risk of entering a vulnerable state, whereas it may make more sense to enquire about the preceding evolution of these resources over time. In this chapter, we will first explain how jointly considering the relationship between individuals' longitudinal trajectories on a continuous variable and the risks of occurrence of an event

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E. Joly-Burra (✉)

Centre for the Interdisciplinary Study of Gerontology and Vulnerability,  
University of Geneva, Geneva, Switzerland

Faculty of Psychology and Educational Sciences, University of Geneva,  
Geneva, Switzerland

e-mail: [Emilie.Joly@unige.ch](mailto:Emilie.Joly@unige.ch)

S. Cekic • P. Ghisletta

Faculty of Psychology and Educational Sciences, University of Geneva,  
Geneva, Switzerland

e-mail: [Sezen.Cekic@unige.ch](mailto:Sezen.Cekic@unige.ch); [Paolo.Ghisletta@unige.ch](mailto:Paolo.Ghisletta@unige.ch)

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of interest can enhance our understanding of vulnerability processes. We will then give a brief overview of joint modelling (JM), a combination of longitudinal mixed-effects models (LMEM) and time-to-event survival models relying on Bayesian estimation. These models simultaneously analyse how continuous and dichotomous outcomes evolve over time and, more importantly, how they relate to each other.<sup>1</sup> Using data collected within the Swiss Household Panel (SHP, 2020), we will provide an illustration of JM, relating the evolution of older participants' self-perception over 9 years to their risk of dropping out of the study due to death or health-related issues. Finally, in the last section of the chapter, we will discuss in more detail how researchers may tailor these statistical models to enquire about the various dimensions of the LIVES approach to vulnerability.

### ON THE USEFULNESS OF JM FOR STUDYING VULNERABILITY OVER THE LIFE COURSE

Vulnerability processes unfold throughout the life course as the interplay among resources, reserves, and stressors (Spini et al., 2013, 2017b). Vulnerability results from a three-step process in which individuals are unable to avoid, efficiently cope with, and recover from various individual, social or environmental stressors (Spini & Widmer, in the present volume). Biological, psychological, social, or environmental resources and reserves evolve and accumulate over the years and may, consequently, lead to a manifest state of vulnerability when they no longer suffice to counter the effects of chronic or nonnormative stressors (Cullati et al., 2018). By studying the dynamics between resources, reserves, and stressors, researchers aim to understand if, when, and what individuals will experience vulnerability in one or multiple life domains.

From a statistical point of view, researchers can model the process of vulnerability as the influence of levels (intercepts) and evolution (slopes) of resources, reserves, and stressors over time on the risk of occurrence of

<sup>1</sup>This chapter targets social scientists with basic quantitative skills and an interest in longitudinal data. We refer the readers to Singer and Willett (2003) for introductory reading on longitudinal LMEM and Kleinbaum and Klein (2012) for time-to-event survival models. For a practical tutorial on JM in R, we refer to Cekic et al. (2021).

a harmful event of interest. The former can be assessed by continuous variables (e.g., number of years of education, income, score on a depression scale), whereas the latter is indicated by a dichotomous yes/no variable (e.g., divorcing, having cancer, receiving social assistance, being promoted at work, losing one's job, entering a nursing home, dying). For instance, one may posit that solo working mothers face a higher risk of burnout when their social support within the community decreases over time (e.g., Robinson et al., 2014) or that an acceleration in cognitive decline may be associated with higher risks of being diagnosed with dementia in late life (McArdle et al., 2005). To properly answer these kinds of questions, many scholars in the field have stressed the importance of longitudinal designs that collect both continuous and dichotomous measures to study individual trajectories of vulnerability throughout various life domains (Baltes & Nesselroade, 1979; Ghisletta & Fürst, 2014; Spini et al., 2017a). Sadly, researchers often fail to maximise the usefulness of such comprehensive longitudinal databases because they lack accessible statistical tools to treat this rich and complex data.

In social sciences and psychology, researchers usually analyse the longitudinal trajectories of continuous variables (such as resources and reserves) and the probability of an event's occurrence over time (vulnerability outcome) separately. Scholars often use longitudinal LMEM for the former (e.g., Singer & Willett, 2003) and survival analysis models, such as Cox proportional hazards regression (e.g., Kleinbaum & Klein, 2012), for the latter. One inefficient, and at times biased, approach combines the two types of analysis by first estimating longitudinal LMEM and then entering the corresponding individual estimates about the trajectories as covariates in a subsequent survival model (Rizopoulos, 2012). However, these two-step approaches neither consider that trajectories of continuous variables across time may influence the occurrence of an event of interest nor that the latter may condition the former (cf., reverse causality, see Lewis, 1974). For example, one's risk of receiving a diagnosis of dementia not only depends on one's cognitive decline but also likely shapes one's cognitive trajectory years before the malignant event. JM precisely bridges that reciprocity gap by jointly (i.e., simultaneously) estimating the risk of occurrence of an event of interest contingent upon the longitudinal process, and the other way around. Applied to the study of

vulnerability, JM allows researchers to test whether and how the level (i.e., intercept) and/or evolution (i.e., slope) of resources across time are (bidirectionally) linked to the risk of encountering a stressor or entering a vulnerable state.

To date, only a few studies have applied JM to assess the role of longitudinal trajectories of various psychological, cognitive or health-related resources to predict longevity and the risk of receiving a dementia diagnosis or dying. For instance, Zhang et al. (2009) showed that the mortality risk in older adults whose depressive symptoms grew annually by one point increased by 57% compared to those with stable depressive symptoms. In cancer patients, Kypriotakis et al. (2016) reported a predictive effect of both the level of and change in quality of life on survival rates. Patients with higher baseline levels of quality of life had higher chances of survival, and more importantly, each one-unit increase in the trajectory of quality of life across time decreased the risk of death by 82%. Regarding cognitive abilities, levels of and/or rate of change in memory, processing speed, or verbal fluency also predicted both risk of dying and/or being diagnosed with Alzheimer's disease (Ghisletta, 2008; Ghisletta et al., 2006; McArdle et al., 2005; Muniz-Terrera et al., 2011). Moreover, Aichele et al. (2021) compared direct predictions from a JM to those of a two-step estimation procedure and showed that JM has greater power to estimate associations between cognitive decline and mortality in a large sample of adults. Based on these encouraging results in the health and cognitive literature, we therefore advocate that researchers consider JM a promising statistical tool to further the understanding of vulnerability processes throughout the life course.

## INTRODUCTION TO JM

Some scholars have studied the association between the occurrence of an event and life-course trajectories on continuous variables by applying two separate LMEMs to participants who have experienced the event and to those who have not. The difference in parameter estimates between the two sets of models is then imputed to the occurrence of the event. Although this approach serves the purpose of separately describing trajectories for the event-positive and event-negative participants, it assumes that the two groups stem from different populations and cannot allow for

the direct reciprocal influence between the event and the trajectories. In other words, analysing separate trajectories for event-positive and event-negative participants relies on the assumption that participants fundamentally differ across their entire life course and that the event is bound to occur (or not) according to group membership. However, not having experienced the event at a given time point does not preclude the event from happening later on (e.g., not having divorced or received a medical diagnosis in the past does not protect individuals from these events occurring in the future). JM, instead, considers all participants as stemming from the same population, as is customary in survival analyses, and explicitly estimates individual risks of the event occurring, given that it has not yet occurred. JM thus accounts for both complete and censored data (i.e., data for both event-positive and event-negative participants). As such, joint models avoid estimation biases caused by nonrandom dropout (Little & Rubin, 1987). In addition, JM differs markedly from the combination of sequence analysis and survival analysis with respect to the nature of the longitudinal phenomenon. JM estimates trajectories of continuous longitudinal data, while the combination of sequence and survival analyses models longitudinal data as a sequence of various events over time and how transitioning from one state to another may influence the occurrence of the event of interest (e.g., does transitioning from married to widowed influence the risk of receiving social assistance? cf. the chapter by Studer, Gauthier, & Le Goff in this volume).

In JM, two submodels are simultaneously estimated, one for the longitudinal continuous portion and one for the time-to-event portion of the data. We refer the reader to Appendix A of the Supplementary Material for the decomposition of the joint model into equations corresponding to the LMEM and the time-to-event submodels and the association between the two through the shared parameters. The former (LMEM) submodel models the trajectory of the dependent longitudinal variable. It allows for the estimation of both fixed and random effects as a function of the intercept, time (i.e., the slope), and, if included, additional independent variables (Eq. (A.1) in Appendix A). While fixed effects correspond to mean effects (i.e., at the group level), random effects correspond to deviations from this mean group-level effect for each given individual in the sample. In other words, random effects indicate the extent to which a given participant deviates from the average intercept (i.e., general level) or slope (i.e., change across time). To put it simply, the LMEM submodel estimates parameters describing how the longitudinal variable of interest changes

over time at the group level and how individuals differ both in their initial level (i.e., intercept) and change (i.e., slope) on this variable. In the time-to-event submodel (Cox proportional hazard), the risk of event occurrence depends on both a baseline hazard function that varies with time (i.e., the risk of event occurrence at a given time point, given that it has not occurred yet) and, possibly, individual differences in independent variables of interest (Eq. (A.2) in Appendix A). In other words, this submodel describes how the risk of event occurrence evolves over time and how participant characteristics affect this risk.

The two submodels are then joined through a conditional joint density estimation, whereby the time-to-event and longitudinal processes are conditional upon each other (e.g., Hogan & Laird, 1997; Papageorgiou et al., 2019; Wulfsohn & Tsatis, 1997; see Eq. (A.3) in Appendix A). Thus, in the joint model, the probability of event occurrence at any given time point depends on (a) elapsed time, (b) individual differences in independent variables, and (c) the current value and/or trajectory of the longitudinal variable over time. In simpler terms, this means that the joint model allows for reciprocal effects between the longitudinal and survival components. The longitudinal trajectory is thus not only defined as a function of an individual intercept, slope, and possible other independent variables but also depends on an individual's risk of an upcoming event occurrence. Likewise, an individual hazard of the event occurring depends not only on that individual's baseline hazard function and possible other independent variables but also on his or her previous trajectory on the longitudinal dependent variable. The exact form of the relationship between the longitudinal process from the LMEM and the probability of occurrence of the event (point (c)) depends on the selected association function for the joint model.

Various types of association between the longitudinal and time-to-event portions of the model are available, thereby allowing the quantification of both the nature and strength of this association. For space reasons, we present the shared-random effect linking function only (see Rizopoulos et al., 2014), which specifies that random effects (typically from intercept and slope) in the longitudinal submodel (Eq. (A.1) in Appendix A) be inserted as predictors of the time-to-event submodel (Eq. (A.2) in Appendix A). Accordingly, the association parameter vector (in Eq. (A.3) in Appendix A) indicates the change in the log hazard for a one-unit change in individuals' deviations from the average linear mixed intercept or slope. In other words, the joint model assesses to what extent deviating

from the average general level and/or change in the longitudinal variable influences the risk of occurrence of the event and quantifies the *strength* of this association. Practically, these models allow for testing whether individuals who have a higher/lower general level (random intercept) or a steeper decline/increase (random slope) in the continuous variable have a higher/lower risk of experiencing the dichotomous event of interest. For instance, one could test whether participants who show lower general health status and/or a steeper decline in their health status are at higher risk of dying before the end of the study than those who display an average health level and/or rate of decline.

For further detail and other parametrisation functions, we refer the reader to Cekić et al. (2021), who provided a comprehensive and accessible tutorial for JM using the JMBayes package (Rizopoulos, 2016) in R (R Development Core Team, 2020). We also briefly mention other parametrisation functions in the last section of this chapter.

