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Deindustrialization and deaths of despair: mapping the impact of industrial decline on ill health

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Abstract

A growing literature on deaths of despair has argued that workers' declining life expectancy in deindustrialized rustbelt areas in the U.S. and the associated deepening of health inequalities signal the profound existential crisis of contemporary capitalism. Competing explanations downplay the negative consequences of "creative destruction" and focus instead on unhealthy lifestyles. This article contributes to this debate by presenting the first empirical analysis of the role of deindustrialization in the deaths of despair epidemic that hit Eastern Europe in the 1990s. Drawing on the thematic analysis of 82 semi-structured interviews in four deindustrialized towns in Hungary, the article constructs a general sociological framework for analyzing deaths of despair applicable to other rustbelt areas. Deindustrialization engenders individual and social processes that affect health by increasing stress and eroding coping resources. By conceptualizing deindustrialization as a fundamental cause of ill health, sociology has great potential to contribute to understanding the root causes of deaths of despair.

Keywords

deindustrialization, deaths of despair, health inequality, fundamental cause, psychosocial stress

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Introduction

The rise of populism, the Brexit vote, and the presidency of Donald Trump put the issues of deindustrialization and the working class back into the spotlight. Deindustrialization—the “systematic disinvestment in a nation’s basic productive capacity” (Bluestone and Harrison 1982:6) and the accompanying decline in manufacturing employment—is not just a thing of the past. Global competition, climate change, and robotization will continue to put downward pressure on several types of industrial jobs. A growing literature has argued that workers’ declining life expectancy in deindustrialized, rustbelt areas and the accompanying deepening of health inequalities signal the existential crisis of contemporary capitalism. “Deaths of despair reflect a long-term and slowly unfolding loss of a way of life for the white, less educated, working class” (Case and Deaton 2020:146), in part related to deindustrialization and the “faults of contemporary capitalism” that are “widespread and America is simply the leader of a more general disaster that is already taking root elsewhere” (Case and Deaton 2020:186). Ill health in rustbelt areas feeds back into politics, with health-deprived constituencies more likely to support anti-establishment populism (Koltai et al. 2020; Monnat and Brown 2017).

However, competing explanations question the association between economic dislocation and health inequality. Some argue for the centrality of individual lifestyles, i.e., health behavior. One version of this behavioral argument posits that differences in health behavior are driven by “cognitive ability.” While education “raises cognition, which in turn improves behavior,” poor “factual knowledge ... of the harms of smoking and drinking” has the opposite effect (Cutler and Lleras-Muney 2010:1). Another version of the behavioral thesis concentrates on the price and availability of harmful substances—drugs and alcohol—as the critical determinant of unhealthy lifestyles (Ruhm 2018). This approach has engendered a focus on individual lifestyle and health

behavior choices in public policy (Mackenzie et al. 2017; Oleschuk 2020), with an increased emphasis on “nudging health” (Thaler and Sunstein 2009).

Some claim that deindustrialization facilitates public health, at least in the long term. Assuming that “wealthier is healthier” (Pritchett and Summers 1996), these scholars accept that deindustrialization might generate temporary economic dislocation, but they see this as a process of creative destruction needed to improve well-being (Aghion et al. 2016). Declining economic deprivation and rising income, in turn, lead to better nutrition and health (Dollar 2001). The destruction of old industrial activities also propels workers to search for jobs with a healthier occupational environment, which is also supposed to lead to better health (Loomis et al. 2004; Ostry et al. 2002). This perspective dovetails with policy proposals advocating liberalization, deregulation, and more efficient markets to facilitate growth through creative destruction and thereby solve health problems.¹

This controversy is a challenge and opportunity for sociologists to contribute to public discussion and policy, exploiting the discipline’s roots in analyzing social deaths and the health consequences of industrial change (Durkheim 2002[1897]; Jahoda et al. 1971). We enter into this debate by performing a detailed case-study of an earlier epidemic of deaths of despair that led to overall declining life expectancy—the post-socialist mortality crisis of the early to mid-1990s, representing one of the largest demographic catastrophes seen outside famine or war in recent history (Eberstadt 2010). As Case and Deaton (2020:108) highlight, “it is no exaggeration to compare the long-standing misery of these Eastern Europeans with the wave of despair that is driving suicides, alcohol, and drug abuse among less educated white Americans.” Mirroring the debate on the deaths of despair, existing approaches to the post-socialist mortality crisis dominantly focus on material, life-style, and alcohol availability explanations. Emerging evidence

also suggests a strong association between economic dislocation and mortality. However, the existing research has so far failed to reach a consensus on whether this is actually the case, or on the mechanisms involved.

In response to these challenges, the present article offers two contributions. First, drawing on the thematic analysis of 82 semi-structured interviews in four medium-sized industrial towns in Hungary's rustbelt, we show that the post-socialist mortality crisis is best understood as having a fundamental cause in deindustrialization, which has multiple individual and community effects in the short and long term that exacerbate psychosocial stress and reduce coping mechanisms. Second, following a theory-building process-tracing approach (Beach and Pedersen 2013), building up from the insights offered by Hungary's case, we use extant literature on deindustrialization in the U.S. and Western Europe to show that this model of deindustrialization as a fundamental cause of deaths of despair could be applicable to other cases. Deindustrialization's negative health consequences persist even if economic deprivation abates and knowledge on positive health behavior accumulates. Policies only targeting health behavior and economic deprivation are insufficient unless they focus on deindustrialization as a fundamental cause of the deaths of despair.