## ILLUSTRATION OF JM WITH DATA FROM THE SWISS HOUSEHOLD PANEL

### *Database and Hypotheses*

For didactic purposes in this chapter, we analysed a subset of data from the Swiss household panel (SHP, 2020). To do so, we used R and relied in particular on the JMBayes package (Rizopoulos, 2016; all R syntax is presented and commented on in Appendix B). The SHP is a nationally representative annual panel study to observe dynamics of living and social condition changes in Switzerland since 1999. The study included questionnaires related to various aspects of participants' characteristics and living conditions, such as sociodemographics, employment, life events, health, education, income, social networks, leisure and psychological resources. For illustration purposes, we focused our analysis on psychological resources and did not investigate the additional role of biological (except for biological sex) or social resources. As previous studies have shown that self-reported evaluations of one's functioning strongly predict mortality risk (e.g., Kaplan et al., 1988), we investigated the predictive role of self-reported psychological resources on health frailty in older adults.

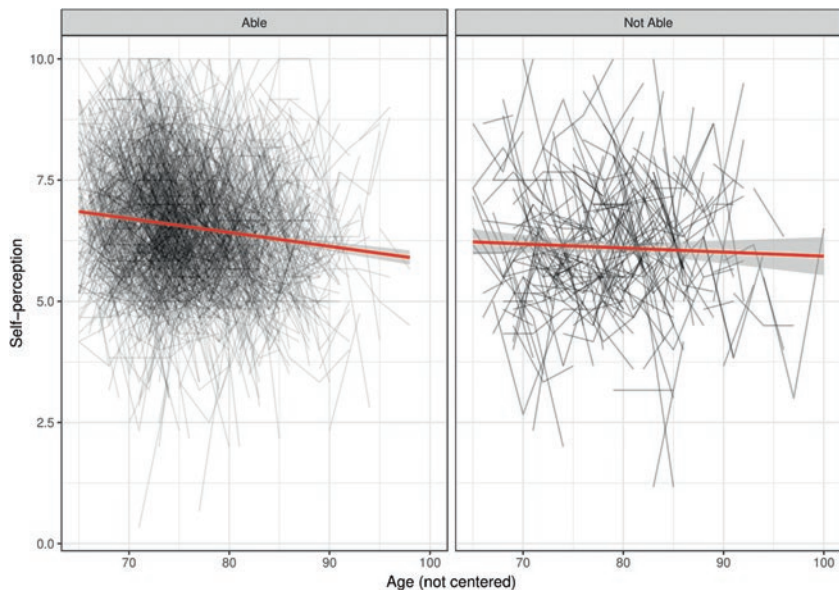
We focused our analysis on a very general measure of personal perception of the self (self-perception), included in the SHP. Self-perception



indicates the extent to which participants feel that they exert an impact on their own destiny and are able to make decisions for themselves (as opposed to their destiny and decisions being dictated by external factors over which they have no control; see Voorpostel et al., 2018). Self-perception was measured via six items from self-mastery, self-efficacy, and self-esteem scales (Levy et al., 1997; Rosenberg, 1965). We aimed to investigate how self-perception evolves with advancing age and whether and how it may inform risks of dropping out of the study due to death or health-related vulnerability in old age (see Rothenbühler & Voorpostel, 2016 for analysis of nonrandom dropout in SHP data). Addressing this question with a JM is highly appropriate because participants' trajectories of self-perception may inform their risk of dying or having serious health-related issues inasmuch as imminent death or altered health state may impact their level of perceived self-perception.

Because the risk of dying in younger participants is low, we included participants aged 65 or older in 2009 who personally responded to a minimum of two of four waves, resulting in a sample of 1632 individuals. Self-perception was measured every 3 years since wave 11 of SHP—in 2009, 2012, 2015 and 2018—via a 6-item scale with items such as 'I have little influence on life events'. Responses were rated from 0 ('I completely disagree') to 10 ('I completely agree'). We followed SHP guidelines to compute the mean of the six items after recoding items with reversed valence (Voorpostel et al., 2018). For the event, we used the variable *RNPX* of the SHP dataset and computed our dichotomous event of interest, namely, being unable to participate in the study anymore because one died (coded as '2' in the original database), was institutionalised (coded as '3'), or had problems due to age or health (coded as '8'). The event of interest occurred for 209 (12.8%) participants before the last wave. Figure 24.1 depicts participants' longitudinal trajectories for self-perception separately for participants who were and were not able to pursue participation in the study by 2018. Participants were measured at least twice out of the four occasion measurements.

Initially, we hypothesised that (1) participants' decrease in self-perception with increasing age and both (2) a lower baseline level and (3) a steeper decline in self-perception would increase the risk of being unable to continue participating in the study due to health-related issues or death (e.g., Lee et al., 2016; Orth et al., 2010). We controlled for participants' age at their first wave of measurement (*AgeEntry*) and biological sex (*Sex*), given that life expectancy is longer for females than for males (Federal Statistical Office Section Demography and Migration, 2019).



**Fig. 24.1** Lineplot of individual trajectories for self-perception by participation status by the last wave. (Data source: Swiss Household Panel (SHP))

### *Analyses and Results*

Following Cekic et al. (2021), data were analysed in three successive steps in R using the packages nlme, survival, and JMbays. First, we estimated the longitudinal submodel, then the time-to-event submodel, and finally the joint model. As the specification of the joint model depends on the results from the two submodels, we report below the analytical strategy and corresponding results for each of the three steps sequentially.

#### *Longitudinal Submodel*

In the first step, we estimated four LMEMs to select the best fit for the mixed-effects subpart of the joint model (we refer the reader to Eq. (A.4) in Appendix A for equations of predictions for the LMEM models). First, we modelled change in self-perception as a function of a random intercept, the fixed effect of Age (centred at age 65 years,  $Age_{65}$ , the time-varying variable in this model), and controlling for initial Age ( $AgeEntry$ ) ( $M0$ ). In other words,  $M0$  proposes that individuals differ with respect to

their initial level of self-perception and that self-perception varies according to participants' current age and age at first measurement. However, given that there are no random effects associated with  $Age\_65$ , the model assumes that all participants change at the same rate. Then, in model M1, we added the random effects of  $Age\_65$  (and its covariance with the random intercept) to the previous model  $M0$ , acknowledging the possibility that participants' self-perception may change at various rates as they age. In the last two models, we tested the additional contribution of quadratic ( $Age\_65^2$ ) and cubic ( $Age\_65^3$ ) fixed effects of age ( $M2$  and  $M3$ , respectively). Compared to  $M0$  and  $M1$ , the last two models imply an accelerated decline in self-perception with increasing age (in a quadratic form for  $M2$  and a cubic form for  $M3$ ). The four models can be written as follow:

$$\begin{aligned}
 M0: y_i(t) &= (\beta_0 + b_{0i}) + \beta_1 Age\_65_i(t) + \beta_4 AgeEntry_i + e_i(t), \\
 M1: y_i(t) &= (\beta_0 + b_{0i}) + (\beta_1 + b_{1i}) Age\_65_i(t) + \beta_4 AgeEntry_i + e_i(t), \\
 M2: y_i(t) &= (\beta_0 + b_{0i}) + (\beta_1 + b_{1i}) Age\_65_i(t) \\
 &\quad + \beta_2 Age\_65_i(t)^2 + \beta_4 AgeEntry_i + e_i(t), \\
 M3: y_i(t) &= (\beta_0 + b_{0i}) + (\beta_1 + b_{1i}) Age\_65_i(t) + \beta_2 Age\_65_i(t)^2 \\
 &\quad + \beta_3 Age\_65_i(t)^3 + \beta_4 AgeEntry_i + e_i(t),
 \end{aligned}$$

where  $y_i(t)$  denotes self-perception for individual  $i$  at time  $t$ , betas denote fixed effects, and  $b_{0i}$  and  $b_{1i}$  denote random effects for the intercept and slope, respectively.

We selected the best model based on Bayesian information criterion (BIC) values, with smaller BIC values indicating better fit. We used a threshold of a 6-point difference in BIC values as strong evidence against the model with the highest BIC (Kass & Raftery, 1995). Based on BIC values, we retained M0 as the best model given the data (as indicated by a BIC value of 15,225.55 for 5 degrees of freedom versus 15,232.22, 15,239.68 and 15,248.08 with 7, 8, and 9 degrees of freedom, respectively, for models M1, M2 and M3). The model explained 48% of the variance in the data, as indicated by the conditional R-square.

As presented in Table 24.1 and in line with our first hypothesis, the data showed a linear decline in self-perception with increasing age. There was also a positive effect of  $AgeEntry$  such that the older the participants were at the first measured wave, the higher their self-perception. This result

**Table 24.1** Parameter estimates for longitudinal submodel M0

<i>Random Effects</i>	<i>Variance</i>	<i>SD</i>			
<i>Intercept</i>	0.796	0.892			
<i>Residual</i>	0.889	0.943			
<i>Fixed Effects</i>	<i>Estimate</i>	<i>SE</i>	<i>df</i>	<i>t</i>	<i>p</i>
<i>Intercept</i>	5.442	0.422	3189	12.889	<0.001
<i>Age_65</i>	-0.046	0.005	3189	-9.506	<0.001
<i>AgeEntry</i>	0.021	0.006	1630	3.420	<0.001

Note: Data source: Swiss Household Panel (SHP)

most likely reflects a selection effect, such that the oldest individual might not decide to participate in the study unless he or she had a high sense of personal competence. The random effects of the intercept substantively contributed to the model, given that 47% of the variance in self-perception over time was due to differences between subjects, as indicated by the intraclass coefficient.

Of importance, adding the random effect of the slope did not substantially improve model fit, and the addition of this effect to the model only increased the explained percent of variance by 0.9%. Critically, due to a computational issue, *M1* did not provide realistic estimates for the random slope of *Age\_65* (ultimately resulting in uninterpretable results in the joint model—not presented in the present chapter). It is well known that the power for variance in slope can be quite limited in these kinds of models (Hertzog et al., 2008). Hence, the longitudinal submodel did not adequately capture interindividual differences in steepness of decline for self-perception across time. Thus, although there appeared to be differences between individuals in the steepness of their self-perception decline with increasing age (see Fig. 24.1), the model did not adequately capture interindividual differences in change. Similarly, the fixed quadratic and cubic linear effects of age neither reached significance nor proved useful in explaining the data, as indicated by the increase in BIC from *M1*, *M2*, and *M3*, respectively.

#### *Time-to-Event Submodel*

Then, for the time-to-event data, we estimated the Cox proportional hazards model with *Sex* and *AgeEntry* as covariates. One assumption of these time-to-event models is that the baseline hazard function (i.e., the risk of

the event occurring given that it has not yet occurred; see Eq. (A.2) in Appendix A) is proportional for each predictor. This assumption was met for *Sex*, as indicated by the nonsignificant Schoenfeld residuals test ( $\chi^2 = 1.13$ ,  $df = 1$ ;  $p = 0.29$ ). However, baseline hazard functions were not proportional for *AgeEntry* ( $\chi^2 = 8.40$ ,  $df = 1$ ;  $p < 0.01$ ), meaning that the risk of event occurrence over time differed based on age at first wave of measurement. We thus stratified the time-to-event analysis by *AgeEntry* by using two arbitrary strata for participants 65–75 years old and those 76 or older. In other words, the final Cox proportional hazard model accounted for differences in baseline hazard function between individuals who were 75 or younger versus 76 or older at the first wave of measurement (for further explanation, see Cekić et al., 2021; Cox, 1972; Fox & Weisberg, 2011).

In stratification procedures, the corresponding variable is considered for the estimation of the Cox model but does not appear as a predictor in the model outputs (as denoted by the subscript  $k$  in Eq. (A.5) in Appendix A). Model estimates using the stratification procedure are presented in Table 24.2.

The results from the time-to-event submodel therefore indicated that sex did not affect the risk of dropping out of the study due to dying, health reasons or institutionalisation. This result is also apparent in the corresponding Kaplan–Meier curve for survival by sex (see Fig. 24.2), which depicts a clear overlap of the survival probabilities (i.e., still being able to participate in the study) for women and men, at least until age 85. Although the effect of *Sex* was nonsignificant, we kept this variable in the model for the following joint modelling step for didactic purposes.

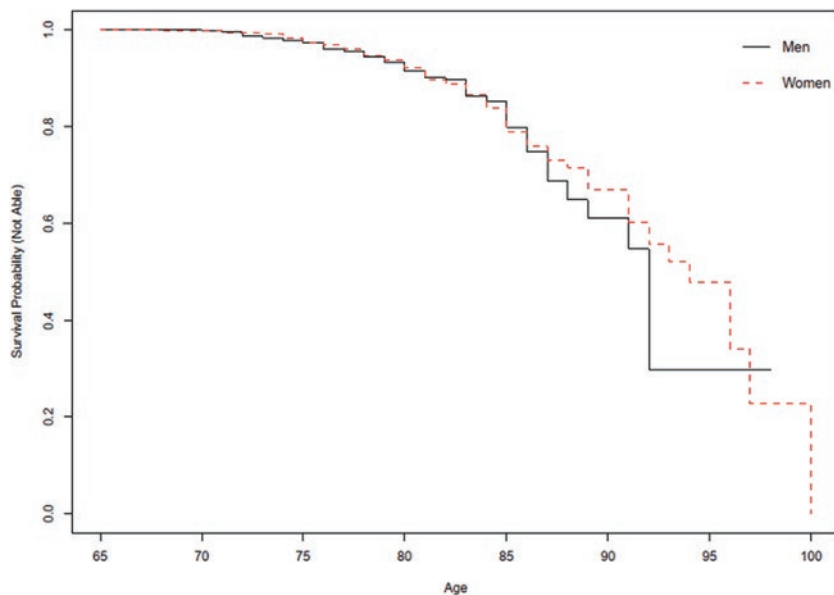
### Joint Model

Finally, based on the selected submodels (*MO* and Cox proportional hazard model with stratification for *AgeEntry*), we estimated the joint model with the shared random effects parametrisation (see Eq. (A.6) in Appendix A). Given that the longitudinal submodel we retained included a random

**Table 24.2** Parameter estimates for the Cox proportional hazard submodel

	<i>coef</i>	<i>exp(coef)</i>	<i>SE(coef)</i>	<i>z</i>	<i>p</i>
<i>Sex</i>	-0.112	0.894	0.141	-0.793	0.428

*Note:* Data source: Swiss Household Panel (SHP)



**Fig. 24.2** Kaplan–Meier estimator of survival probabilities for men and women (Data source: Swiss Household Panel (SHP))

effect only for the intercept (i.e., the model only accounted for interindividual variations on the baseline level of self-perception), we only had one association parameter in our model, which quantified the strength of the association between deviations from the initial group level of self-perception and risks of being unable to participate in the study due to death, health reasons or institutionalisation (corresponding to our second hypothesis). Indeed, the absence of a random slope in  $M_0$  subsequently prevented us from testing the association between the steepness of decline in self-perception and our event of interest (our third hypothesis). The results for the joint model are reported in Table 24.3. We made inferential decisions regarding the results based on the credible intervals at 95% for the estimated parameters, following Bayesian estimation.

The results for the longitudinal process within the joint model were almost identical to those obtained for the longitudinal submodel (reported in Table 24.1). However, the results differed for the time-to-event portion of the model. Indeed, while the effect of *Sex* was not significant in the Cox

**Table 24.3** Parameter estimates and 95% credible intervals for the joint model using shared-random effects association

	Value	SE	2.5%	97.5%
<i>Sex</i>	-0.295	0.011	-0.5744	-0.011
<i>Assoct : (intercept)</i>	-0.5126	0.003	-0.711	-0.307
<i>tauBs</i>	89.219	14.971	11.380	386.509
<i>Intercept</i>	5.240	0.007	4.614	5.847
<i>Age_65</i>	-0.047	0.001	-0.051	-0.044
<i>AgeEntry</i>	0.024	0.001	0.016	0.033
<i>D[1, 1]</i>	0.796			

*Note:* Upper and lower panels correspond to estimates for the time-to-event and longitudinal processes, respectively. *tauBs* is a parameter related to the baseline hazard function and is typically not interpreted. *D[1, 1]* denotes the variance of the random intercept from the longitudinal subprocess. Data source: Swiss Household Panel (SHP)

proportional hazards submodel (reported in Table 24.2), it emerged in the joint model (given that 0 is not included in the 95% credible interval). Hence, when the longitudinal process and the association between the general baseline level of self-perception were controlled, the effect of *Sex* reached significance. This effect was probably driven by the difference in survival probability from age 85 onwards (see Fig. 24.2). However, most importantly regarding our hypothesis, the association parameter  $\alpha$  (denoted as *Assoct : (intercept)* in Table 24.3 and in the R output) was negative and significant, meaning that individuals who had lower general levels of self-perception than the average of the sample at baseline were more likely to drop out of the study due to health reasons or dying. The hazard ratio for a one-unit increase from individual deviation from the general mean of the intercept is  $\exp(\alpha) = \exp(-0.513) = 0.599$ . We can calculate the risk reduction as  $1 - \exp(\alpha) = 1 - \exp(-0.513) = 0.401$ . In other words, participants who were more confident by one unit in their own ability to cope with life events at their first measurements were 40.1% less likely to quit the study because of death, institutionalisation or health-related issues compared to participants with average levels of self-perception at age 65.

To summarise, our analyses revealed (a) that participants who were older at the first wave of measurement had a higher level of self-perception than their younger counterparts, probably reflecting a selection effect (i.e., older individuals who had low levels of self-perception might not have enrolled in the study). Furthermore, and in line with Orth et al. (2010),

controlling for sex and age at first measurement, joint modelling allowed us to show that (b) self-perception generally declined with advancing age. Finally, similar to Lee et al. (2016), who reported that high levels of personal mastery dampened the effects of frailty on physical function, (c) individuals who had higher levels of self-perception at age 65 were 40.1% less likely to drop out of the study due to death, institutionalisation or health issues. However, we did not find conclusive evidence for interindividual differences in steepness of decline, which prevented us from studying whether individual trajectories of self-perception across time were associated with risks of being unable to pursue study participation. Overall, these results stress that older adults' perception of their ability to influence the course of their lives and the evolution of their physical and autonomy status intertwine. They further show that psychological resources—simply evaluated through six quick questions—can prove useful to predict frailty or death years later (also see Hülür et al., 2017).

#### FUTURE DIRECTIONS IN USING JOINT MODELLING FOR STUDYING VULNERABILITY AS A PROCESS

In this chapter, we presented an example of JM using the *shared random effects* parametrisation, which is the most accessible and intuitive JM parametrisation that answers the question 'Does an individual with higher/lower value than average have an increased risk of event occurrence?' However, more complex parametrisations (see Cekic et al., 2021; Rizopoulos, 2012, 2016) provide analytical flexibility for testing a wide array of theoretical hypotheses, such as 'Does the current value on the time-varying variable influence the risk of event occurrence, irrespective of this variable's trajectory?' (*current value association*) or 'Does the rate of change in the longitudinal variable predict the risk of event occurrence?' (*current value plus slope association*). More broadly, given the possibility of adding both continuous or dichotomous and time-invariant or time-varying covariates to the model, JM can accommodate a wide array of variables of interest for studying vulnerability in the life course. As detailed below, this analytical technique thus appears to be a promising tool for investigating the multidimensional, multilevel, and multidirectional aspects of vulnerability.

In relation to the LIVES approach to vulnerability from a life-course perspective, JM can prove useful in studying the multidimensional aspects



of the vulnerability process (Spini et al., 2017a). Indeed, JM can be applied to analyse how trajectories in one life domain can relate to the occurrence of a given event in another life domain over time (spillover effects, Bernardi et al., 2017; Spini et al., 2017a). These models allow researchers to investigate whether levels of and changes in resources in one life domain (e.g., social policies and/or evolution of social support in individuals' personal lives) may affect the risk of experiencing vulnerability in another domain (e.g., burnout in solo working mothers).

Vulnerability processes not only unfold in different life domains but also occur at multiple levels of analysis at the articulation between individuals and contexts. Given its ability to include both continuous and dichotomous predictors, JM also allows the investigation of multilevel aspects of vulnerability processes. Practically, researchers can model whether factors from the micro and macro levels, as well as their articulation at the meso level, are associated with the occurrence of an event of interest over time. For instance, in a JM model, one can study systemic inequalities in access to higher education across countries by analysing how a country's welfare regime, ethnic/social group belonging and the trajectory of various individuals' resources may predict the chance of being accepted to prestigious school programmes across various countries.

Finally, some advanced applications of JM—cumulative models (see Rizopoulos 2016, pp. 17–18; and Rizopoulos, 2012, pp. 106–111)—may be particularly suited for the study of multidirectionality—the temporal dimension—in the vulnerability process. Within a cumulative disadvantage paradigm, micro (dis)advantages cumulate over the years and lead to drastically different outcomes (Dannefer, 2003). Hence, JM can be tailored to investigate resources or frailty accumulation across the life span or, more generally, variations in life trajectories. JM can specifically model the *cumulative effects* of the longitudinal variable in individuals' life trajectories up to a given point in time through integrals (i.e., the area under the curve for the longitudinal variable), which provides a far better representation of the accumulation of advantages or disadvantages throughout the life span than any regression slope. This is especially true when the trajectory for the longitudinal variable is not monotonic and instead alternatively increases or decreases throughout the life course. An applied example would be investigating how the accumulation (and not merely the slope) of subjective loneliness over the years could accumulate and lead to an increased risk of depression in older adults. These models are hence particularly appropriate for testing how cumulative advantages or

disadvantages accumulate over time and whether and how they relate to the likelihood of entering a vulnerable state later on.

To conclude, we deeply believe that JM is a privileged tool to further our understanding of the multidimensional, multilevel and multidirectional perspectives of vulnerability dynamics across the life span. Moreover, JM can also prove useful to gain insight into each of the three steps of the vulnerability process. Indeed, researchers can tailor JM not only to identify which variables and how they evolve over time will predict the likelihood of entering a vulnerable state but also to determine whether individuals will be able to avoid, efficiently cope with, or recover from stressors. Given the extant availability of software to estimate JM (see Cekic et al., 2021), we strongly encourage researchers to consider these models in their methodological approaches to studying vulnerability processes and subsequently to fully exploit the richness of multidisciplinary longitudinal databases.

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# Synthesis: Combining Methods for the Analysis of Vulnerability Processes Across the Life Course

*André Berchtold and Paolo Ghisletta*

## INTRODUCTION

The analysis of vulnerability processes throughout the life course implies two main methodological difficulties. On the one hand, it requires long sequences of data that ideally should cover the entire lifespan of an individual, from birth to death (possibly, one may even go as far back as the womb if investigating perinatal determinants of vulnerability processes, such as exposure to detrimental environmental factors like lead, alcohol,

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A. Berchtold (✉)

Faculty of Social and Political Sciences, Institute of Social Sciences, University of Lausanne, Lausanne, Switzerland

e-mail: [andre.berchtold@unil.ch](mailto:andre.berchtold@unil.ch)

P. Ghisletta

Faculty of Psychology and Educational Sciences, University of Geneva, Geneva, Switzerland

Swiss Distance University Institute, Valais, Switzerland

e-mail: [Paolo.Ghisletta@unige.ch](mailto:Paolo.Ghisletta@unige.ch)

micronutrients, and various toxins). On the other hand, people in vulnerable conditions, or in situations that increase the risk of becoming vulnerable, are often more difficult to assess in empirical research: They either belong to hard-to-reach subpopulations or suffer from conditions that limit the chances of collecting complete data about them. Taken together, these two characteristics can require both the use of unconventional data collection methods and the development of advanced statistical analysis procedures that are able to extract a maximum amount of information from the data. Clearly, both data collection and data analysis methods need to be motivated primarily by theory rather than merely being the result of practical or empirical limitations stemming from the difficulties mentioned above. Substantive questions need to remain the main instigator that defines how data are to be collected and analysed. Otherwise, the interpretation of any result will either be impenetrable or too remote from the previous and extant substantive knowledge to be of any use to the researcher.

In this synthesis, we look back at more than ten years of methodological innovations developed within the LIVES research program and aiming for a better understanding of the development of vulnerability processes throughout the life course. Regarding data collection, although prospective surveys often remain the gold standard for obtaining longitudinal data, retrospective data collected through specially adapted tools (see chapter by Morselli & Berchtold), such as life calendars, have become precious companions, as they allow for the rapid completion of long and valid data sequences. Moreover, alternative sampling schemes, based, for instance, on networks (Perrenoud et al.), are able to reach people who are unlikely to be included in traditional probabilistic samples, thereby increasing the representativeness of the sample by including participants who otherwise could not have been assessed. Such approaches also require the development and use of more global data collection modes that combine qualitative and quantitative data, thereby allowing participants to respond in the manner best suited to their specific situations and capacities. However, the increasing complexity of data collection procedures also implies additional risks regarding the comparability of data to existing knowledge and the psychometric quality of measurement. For example, what can be gained, on the one hand, through the simultaneous use of several data collection modes can be lost, on the other hand, because data collected through one specific mode can prove to be not fully comparable with that obtained through another, whether in terms of margin of error,



number of missing data, or representativeness. Special care thus needs to be taken when implementing such advanced data collection schemes to avoid jeopardising the whole research enterprise.

What is true regarding data collection is also a requirement for accurate data analysis: From a substantive perspective, relying on a single approach to analyse complex data is rarely sufficient to deepen the theoretical understanding of a particular vulnerability topic. Indeed, it is often essential to combine the strengths of different analytical tools. One approach is to rely on mixed methods to combine qualitative and quantitative information (Bryman, 2008; Joly-Burra et al., 2020), but even if only quantitative approaches are implemented, it is sensible, for instance, to associate sequence analysis with survival analysis, the aim being to study the occurrence of specific events (survival analysis) without losing sight of an individual's prior trajectories on a categorical variable over their life course (sequence analysis). This approach is also possible if prior trajectories are represented by continuous variables so that traditional longitudinal methods, such as linear mixed-effects models, can be conjointly estimated with survival analyses.

In this chapter, we discuss the new perspectives in terms of data collection and data analysis offered by the different methodological tools developed within LIVES.

## LONGITUDINAL DATA COLLECTION AMONG VULNERABLE POPULATIONS

Some decades ago, it was possible for a social scientist to draw data from a cross-sectional survey, perform analyses on life course issues, and publish the results. Clearly, scholars were aware that they were approximating within-person processes by examining between-person data, but costs for repeated data collections were prohibitive, and methods to handle statistical artefacts of such data (such as dependence) were of the sole domain of methodologists and statisticians; hence, a restricted population of scholars was not necessarily confronted with substantive research themes. However, following the development of new theories in life course research and the spread of appropriate methods for repeated-measures data to large audiences of substantively motivated scholars, the situation has evolved, and we are now in a world in which longitudinal analyses, and hence data, are the rule for life course research. For instance, in their definition of vulnerability, Spini et al. (2017) stressed that in addition to being a

multidimensional and multilevel concept, vulnerability also develops and evolves over time. This is not to say that it is no longer possible to conduct sound cross-sectional research, but it is now established that the present situation of an individual is strongly related and/or influenced by her or his past history. Therefore, to understand a given individual's situation, scholars need to consider that individual's life as a whole and, consequently, use longitudinal data and longitudinal analyses. Note, however, that we are not completely rejecting the use of cross-sectional data. Indeed, cross-sectional methods remain highly valuable when investigating life-course vulnerability processes, given that any longitudinal study starts out as a cross-sectional study. Particularly in novel scholarly terrain, a cross-sectional study remains a feasible and invaluable exploration tool that can shape the beginning of a successful longitudinal research enterprise.

Generally, collecting longitudinal data is notoriously more difficult than collecting cross-sectional data because it requires multiple data collection points, hence the requirement to motivate people to answer to multiple assessments over time. The first, and at times most serious, drawback of a longitudinal study is attrition, i.e., the fact that as time unfolds, increasingly fewer initial participants continue assessment. Many strategies have been developed to reduce attrition, including the possibility of answering through various data collection modes (Voorpostel et al., 2021) and different kinds of incentives offered to the participants (Stähli & Joye, 2016). Particular care needs to be taken to ensure that the returning participants adequately represent the initial sample well; otherwise, generalisability is reduced. However, even if such strategies are effective against attrition, they cannot reduce the time required to collect sufficiently long datasets. Accelerated longitudinal designs (Bell, 1953; Galbraith et al., 2017), which consist of assessing multiple cohorts for a shorter interval but with temporal overlap among cohorts, are an extremely interesting alternative, but such data are not compatible with all analysis methods (i.e., such data inherently require a multiple-group approach). Another approach is to collect data retrospectively, whereby participants reconstruct their past life course, but this implies other issues related mainly to the difficulty of recalling old memories and accurately reporting them. The use of a life history calendar, a tool especially designed to enhance memory recall, can mitigate many such difficulties to allow the reconstruction of valid and reliable past trajectories (Belli, 1998).

Difficulties in investigating usual general population samples become even more complex when researchers investigate minority, hard-to-reach,

or vulnerable populations. In addition to those previously mentioned, investigating such populations implies additional challenges. Principal among these is the problem of how to contact them, given that they are generally invisible either because they are not clearly distinguishable from other subpopulations or because they live on the margins of society, with very limited or no administrative contact. Therefore, imaginative ways of not only collecting data but also contacting people are required.

Three chapters of this book tackle the problem of data collection. The first discusses the use of life calendars for collecting retrospective data (Morselli & Berchtold). The second examines alternative sampling schemes that use a network of respondents to increase sample size and diversity and allow the investigation of hard-to-reach individuals (Perrenoud et al.). The third reviews the benefits but also the difficulties of offering different answering modes to survey respondents (Roberts & Voorpostel). Taken together, the conclusions of these three chapters show promise for longitudinal data collection: New methods are available, and they work. However, they also imply additional difficulties in generating a representative sample and obtaining accurate information. More work is clearly required to further explore the properties of these methods and to validate them in additional research practice. We may add to these challenges the increasing number of polls (mostly conducted by the media and too often with low scientific standards), which decrease the likelihood of finding respondents to academic surveys (Beullens et al., 2018), and the increasing use of the internet to collect information, which increases the difficulty of evaluating data quality (Benfield & Szlemko, 2006).

In this context, we must ask ourselves what we want or need to focus on. Data-scraping tools (Marres & Weltevrede, 2013), which allow the collection of very large ('big data') information bases from the internet, are now just a mouse click away through the web and popular social media. In this sense, the internet increasingly resembles a quasi-infinite data repository. However, is it an appropriate way to collect longitudinal data for scientific purposes? Is it still possible to obtain a representative sample through this approach? What biases are produced or increased? Is it ethical to collect and link data without the active knowledge of the persons concerned? All these questions are still open, and we as scholars must remain aware that technical progress must not take precedence over scientific rigor and ethics.

## STRENGTHENING AND COMBINING STATISTICAL ANALYSIS TOOLS

Relying on a single statistical index in isolation has rarely been a good and sufficient analytical practice. Even one of the simplest statistics, the mean, ought to be combined with a measure of the dispersion, such as the standard deviation, to adequately represent a variable (note that, depending on the underlying distribution, many alternative indices of central tendency and variability may be preferable (Tukey, 1977; Weisberg, 1992)). This reasoning can be easily extended to much more complex analyses. The life course of an individual is made of a succession of events, or trajectories of varying magnitude, whether important or not, that shape his or her future life. These past events and trajectories deserve a closer examination to elucidate one's life course. For instance, while most individuals will experience diverse health problems during their life, what are the determinants of suffering from one specific disease after the age of 50? Thus, while from a holistic perspective an individual's life trajectory must be taken as a whole, the successive events that shape that trajectory are also of interest.

Two chapters in this book tackle the study of past sequences/trajectories as determinants of upcoming events: The first primarily considers the case of categorical data that define sequences of events (Studer et al.), and the second discusses trajectories on continuous data and their relation to upcoming (often detrimental) events (Joly-Burra et al.). As shown in both chapters, the key to the sound analysis of complex life course data is the ability not only to apply different analyses successively but also to combine them into a new, integrated methodological approach. Studer et al. described the combined use of sequence analysis and event history analysis. When the objective is to study what can lead to the occurrence (or not) of a specific event, then sequence analysis can be used first to identify frequently occurring life trajectories, and then event history analysis can use this information to predict the risk of occurrence of the event of interest. The reciprocal is also possible: The interest can be in how individuals cope with the occurrence of a specific event, e.g., how they recover from a stressor, but without forgetting that the resources accumulated before the event of interest can be helpful in coping after its occurrence. Methodologically, this approach implies identifying what can happen after the event through sequence analysis and then applying an event history model to understand what triggers the occurrence of each of the possible trajectories.

Another integrated approach is described in Joly-Burra et al. Here, the idea is to simultaneously estimate two submodels, the first for the whole longitudinal trajectory as represented by continuous data and the second to study the risk of occurrence of a specific event. These two parts are then linked by a joint model, which simultaneously estimates all parameters of both submodels. Thus, both the longitudinal and the event history submodels make up the final model, wherein the parameters of one submodel are necessarily influenced during estimation by those of the other. The methods described in Studer et al. and in Joly-Burra et al. are promising given the high level of statistical integration they propose. We urge any life-course scholar who is particularly interested in vulnerability processes to assimilate these two chapters in the hope that these integrative methods may serve their own research agenda well.

Our retrospective look at methodological contributions within LIVES over the past ten years highlights the investigation of other approaches that combine statistical methods to extract more information from data. In a typical sequence analysis approach, dissimilarities between sequences are computed to create a typology that greatly reduces the complexity of the set of individual components. This typology may then be used as an independent variable in subsequent analyses, as shown by Ritschard and Studer (2018). Alternatively, Bolano and Studer (2020) proposed adopting another approach: Instead of reducing the number of different individual trajectories, and hence their complexity, they automatically extract a very large set of indicators representing the key information (timing, sequencing, and duration) of all trajectories. Then, machine learning algorithms are used to establish potential relations between these indicators and an event of interest or to identify a minimal set of indicators that are able to accurately predict this same event.

The different statistical methods mentioned above all consider the life course of an individual in its entirety, but debate remains ongoing between supporters of this vision and scholars who prefer to consider and analyse the underlying processes that generate the sequences themselves. Using a Markovian-type model, the latter approach was applied, for instance, by Berchtold et al. (2018) to study the development of somatic complaints among adolescents and by Bolano et al. (2019) to study the process of change in functional health among nursing home residents. Furthermore, Bolano and Berchtold (2021) showed that these two visions, life trajectory as a whole vs. generating process, can—and should—be regarded as complementary rather than competitive. This integrative approach entails

a first step in which a sequence analysis is performed as usual to reduce the complexity of a dataset, and a second step in which a Markovian approach is applied independently to each subset to gain more information on the specificities of the trajectories associated with each group.

### OTHER DEVELOPMENTS

Two additional issues ought to be considered for an accurate analysis of life course trajectories. First, a person's life cannot usually be summarised by any single trajectory, such as a set of occupational or family situations. Thus, the combination of trajectories from many different life domains, such as health, family, social participation and occupation, reveals the richness and complexity of a person's life. To analyse these trajectories simultaneously, we can use an extension of sequence analysis called multichannel analysis (Gauthier et al., 2010; Piccarreta, 2017). Similarly, the analysis of reciprocal dynamical influences between two or more life trajectories is also a promising tool to further the understanding of vulnerability processes (as exemplified by Aichele & Ghisletta, 2019, where the authors analysed over 100,000 individual trajectories of memory performance and of depressive symptoms, showing that the former influences changes in the latter, whereas the reciprocal effect did not emerge). In the future, it will also be of high interest to adapt the different approaches discussed in this article to the case of multichannel data, which will undoubtedly require additional mathematical developments.

Second, we simply cannot omit the inevitable topic of missing data. Regardless of the data collection method, missing data occur in almost all datasets, thereby complicating the computation of reliable statistical results when they do not simply prevent them from being obtained. As demonstrated in Berchtold (2019), even if the impact of missing data on statistical analyses is known, as are the possible remedies, most social sciences publications still do not appear to have seriously integrated these concerns. Life trajectories are not an exception, and missing data have been identified as one of the most important remaining issues to be considered in sequence analysis (Ritschard & Studer, 2018). Moreover, even if different authors have already proposed possible solutions (Gabadinho & Ritschard, 2016; Halpin, 2016), additional developments are still required to fully consider the specificities of longitudinal data (Berchtold & Surís, 2017).

## CONCLUSION

Vulnerable populations are especially prone to being represented by low-quality data and hence low-quality statistical results because they are more likely to be hard to reach, hide their real situation, evolve quickly, and drop out of a longitudinal study because the occurrence of a life event is an additional risk of leaving a survey (Ellard-Gray et al. 2015; Kaeser, 2016). Such challenges may lead to the data minimising the possible negative, or at times positive, impact of such events. For instance, when considering representative data from a whole population and estimating a typology from such data, it is quite common to obtain, among well-defined groups, a highly heterogeneous group that is very difficult to analyse and interpret (e.g., Taushanov & Berchtold, 2018; Taushanov & Ghisletta, 2020). Such a group may consist of vulnerable individuals, but relying on a single classical clustering approach is clearly not sufficient to understand the dynamics at work in this group.

Even if their goals and their models are different, all the chapters included in the methodological section of this book lead to two main conclusions: (1) The very high complexity of life course trajectories is difficult to grasp through a single analytical approach because most tools are extremely specialised in recovering a single aspect of the data, rather than the overall multifaceted complexity; and (2) by combining two or more approaches, it is possible to extract much more information from the data, leading to a more comprehensive understanding of both the data and of the different processes at work during a life course. Such understanding is especially critical in the case of vulnerability processes because they tend to evolve across an individual's entire life course, such as through the accumulation of resources over several years that will prove useful in a later phase of his or her life to cope with adverse stressful events. A combination of longitudinal and point approaches is therefore required to consider all this information and to highlight the links among an individual's past trajectories and sequences, present situation, and possible futures.

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## Overcoming Vulnerability in the Life Course—Reflections on a Research Program

*Richard A. Settersten Jr, Marlis Buchmann, Martin Kohli,  
René Levy, Anik de Ribaupierre, Katariina Salmela-Aro,  
and Elizabeth Thomson*

This book represents a synthesis of theories, concepts, and empirical illustrations of core scientific contributions of the LIVES research program as it has unfolded over the years. The first chapter introduced some of the

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The authors of this conclusion have served as core members of the scientific advisory committee to the Swiss National Center of Competence in Research (NCCR), “LIVES: Overcoming Vulnerability: Life Course Perspectives,” a partnership of the University of Geneva and University of Lausanne (Phase 1, 2010–2014; Phase 2, 2014–2018; Phase 3, 2019–2022) funded by the Swiss National Science Foundation (SNSF). Julie McMullin (Western University, Canada) and the late Victor Marshall (University of North Carolina, Chapel Hill) were also core contributing members of the advisory committee for the first two phases. The Appendix B charts the history of the LIVES program and names other important contributors to the program or the centers on which it was built.

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R. A. Settersten Jr (✉)  
Human Development and Family Sciences, Oregon State University,  
Corvallis, OR, USA  
e-mail: [Richard.settersten@oregonstate.edu](mailto:Richard.settersten@oregonstate.edu)

program's starting-point definitions of "vulnerability" and its significance within a life course framework. The remaining sections take up the cross-cutting aspects of vulnerability. First, they refer to vulnerability as a multi-dimensional process: Vulnerability spans and spills over to many life domains, such as family, work, and health. Secondly, they view vulnerability as a multilevel process: Vulnerability is anchored in phenomena that exist on and interact across micro, meso, and macro levels of analysis—from cognitive and personality characteristics of the individual to the social system. Third, they refer to vulnerability as a multidirectional process: In adding the dimension of time, multiple trajectories of experience and functioning yield unequal levels and types of vulnerability.

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M. Buchmann

Department of Sociology, University of Zurich, Zurich, Switzerland  
e-mail: [buchmann@soziologie.uzh.ch](mailto:buchmann@soziologie.uzh.ch)

M. Kohli

Department of Social and Political Sciences, European University Institute,  
Florence, Italy

Bremen International Graduate School of Social Sciences, Bremen, Germany  
e-mail: [martin.kohli@eui.eu](mailto:martin.kohli@eui.eu)

R. Levy

Faculty of Social and Political Sciences, Institute of Social Sciences, University of  
Lausanne, Lausanne, Switzerland  
e-mail: [rene.levy@unil.ch](mailto:rene.levy@unil.ch)

A. de Ribaupierre

University of Geneva, Geneva, Switzerland  
e-mail: [anik.deribaupierre@unige.ch](mailto:anik.deribaupierre@unige.ch)

K. Salmela-Aro

Department of Educational Sciences, University of Helsinki, Helsinki, Finland  
e-mail: [katariina.salmela-aro@helsinki.fi](mailto:katariina.salmela-aro@helsinki.fi)

E. Thomson

Demography Unit/Department of Sociology, Stockholm University,  
Stockholm, Sweden

Center for Demography and Ecology, University of Wisconsin–Madison,  
Madison, WI, USA

e-mail: [elizabeth.thomson@sociology.su.se](mailto:elizabeth.thomson@sociology.su.se)

These features mean that vulnerability is inherently a transdisciplinary and life course matter. It is therefore important to not only understand the forms, sources, and consequences of vulnerability in distinct life phases, but also to understand how it unfolds over time—for example, how its dynamics slow, stop, or even reverse course. These characteristics, in turn, demand measures and methods that are sensitive enough to capture these processes for people of different ages, and to capture them longitudinally.

In having witnessed and shaped the evolution of this research program, our task here is fourfold: to reflect on some of its (1) major accomplishments, (2) ingredients of success, (3) barriers to success, and (4) directions going forward.

### MAJOR ACCOMPLISHMENTS

LIVES was the first Swiss National Center for Competence in Research (NCCR) in the social sciences. This alone is an extraordinary accomplishment. Standard measures of success, such as publications in major journals and other scientific outlets, are important. To date, we count 909 journal articles, 293 book chapters, 88 books, and 1707 academic events. Beyond these quantitative criteria, we would like to briefly highlight four major accomplishments of the research program in advancing (1) the concept of vulnerability, (2) data, measures, and methods, (3) education and training, and (4) social relevance.

First, in terms of the basic concept, vulnerability was in the beginning of the program understood pragmatically. It was taken at face value, an umbrella term that could potentially capture many empirical phenomena of interest. Only later did it reveal itself to be more demanding in theoretical rigor and depth, with the leaders developing an integrative theoretical paper on vulnerability to both organize the program and stimulate further research in the field, notably on notions of latent/manifest vulnerability and the role of norms and institutions in this regard (Spini et al., 2017); a sequential view of vulnerability in three steps of being at risk for it, of having difficulty in adapting to stressors, and of having difficulty recovering or profiting from opportunities in a specific time frame; and finally, the need to consider resources and reserves, as well as processes of growth, robustness, and resilience, as intrinsic processes of vulnerability in a life course framework (Spini & Widmer, this volume).

Second, from the vantage point of data, measures, and methods, there are a few particularly important achievements. LIVES has shined a light on

issues related to vulnerability in Switzerland as a case study. Switzerland has not been included in some major international data collection efforts (e.g., the Generations and Gender Programme). The in-depth attention to Switzerland in LIVES, especially through modules associated with the Swiss Household Panel, has been instrumental in bringing Switzerland to the forefront of international discussions. As a corollary, Switzerland, because of LIVES, developed a much wider international presence in the social and behavioral sciences and brought attention to Swiss researchers.

The case of Switzerland demanded greater justification and explanation of context. It posed special challenges because, while small, it is highly differentiated linguistically, culturally, and politically, as reflected in the history and political autonomy of the present-day 26 cantons. On the one hand, this diversity makes Switzerland a unique social laboratory: it has the potential to generate and test theories and hypotheses that are not relevant or cannot be tested in other contexts. On the other hand, this explains why a program such as LIVES encountered challenges establishing a research and doctoral program at the Swiss federal level. The 10 universities are run at the cantonal level, and all have slightly or even widely different study regulations.

Through LIVES, the use of the Swiss Household Panel has greatly increased because of both the productivity of LIVES researchers and the financial investments of the program in panel data collection. The program has also been instrumental in fostering research methods to analyze longitudinal data. The Institute for the Study of Biographical Trajectories (ITB) at the University of Lausanne (2001–2009) and the creation of the Swiss Center for Expertise in the Social Sciences (FORS) in 2008, with its location in Lausanne and its Swiss Research Infrastructure Roadmap, have been important in launching LIVES, especially in building modules and collecting specialized data to examine connections between vulnerability and the life course. For example, ITB was instrumental in adding more life course content to the Swiss Household Panel, including a retrospective module in one of the early waves to give greater attention to the past lives of respondents. These collaborations increased the scientific value of the project. Of course, LIVES also had other data collection and analysis efforts across the many projects associated with it.

Third, education and training, along with emphasis on equal opportunities, have offered another major dimension for advancing the treatment of vulnerability in a life course perspective. The introduction of NCCRs in the late 1990s by the federal government and the Swiss National Science

Foundation was a decisive step for more harmonized doctoral training and for getting researchers from various universities to work together.

Since the beginning of LIVES at least 72 doctoral students have completed their PhDs. About half of the doctoral students have been international students. LIVES does not itself deliver a full-fledged doctoral program; rather, it provides a common core of seminars and experiences that complement the training that students receive in their own university. In addition to the doctoral students, the program has also funded post-docs who have been placed in specific research projects and trained in the context of the larger program. LIVES has also hosted or been involved in co-organizing a handful of “winter schools” in partnership with other universities to provide doctoral students from other countries training in vulnerability and/or life course studies.

LIVES has therefore been an advantage to doctoral programs in Lausanne and Geneva for recruiting excellent doctoral students and postdoctoral fellows in the social sciences, and it has offered a sizable and unusual source of funding for students. Through these educational and training efforts, the program has produced a strong professional network for doctoral and postdoctoral students that would not otherwise have been possible and will continue to impact their international careers and science itself.

Fourth, the program has drawn attention to the social relevance of vulnerability through its knowledge transfer and social policy efforts. These include, for instance, the periodic “LIVES Impact” policy briefs, which are sent to targeted people and institutions in communities and cantons and across Switzerland; many of them have received significant attention via downloads and public discussion (e.g., a special issue on how to address public confidence during the COVID-19 pandemic). The Dictionary of Swiss Social Policy, now in its second edition, is another good example. So, too, is the projected creation of a subunit within the future LIVES Center called LIVES Social Innovation, in collaboration with the regional University of Applied Sciences and Arts in Western Switzerland (HES-SO). This subunit will develop prototypes of social interventions in various problem fields. There have also been innovative activities to reach new audiences, such as a game developed for elementary school students to facilitate discussion about their aspirations and expectations for adulthood and a major collaborative gallery exhibit and art book of photographs depicting the expression of vulnerability in the life course.

## INGREDIENTS FOR SUCCESS

There are some key factors that contributed to the success of LIVES, which may be of interest to those who wish to launch similar large-scale collaborative enterprises. A central ingredient was a strong network of senior scientists. Another was its interdisciplinary orientation, grounded in a common concept and theoretical framework attractive and open enough to incorporate and join different perspectives. As already noted, it was reinforced by a doctoral program and the involvement of junior researchers, postdoctoral fellows, and doctoral students.

Another crucial element was an already-established intellectual tradition and organizational structure on which to build. LIVES had its origins in the objectives and partnerships in lifespan developmental psychology and gerontology that began between scholars in Geneva and Lausanne in the 1990s. The Center of Gerontology (CIG, now CIGEV) at the University of Geneva and the ITB at the University of Lausanne had created the group PAVIE (short for PARcours de VIE, or “life course”; see also Appendix B). Within the PAVIE center, a number of faculty had already been working on the concepts of “frailty” and “transition,” exploring similarities and differences between “lifespan” and “life course” perspectives, and finding common language to foster interdisciplinary exchanges. These cross-institutional and interdisciplinary teams made it possible to apply for the NCCR funds. There had also been two prior attempts to propose an NCCR by these groups, proposals that were rejected but had nonetheless brought attention to those involved and paved the way for LIVES.

The provision of significant financial resources through the NCCR made it possible to create a research and training enterprise that was much larger and crossed multiple institutions, with co-directors from both Geneva and Lausanne and an administrative infrastructure designed to integrate faculty and students at these and other institutions across Switzerland. LIVES has therefore established durable links across institutions and disciplines. When LIVES started, psychology (with the exception of social psychology) was not well represented in the construction of “social sciences.” LIVES incorporated psychology into its vision from the start. This interdisciplinarity was central to securing long-term funding.

Early on, after having toyed with concepts such as frailty and resilience, a choice was made to center the program around the core concept of vulnerability, which was relatively new to the social sciences at large. It brought



an element of novelty and created conditions to advance interdisciplinary theories and research because it could be examined from multiple angles and stretched across disciplines and fields. The concept of vulnerability captured the imagination of the Swiss National Science Foundation (SNSF), but it also took a handful of years to develop a clearer concept and propositions to anchor the program. In the first phase, there was no shared definition or framework. It began to emerge during the second phase at the urging of the SNSF review panels and our advisory group and came to more complete fruition by the third phase. It takes time for a large interdisciplinary group to agree on shared concepts and perspectives and infuse them systematically to bring coherence and integrity to the whole. The core concept needed to be incorporated into the larger theoretical perspectives of the “life course” in sociology and the preferred label in psychology, “life span.” That is, it had to be extended to examine variability across age and its dynamics over time, across life domains, and at different levels of analysis, as noted earlier. Between the two labels, there was a large space of interdisciplinary complementarity on which LIVES could capitalize—especially in forcing the psychologists and sociologists to get out of their respective “black boxes” of agency and structure.

Success hinged on the active cooperation of multiple institutions. There were important strategic decisions to be negotiated in the choice of top-level leaders and the allocation of resources across the institutions. The SNSF required that the associated universities build capacity and commit resources to complement its investment, including hiring permanent faculty to ensure the representation of these substantive areas of concern in the long term. The NCCRs are meant to transform institutions in ways that are self-sustaining and durable once the SNSF funding ends.

There was a nimble structure of research projects (“IPs”) and project leadership over the three phases, some of which continued in new forms and others of which were funded for just one phase or later combined to optimize their work. During the second phase, LIVES introduced the four cross-cutting issues (“CCIs”) described earlier: vulnerability as multidimensional, multilevel, and multidirectional, and the study of vulnerability as requiring multiple methods. These explicitly organized the intellectual agenda of the third phase and played important roles in fostering the coherence of the program.

Just as there was top-level direction provided by the co-leaders from Lausanne and Geneva, there was also sensitivity in determining leadership and membership in research projects and cross-cutting cores to represent

and reach across the two universities. The two universities are also relatively close in proximity, separated by about an hour by car or train, making it possible to attend meetings, events, and retreats in person. Because the two universities have traditionally been rivals, LIVES has been remarkable in creating a longstanding partnership and shared stakeholders in deep collaboration.

The presence of our independent interdisciplinary multinational advisory committee—one that was largely stable in its composition across the three phases—was also an element in the success of the program. We accumulated many years together as a group, agreeing to an open and transparent relationship with the program's leadership and gaining important backstage knowledge of its administrative, financial, and personnel challenges. We also served in ways that go beyond most advisory panels, providing a firm hand in shaping research emphases and questions, reviewing project proposals and recommending funding priorities, serving as a sounding board for leaders, and helping to navigate organizational changes. We backed up the leaders when they needed to do hard things and forced difficult conversations.

### CHALLENGES TO SUCCESS

A requirement of the NCCRs is that the funded institutions must make long-term commitments to a topic that is important enough to catalyze collaboration and gain recognition. The work must be ground-breaking and open new possibilities. Another highly relevant criterion is that the NCCR must generate “added value” in the cross-fertilization of disciplines and programs. That is, it should yield something different than the institutions would have been able to do on their own and something greater than the simple sum of its parts.

A major challenge has expectedly been found in integrating diverse participants—who often had no prior experience collaborating with each other, let alone crossing disciplinary frontiers—into a common enterprise. As noted earlier, the second phase brought a clearer conception of “vulnerability,” and the third phase brought an explicit focus on the “cross-cutting issues” of domains, levels, time, and research methods. To work in truly interdisciplinary ways takes a great deal of time and requires intentional cultivation. This applied to the LIVES scholars, most of whom had traditional disciplinary degrees and appointments in traditional disciplinary departments, especially psychology and sociology. The pairing

of “life span” and “life course” approaches was also not easy, as there were different disciplinary preferences for collaboration, different vocabularies, and different incentives, worldviews, and values assigned to types of scholarly effort and products (e.g., books versus journal articles).

Throughout the program, there have been challenges in getting people aligned around and committed to the project. Some of this has been about personalities and competing reward structures and obligations. What would LIVES offer as an incentive for giving time, being involved, and taking responsibility? How would these efforts affect one’s evaluation and progress in other roles? One important incentive for joining LIVES and submitting to its expectations was the prospect of long-term research funding. A typical research project with the SNSF lasts a maximum of three years, recently changed to four years, renewable only in exceptional cases; in contrast, an NCCR might last up to 12 years. Another incentive was the stimulating scientific environment, not only for doctoral students and other collaborators but also for senior researchers, even though some of them had first to discover this potentiality. The growing success of LIVES brought a parallel rise in the scientific prestige of being associated with it.

The initial leadership team already had some experience in interdisciplinary collaboration. At the start of the program, however, they were still rather junior. As they were trying to mobilize senior people, they faced status and power differences. The presence of two senior Swiss members (de Ribaupierre and Levy) on the scientific advisory committee was helpful in this situation, and the committee worked in ways that supported the co-directors. This was especially useful when some IP projects needed to be eliminated.

Despite their geographical proximity, it was difficult to share resources between the two home institutions. This was not just because of their competitiveness but also because each institution has its own culture and needs. As noted earlier, universities in Switzerland are largely funded and run at the cantonal level. The contexts in which they operate and the resources they have at their disposal are thus dramatically different.

Doctoral education is a compulsory feature of all NCCRs. Like faculty, most of the doctoral students had training and were seeking degrees in single traditional disciplines. They faced tensions related to the need to design dissertation projects that would be approved in their departments and also conduct their research in the context of an interdisciplinary training program. In the first phase, students affiliated with LIVES did not

receive any common training besides the orientation to the program upon their entry, consistent with Swiss doctoral programs. LIVES eventually required a certain number of seminars on topics of interest. In the second phase, a more focused curriculum was established to focus on theory and methods, also exposing students to the core concepts of “vulnerability” and “life course” and fostering the integration of these concepts in their research and emerging intellectual identities. Still, as evident in the annual *Doctoriales* (days where all students presented their research and received critical commentary from members of the advisory board and associated faculty), some students had difficulty articulating how their projects related to these concepts, despite the efforts of the faculty to inculcate them into students’ research.

### GOING FORWARD

As the chapters of this book reveal, LIVES has concentrated its efforts on understanding vulnerability in middle and later adulthood, and on the expression of vulnerability through stressors, resources, and reserves. It has asked pressing questions about, and gathered precious longitudinal data on, a variety of topics, including second-generation migrants’ and young adults’ transition to adulthood; parenthood, couple, family experiences in the early decades of adult life; work, family, and leisure in midlife; and professional careers and aging. There are many questions to continue asking about other populations and topics in adulthood, and many questions to be asked about populations and topics in the earliest years of life (infancy, childhood, and youth) as well as in the latest years. There is also a need to focus on specific groups in settings of vulnerability, such as people who are refugees, imprisoned, or without housing. LIVES has involved study participants in vulnerable groups such as women with AIDS or breast cancer, people with significant health incidents, or who are divorced, bereaved, single, or unemployed. Naturally, populations that are hardest to reach were underrepresented in the earlier studies and outreach efforts of the LIVES program. This is now one of the current directions of the program.

There is continued work to do in evolving the concept of vulnerability. Vulnerability is a relatively recent term, one that has even grown in the last two years amid the COVID-19 pandemic and the inequalities and social strife it has exposed or brought in its path. A proposal today to study vulnerability in a life course perspective would be even more attractive

than it was a dozen years ago when LIVES began charting this territory. The next frontier of research will need to advance the rigor of the concept and associated theories. Its primary strength is also its primary weakness: It is a broad term that can hold many other concepts within or alongside it. For example, much remains to be clarified about how vulnerability articulates with longstanding or new discussions of coping, adaptation, resilience, risk, precarity, adversity, uncertainty, instability, and the like. This demands not only greater conceptual clarity regarding the distinctions between vulnerability and these overlapping or adjacent concepts, but also their assessment.

Both within and outside of the LIVES program, there is a need to develop and validate more sophisticated measures of vulnerability that are also sensitive enough to capture changes in its core components: “stressors,” “resources,” and “reserves” (the latter of which recently emerged in their framework) and to demonstrate their interrelationships. In particular, the concepts of resources and reserves have a long history in child developmental psychology (e.g., Vygotsky’s [1930–1934/1978] zone of proximal development) and lifespan developmental psychology (e.g., Baltes’ [1987] notions of selective optimization and compensation), are primed for new exploration. These concepts are particularly important in contemporary times, amid the COVID-19 pandemic and rampant civil and political unrest that has placed extraordinary demands on individuals.

The component of “reserves” is a good place to begin clearer exposition, including what it is, what its forms are, and how it interacts or overlaps with “resources” in relation to vulnerability. Reserves will also need to be better articulated in relation to other traditions in the social and psychological sciences. For example, the notion of “social reserves” seems aligned with traditional sociological concepts such as social capital and social integration, and “cognitive reserves” has long been present in lifespan psychology and neuroscience. As it is now being used, “reserves” largely seems to be understood as distinct from “resources” but at times seems to be used interchangeably with it. The notion of “dormant resources” also sounds like a reserve, something akin to “being ready” for action rather than action itself. There is not yet consensus about these terms and their usage, and “reserve” has not yet been threaded throughout the larger LIVES portfolio but has emerged in a few of the projects in the final phase (e.g., on family and social relationships; cognitive functioning). These directions are ripe for conceptual and theoretical development.

Viewed in a life course perspective, much remains to be learned about how the forms of vulnerability and their sources and consequences might be distinct in particular periods of life (e.g., for children, teens, young adults, those in midlife, or those in the early and later phases of old age). That is, there is a need for more systematic comparative research across age groups and life phases, and to understand how age and aging matter in relation to vulnerability. Importantly, there are significant leaps to make with respect to specificity: under what conditions does vulnerability matter (or not), for whom, when, and how. It is similarly important to understand what these things mean for families and societies when they are considered in aggregate, from the vantage points of whole groups and populations. At an even higher level, there is much to be learned about vulnerability as a basic and universal human experience that transcends times and places.

An examination of vulnerability in relation to life course dynamics demands longitudinal inquiry and data, although it is highly unusual to have reasonable indicators of stressors, resources, and reserves, let alone comprehensive measures of these things, over long periods of time. These will continue to represent major challenges for the field. Methods can also help bridge conceptual gaps; a common methodological approach can help when there is no agreement on concepts. Over time, the participants in LIVES moved toward a more integrated view of methods, seeing them more fluidly and developing greater appreciation for methods other than those that might have been championed in the beginning. Appreciation also grew around mixed-methods strategies that combined various quantitative and qualitative approaches. As the chapters of this book illustrate, gains have been made with respect to harnessing multiple methods to reveal vulnerability processes within the context of life-course dynamics, including major advances in developing and analyzing life calendars, gathering data on hard-to-reach populations, and combining event history and sequence analysis as well as longitudinal and survival methods.

Because vulnerability occurs in the social world, LIVES has pointed to the need to examine how social processes generate and perpetuate inequalities and how policies and practices can counteract inequalities and offset vulnerabilities as people grow up and older. The program has reinforced the need to develop life-course policies that focus on supporting individuals when they go through key life transitions and to generate life-course sensitivities in street-level bureaucrats and political leaders. So, too, has the program emphasized the importance of elucidating how an array

of external conditions—from larger historical, economic, and political environments all the way down to local environments, like communities and neighborhoods and family environments—matter in creating and responding to vulnerability throughout the life course.

## CONCLUSION

Some powerful messages are emerging from the findings of LIVES program: The crude and constant divide often made between the “haves” and “have-nots” should be replaced by a process-oriented (life course) perspective in which vulnerability is not a persistent or permanent condition but is rather a dormant condition of the social actor, activated in specific situations and contexts. What are often viewed as permanent states in people and populations are highly variable as the result of these specific situations and contexts. Their findings call into question pervasive assumptions about the linear accumulation of disadvantage over the life course and instead reveal how early hardships are coupled with lifelong compensation processes. Stressful life events and transitions may shock the life trajectories of individuals, but these shocks are more detrimental to people who have fewer resources or reserves. And yet, over time, people do tend toward adaptation or recovery, aided by resources and reserves in themselves and in their environments—which become prime targets for interventions to reduce vulnerability. In probing gender, the program has also revealed how gender inequalities are not necessarily the direct effect of stereotyping and institutional discrimination but are instead fueled by social processes that unfold in relation to life transitions (e.g., becoming parents, divorcing, changing jobs, caring for others).

A test of an NCCR is whether a topic is important enough to become a goal of its institutions. This is being realized now, particularly through the launch of a new permanent center: “LIVES—Swiss Center of Expertise in Life Course Research” (“Vision of LIVES: An Integrated Theoretical Concept”). An even greater test of the success of an NCCR is whether it has transformed its intended fields and had international impact. Strong interdisciplinary research takes time to conduct—and time to wield its influence. In the dozen years of this grand experiment, there have been many successes and it has been our deep pleasure and honor to have made the journey alongside this extraordinary team of scholars. It is with great anticipation that we watch its evolution and await its cumulative scientific and social returns.

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# APPENDIX A

## SUPPLEMENTARY MATERIAL: PREDICTION

### EQUATIONS FOR THE JOINT MODEL

Following Cekić et al. (2021) and Rizopoulos (2012, 2016), we can decompose a joint model into three equations corresponding to the linear mixed-effects models (LMEM) and time-to-event submodels as well as the association between the two through the shared parameters.

The longitudinal submodel can be written as:

$$\mu_i(t) = X_i(t)\beta + Z_i(t)b_i, \quad (1)$$

where  $\mu_i(t)$  is the true unobserved value for an observed measurement  $y_i(t)$  of individual  $i$  at time  $t$  on a given variable  $y$ , such that  $\mu_i(t) = y_i(t) + \varepsilon_i(t)$ . The true unobserved value  $\mu_i(t)$  therefore corresponds to the sum of the fixed ( $X_i(t)\beta$ ) and random ( $Z_i(t)b_i$ , where  $b_i$  usually contains a random intercept  $b_{0i}$  and a random slope  $b_{1i}$ ) effects of the model.  $X_i$  and  $Z_i$  are sets of covariates (which may be equal) that are thought to explain fixed and random effects, respectively. Typically, some time metric (e.g., age, occasions, years in study) is included in both. Each random effect (the  $b_i$  vector) is typically assumed to be normally distributed, centered at 0, with variance  $D$ , and to correlate with other random effects. Deviations  $\varepsilon_i(t)$  – model residuals – from the true unobserved value are assumed to be normally distributed, centered at 0 with variance  $\sigma^2$ . The component  $\mu_i(t)$  is thus free of measurement error.

In turn, the time-to-event (Cox proportional hazards) submodel combines a baseline hazard function (i.e., risk of event occurrence, given that it has not yet occurred) with the effects of explanatory covariates as follows:

$$h_i(t) = h_0(t) \exp(\gamma^T w_i). \quad (2)$$

The baseline hazard function  $h_0(t)$  itself does not vary across subjects but varies with time. Individual differences in hazard function are then due to individual differences on a set of covariates  $w_i$  associated with regression coefficients  $\gamma$ .  $w_i$  could include, be equal to or be totally different from either  $X_i$  and  $Z_i$ .

Finally, the joint model connects the two previous equations and can be written as:

$$h_i(t) = h_0(t) \exp(\gamma^T w_i + f\{\mu_i(t), b_i, \alpha\}), \quad (3)$$

where individual variations in the hazard function are not only due to covariates  $w_i$  but also to the history of the true unobserved longitudinal process  $\mu_i$  up to time point  $t$  or the corresponding random effects  $b_i$  for individual in this longitudinal process. The linking function  $f\{\mu_i(t), b_i, \alpha\}$  specifies *how* parameters from the longitudinal submodel are connected to the hazard for the event at time  $t$ , and the parameter  $i$  vector  $\alpha$  quantifies the *strength* of this association. This function  $f$  can take many forms and lead to different forms of the time-to-event submodel (for various options and parametrization details for the association functions, see Cekić et al., in press; Rizopoulos, 2012, 2016; Rizopoulos et al., 2014). Although structurally, the longitudinal submodel influences the survival submodel via the vector parameter alpha, because all parameters are estimated simultaneously, the latter model also affects the former.

Based on Equation (1), the four LMEM models can be written as follows:

$$\begin{aligned} M0: y_i(t) &= (\beta_0 + b_{0i}) + \beta_1 \text{Age}_{.65_i}(t) + \beta_4 \text{AgeEntry}_i + e_i(t), \\ M1: y_i(t) &= (\beta_0 + b_{0i}) + (\beta_1 + b_{1i}) \text{Age}_{.65_i}(t) + \beta_4 \text{AgeEntry}_i + e_i(t), \\ M2: y_i(t) &= (\beta_0 + b_{0i}) + (\beta_1 + b_{1i}) \text{Age}_{.65_i}(t) + \beta_2 \text{Age}_{.65_i}(t)^2 + \beta_4 \text{AgeEntry}_i + e_i(t), \\ M3: y_i(t) &= (\beta_0 + b_{0i}) + (\beta_1 + b_{1i}) \text{Age}_{.65_i}(t) + \beta_2 \text{Age}_{.65_i}(t)^2 + \beta_3 \text{Age}_{.65_i}(t)^3 + \beta_4 \text{AgeEntry}_i + e_i(t), \end{aligned} \quad (4)$$

Based on Equation (2), the Cox proportional hazards model with our data can be written as follows:

$$h_{ik}(t) = h_{0k}(t) \exp(\beta_1 \text{Sex}_i), \quad (5)$$

where the subscript  $k$  denotes the strata for AgeEntry.

Based on Equation (3), we can write the joint model as:

$$h_{ik}(t) = h_{0k}(t) \exp(\beta_1 \text{Sex}_i + \alpha b_{0i}), \quad (6)$$

where the association parameter  $\alpha$  quantifies the strength of the association between deviations from the group baseline level of self-perception and risks of not being able to participate in the study due to dying, health reasons or institutionalization (corresponding to our second hypothesis).

```

Appendix A Annotated R code for the didactic example in this chapter
install.packages("JMbayes")
install.packages("rjags")
install.packages("survminer")
install.packages("MuMIn")
install.packages("plotly")
library(JMbayes)
library(rjags)
library(splines)
library(psych)
library(ggplot2)
library(survminer)
library(dplyr)
library(plotly)
DB_long <- read.csv("replace by your folder path")
#-----#
# Longitudinal Submodel for Self-perception (2009, 2012,
2015, 2018) #
#-----#
ctrl <- lmeControl(opt="optim")
#Empty model with random intercept in order to compute the intra-
class coefficient

```

```

emptymodel <- lme(SP_mean ~ 1,
  data = DB_long, random = ~ 1 | IDPERS, na.action=na.exclude)
summary(emptymodel)
#Model M0: random intercept + fixed effects of Age(centered at 65)
and Age at first wave of measurement
M0 <- lme(SP_mean ~ AGE_65 + AgeEntry,
  data = DB_long, random = ~ 1 | IDPERS, na.action=na.exclude)
summary(M0)
#Compute conditional (R2c : variance explained by random + fixed
effects) and marginal (R2m: variance explained by fixed effects only)
R-squares
library(MuMIn)
r.squaredGLMM(M0)
#Check statistical assumptions for M0
hist(ranef(M0))
boxplot(ranef(M0))
str(RANintercept <- ranef(M0)[,1])
hist(RANintercept)
boxplot(RANintercept)
qqnorm(RANintercept, main="Normal Q-Q plot, intercept aléatoire")
qqline(RANintercept)
max(RANintercept)
min(RANintercept)
max_minIntercept <- max(RANintercept) - min(RANintercept)
max_minIntercept
max_minIntercept_std <- (max(RANintercept) - min(RANintercept))/
sd(RANintercept)
max_minIntercept_std
#Model M1: random intercept and slope for Age + fixed effects of Age
and Age at first wave of measurement
M1 <- lme(SP_mean ~ AGE_65 + AgeEntry,
  data = DB_long, random = ~ AGE_65 | IDPERS, na.action=na.
exclude)
summary(M1)
hist(ranef(M1))
randoms <- ranef(M1)
str(RANslope <- ranef(M1)[,2])

```

```

hist(RANslope)
boxplot(RANslope)
qqnorm(RANslope, main="Normal Q-Q plot, intercept aléatoire")
qqline(RANslope)
max(RANslope)
min(RANslope)
max_minslope <- max(RANslope) - min(RANslope)
max_minslope
max_minslope <-(max(RANslope) - min(RANslope))/sd(RANslope)
max_minslope
r.squaredGLMM(M1)
#M2: random intercept and slope for Age + fixed effects of linear and
quadratic Age, and linear Age at first wave of measurement
M2 <- lme(SP_mean ~ AGE_65+I(AGE_65^2)+AgeEntry,
  data = DB_long, random = ~ AGE_65 | IDPERS, na.action=na.
exclude)
summary(M2)
#M3: random intercept and slope for Age + fixed effects of linear, qua-
dratic and cubic Age, and linear Age at first wave of measurement
M3 <- lme(SP_mean ~ AGE_65+I(AGE_65^2)+I(AGE_65^3)
+AgeEntry,
  data = DB_long, random = ~ AGE_65 | IDPERS, na.action=na.
exclude)
summary(M3)
m0SP<-update(M0, method = "ML" )
m1SP<-update(M1, method = "ML" )
m2SP<-update(M2, method = "ML" )
m3SP<-update(M3, method = "ML" )
BIC(m0SP,m1SP,m2SP,m3SP)
#--> based on BIC values, we keep the model with both a fixed and a
random effect for the intercept, but only a fixed effect for the slope (no
random effects for the slope).
#-----#
# time-to-event submodel #
#-----#
DB_wide <- read.csv("replace by your folder path")
#CoxPH model
Coxfit_NA <- coxph(Surv(AgeLastObserved_65, NotAbleby2018) ~
SEX +AgeEntry,

```

```

data = DB_wide,x=TRUE)
print(cox.zph(Coxfit_NA))
summary(Coxfit_NA)
#Create variable AgeEntry as dichotomic variable (65-75 vs 76+) for
the stratification procedure in the cox model in both databases
DB_wide$AgeEntry_cat<-ifelse(DB_wide$AgeEntry<=75,0,1)
DB_long$AgeEntry_cat<-ifelse(DB_long$AgeEntry<=75,0,1)
#CoxPH model Stratified by Age at first wave of measurement
Coxfit_strat <- coxph(Surv(AgeLastObserved_65, NotAbleby2018) ~
SEX +strata(AgeEntry_cat),
data = DB_wide,x=TRUE)
print(cox.zph(Coxfit_strat))
summary(Coxfit_strat)
#-----#
# Joint modeling #
#-----#
#Importantly, note that the scale of the temporal variable (here Age_65
and AgeLastObserved_65)
#should be IDPERSentical in the longitudinal and in the sur-
vival models.
#The indicator for the event (Able or NotAble) is NotAbleby2018.
jointFit<- jointModelBayes(M0, Coxfit_strat,
timeVar = "AGE_65",param = "shared-RE",
n.iter = 30000)
summary(jointFit)
#Check statistical assumptions for the joint model
plot(jointFit, param = c("betas", "sigma", "D", "Assoct"))
plot(jointFit, which = "density", param = c("betas", "sigma",
"D", "Assoct"))
plot(jointFit, which = "autocorr", param = c("betas", "sigma", "D",
"gammas", "alphas", "Dalphas",
"shapes", "Bs.gammas", "tauBs"), ask = TRUE, max.t = NULL,
from = 0)
plot(jointFit,which='autocorr', param='alphas',xlim=c(0,100))
#-----#
# Plots #
#-----#
#-----#

```

# Figure 1. Lineplot of individual trajectories for self-perception by participation status

```
#-----
library(lattice)
library(ggplot2)
for (i in 1:nrow(DB_long)){
  if (DB_long$NotAbleby2018[i]==1) {
    DB_long$statusNA[i]<-'Not Able'
  }
  else {
    DB_long$statusNA[i]<-'Able'
  }
}
snNA = 100
siNA = sample(unique(d$IDPERS), snNA)
dsNA = d[d$IDPERS %in% siNA, ]
dsNA = dsNA[order(dsNA$IDPERS, dsNA$Nwaves),]
plm<-ggplot(data=DB_long, aes(x=AGE, y=SP_mean, group =
IDPERS))
plm + facet_wrap(~statusNA)+
  geom_line(data = subset(DB_long, statusNA == "Able"), alpha
= 1/10) +
  geom_line(data = subset(DB_long, statusNA == "Not Able"), alpha
= 3/10) +
  stat_smooth(method="lm", se=TRUE, color="red",
lty=1, show.legend=TRUE,
aes(group=statusNA)) +
  theme_bw()+
  labs(y= "Self-perception", x = "Age (not centered)")
#-----
```

# Figure 2. Kaplan–Meier estimator of survival probabilities for men and women

```
#-----
par(mfrow=c(1,1))
sfit_SP_NA <- survfit(Surv(AgeLastObserved, NotAbleby2018) ~
SEX, data = DB_wide)
plot(sfit_SP_NA, lty = 1:2, lwd = 2, col = 1:2, mark.time = FALSE, xlim
= c(65,100),
```

```
xlab = "Age", ylab = "Survival Probability (Not Able)")  
legend("topright", c('Men','Women'), lty = 1:2, col = 1:2, lwd = 2,  
cex = 1.1, bty = "n")  
#-----
```

*Note.* This code was implemented in versions 4.0.2 of *R* and 1.2.5033 of *Rstudio*. The sign # indicates to *R* that the corresponding line is a comment. Accordingly, lines preceded by # are not executed by the software.



## APPENDIX B

### BEHIND THE SCENES: THE NCCR LIVES AND THE SWISS LIVES CENTRE

This book is a synthesis of the research advances made collectively by the National Centre of Competencies in Research *Overcoming Vulnerability: life course perspectives* (NCCR LIVES). This research program was funded by the Swiss National Science Foundation (SNF) and lasted 12 years from 2011 to 2022. Dario Spini (University of Lausanne, UNIL) & Eric Widmer (University of Geneva, UNIGE), the co-editors of the present book, were respectively the director (2011-2022) and co-director (2015-2022) of the NCCR LIVES until its successful ending (2022). Michel Oris (UNIGE) has been co-director from 2011 to 2014 of the NCCR LIVES, whereas Laura Bernardi (UNIL) has served as deputy director from 2011 to 2018. Concerning institutional developments, the Swiss Centre of Competence in Research on the Life Course (Swiss LIVES Centre, see <https://www.centre-lives.ch/en>) was inaugurated in February 2019 as a structuration of the NCCR LIVES in the host institutions. Dario Spini and Eric Widmer were the first co-directors of this center.

The roots of the NCCR LIVES are multiple. One is to be found in the pioneering works in life course sociology by René Levy (1977) at UNIL and of Christian Lalive d'Épinay (1983) at UNIGE. The collaboration between researchers from the two universities began in 1999, with these two professors deciding to join their efforts and applying with already a life course project for the first call from the SNF for NCCRs. Unfortunately,

their proposal was rejected at the last (political, not scientific selection step) in January 2001. However, a solid group of scholars was created, consisting of profs Christian Lalive d'Epinay (UNIGE), René Levy (UNIL), Jean-Claude Deschamps (social psychology, UNIL), Jean Kellerhals (sociology, UNIGE), Anik de Ribaupierre (lifespan psychology, UNIGE), with the support of Dario Spini as scientific officer (junior lecturer, social psychology, UNIGE). Together they applied for additional funds to create the PaVie Centre (in French, life course is translated by *parcours de vie*), an interdisciplinary and interuniversity network focused on life course research. At the same time, the creation of an institute on life-course research was proposed at the University of Lausanne.

These two applications were successful, the institute was created that same year with the name of Institute for the study of life trajectories at UNIL (ITB:) and the PaVie interuniversity group received money from a separate research program. In October 2001, Paolo Ghisletta (methods and life span psychology) was hired at the University of Geneva, and Dario Spini (prof., social psychology), Eric Widmer (prof., sociology), and Jean-Marie Le Goff (senior lecturer, demography) were hired at the ITB with René Levy as Director of the Institute. They were followed by Guy Elcheroth (social psychology) and Jacques-Antoine Gauthier (sociology) as the first PhD students of the institute. Four more PhD students were hired soon after: Félix Bühlmann (sociology), Manuel Tettamanti (psychology), Valérie-Anne Ryser (psychology), and Marlène Sapin (sociology). All those first PhD students and junior professors of PaVie made relevant contributions to life course research since then.

Five important steps were achieved in the following years: (1) an international interdisciplinary conference on life-course approaches. It resulted in a collective publication that established the interdisciplinary life course perspective that we are still sharing (Levy et al., 2005); (2) the development at the ITB of a retrospective survey module on life courses on the Swiss Household Panel (by Levy & Widmer, in association with Monika Budowski, University of Neuchâtel) and the take-up and further development of the optimal matching methodology by Jacques-Antoine Gauthier and Eric Widmer, with the decisive contribution of two colleagues from bioinformatics, Cedric Notredame (Centre for Genomic Regulation, Barcelona, Spain) and Philipp Bucher (EPFL, Switzerland); (3) the development of the Swiss Longitudinal study on the oldest old at the centre of gerontology at UNIGE, which was the first longitudinal study on the oldest old in Switzerland analyzing frailty processes (Lalive d'Epinay & Spini,

2008); the international and interdisciplinary project TRACES (Transition to adulthood and collective experiences survey) on the life course experiences of vulnerability and attitudes toward justice of the young adult cohort during the 1990's violent conflicts in the former Yugoslavia (Spini, Elcheroth, & Corkalo-Biruski, 2014), and (4) an interdisciplinary project on the transition to parenthood and its traditionalizing effects on the families' gender structure (Le Goff & Levy, 2016).

From 2006, after René Levy's retirement, the ITB was led by Dario Spini and the PaVie Centre by Eric Widmer (then both assistant professors at UNIL). The leading board of the PaVie Centre also included Dominique Joye (UNIL), Gisela Labouvie-Vief (UNIGE), and Michel Oris (UNIGE). In 2007, Eric Widmer, moved to the UNIGE where he was appointed full professor whereas Laura Bernardi was hired as an associate professor at UNIL. In the same year, Marlène Sapin, Dario Spini & Eric Widmer published a book on the life course, which was going to become one of the first introductory book to life course research published in French. Shortly after, Michel Oris et al. (2009) published a reader on the PaVie network's research activity.

In 2009, Dario Spini, together with Profs Laura Bernardi (UNIL) and Michel Oris (UNIGE), with the administrative support of Doris Hanappi and Tatiana Lazzaro, and other colleagues, took the lead of a new project for the third NCCR call by the SNSF. This time the project was successful and in January 2011 the NCCR LIVES was launched, hosted by UNIL (leading house) and UNIGE (co-leading house), associating scholars from the PaVie network, completed by research groups from other Swiss academic institutions. During the three phases of this twelve-year program, LIVES hosted and funded a series of research projects on various issues related to vulnerability in a life course perspective, both substantive and methodological, which were led by the following scholars: André Berchtold (UNIL; 2015-2018), Laura Bernardi (UNIL, 2011-2022), Jean-François Bickel (Applied University of Western Switzerland (AUWS), 2011-2014); Claudio Bolzmann (AUWS; 2011-2014), Jean-Michel Bonvin (AUWS then UNIGE, 2011-2022), Felix Bühlmann (UNIL, 2015-2018), Claudine Burton-Jeangros (UNIGE; 2011-2014, 2019-2022), Eric Davoine (University of Fribourg; 2019-2022), Jean-Marc Falter (UNIGE, 2011-2012), Nicolas Favez (UNIL then UNIGE, 2011 to 2014), Alexandra Freund (University of Zurich, 2019--2022), Paolo Ghisletta (UNIGE, 2019-2022), Daniela Jopp (UNIL, 2019-2022), Dominique Joye (UNIL, 2011-2014), Matthias Kliegel (UNIGE, 2015-2022), Rafael

Lalive (UNIL, 2012-2018), Nicky Le Feuvre (UNIL, 2011-2021), Koorosh Massoudi (UNIL; 2021-2022), Jürgen Maurer (UNIL, 2019-2022), Daniel Oesch (UNIL, 2019-2022), Michel Oris (UNIGE, 2011-2018), Michele Pelizzari (UNIGE, 2019-2022), Pasqualina Perrig-Chiello (University of Bern, 2011-2016), Gilbert Ritschard (UNIGE, 2011-2018), Clémentine Rossier (UNIGE, 2015-2022), Jérôme Rossier (UNIL, 2011-2021), Dario Spini (UNIL, 2011-2022), Christian Staerklé (UNIL, 2011-2014), Leen Vandecasteele (UNIL, 2019-2022), Eric Widmer (UNIGE, 2011-2022), and Hans-Jörg Znoj (University of Bern, 2015-2018). All in all, the NCCR LIVES has benefited of the scientific work of 313 academic staff, 86 postdocs and 138 PhD students located in different Swiss academic institutions. It is impossible to name them all here, but we are well aware that each of them were an important part of the interdisciplinary spirit that animated the program and has brought important knowledge advances that this book is not able to cover fully. It is possible though to access the complete list of publications of the NCCR LIVES through our website: <https://www.centre-lives.ch/en/articles-scientifiques>). We would also like to mention here the important role played by our advisory committee with their continuous support and thoughtful advises all along the way. The committee was composed of a mix of Swiss and international scholars: Francesco Billari (2011-2014), Anik de Ribaupierre (2011-2022), Martin Kohli (2011-2022), Christian Lalive d'Épinay (2011-2014), René Levy (2011-2022), Ulman Lindenberger (2011-2014), Victor Marshall (2011-2018), Karl Ulrich Mayer (2011-2012), Richard A. Settersten (2011-2022), Elizabeth Thompson (2011-2022), Julie McMullin (2012-2018), Marlis Buchmann (2015-2022), and Katariina Salmela-Aro (2015-2021).

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