The article is structured as follows. The next section presents a brief overview of the competing explanations of post-socialist mortality, pointing out the need for more clarity about the causal mechanisms, which can be best addressed by qualitative research. The article then describes the data and the methodology, with further details presented in the online methodological appendix. The empirical section analyzes the experience of deindustrialization in four towns in Hungary's rustbelt. The discussion section evaluates the competing theoretical propositions about the post-socialist mortality crisis, conceptualizing deindustrialization as a fundamental cause of ill

health. Then, we show that the model derived from our Hungarian case-study is potentially applicable elsewhere by highlighting research that shows analogous processes in deindustrialized areas in the U.S. and Western Europe. Finally, the article concludes with a brief reflection on the policy implications of the results.

The fundamental causes of post-socialist mortality

Although countries of Central and Eastern Europe fared better than the post-Soviet states, some countries in the region—for example, Hungary—experienced a significant increase death rates. Hungarian men’s life expectancy decreased by 1.6 years between 1989 and 1993. In the 1990s, blue-collar workers with less than secondary education had 111% higher odds of dying than those with a college degree, representing a 17% increase compared to the 1980s. Inequality in male mortality between low and highly educated groups continued to grow until the 2000s (Doniec et al. 2018). Middle-aged men (ages 45-59) were hit particularly hard. Driven by growing economic differences, health inequalities across towns also continued to grow throughout the 1990s and 2000s, even as overall life expectancy increased (Scheiring et al. 2018b). In addition to high cancer-related deaths, the leading direct causes of mortality in the 1990s were acute cardiovascular disease, alcohol-related health issues, with drug-related poisoning and accidents also rising rapidly in the anomic post-socialist environment (McKee 2002). Most of these deaths were deaths of despair, concentrated in working-age men.²

In parallel to this deaths of despair epidemic, Hungary also experienced a severe industrial decline, representing one of the more pronounced variants of the global wave of deindustrialization. Manufacturing output and employment fell by 40% cumulatively between 1988-1995 (Laky 2000). Firms were particularly likely to lay off skilled and semi-skilled manual

workers; 60% of companies reported significant labor surplus among them in 1990 (Sziráczki and Windell 1993:14). Deindustrialization in post-socialist Hungary was high by international standards. Severely deindustrialized metropolitan regions in the U.S. lost around 30% of their manufacturing labor force between 1972-1987 (Wallace et al. 1999:115). In Western Europe, the U.K. lost 25% of total manufacturing employment in the 1980s. In West Central Scotland, deindustrialization reached 62% between 1971-2005 (Walsh et al. 2009).

The theoretical approaches identified in the introduction are also reflected in the literature on the post-socialist mortality crisis (Scheiring et al. 2019). Followers of the material approach hypothesized that the destruction of old industrial jobs would wipe out unhealthy work environments (Carlson and Hoffmann 2011), engender an efficiency-based reallocation of resources, which would lead to rapid improvements in welfare (Lipton and Sachs 1992), and health (Carlson and Rychtarikova 1996). Because health did not improve rapidly, proponents of the material approach often revert to health lifestyle as an explanation. Some argue that the survival of “homo sovieticus”—the lack of a health-conscious, educated middle class— undermined people’s capacity to adapt to the new market environment, leading to pervasive unhealthy lifestyles and health problems (Cockerham et al. 2002). Others stressed the importance of the rebound effect after the end of Gorbachev’s anti-alcohol campaign, which resulted in death rates returning to the trend observed in the 1980s before Gorbachev increased the price of alcohol (Bhattacharya et al. 2013).

However, some argue that behavioral risk factors alone cannot explain the sudden increase in mortality during this period (Brainerd and Cutler 2005: 123-124). The magnitude of the mortality crisis suggests that these social determinants go beyond absolute deprivation, encompassing broader segments of society and operating through psychosocial stress (Brainerd

1998; Cornia and Paniccia 1995; Marmot and Bobak 2000). Research has provided clear evidence that stress was a robust predictor of ill health in post-socialist Eastern Europe (Pikhart et al. 2001; Watson 2006).

A stream of studies has identified some of the important upstream, political-economic sources of acute and chronic stress, such as regional-level labor market upheaval (Walberg et al. 1998), income inequality (Marmot and Bobak 2005; Popov 2009), and social disintegration, i.e., anomie and the decline in social and political participation (see Scheiring et al. 2018a). Market-oriented reforms also appear to have contributed to elevated death rates through the psychosocial stress mechanism (Brainerd 1998; Irdam et al. 2015; Mackenbach et al. 2013). Stuckler, King and McKee (2009) found that rapid mass privatization significantly contributed to the loss of life expectancy. Although some questioned this association (Earle and Gehlbach 2010; Gerry 2012; Sachs 2009), subsequent research using a quasi-experimental set-up with matched towns estimating the treatment effect of rapid privatization has confirmed its adverse health effect (Azarova et al. 2017). Research using multi-level data on settlements and individuals in Hungary has also shown that prolonged state ownership was associated with lower mortality among women in the 1990s and 2000s (Scheiring et al. 2018b).

Qualitative research has confirmed that shock-therapy-inspired disintegration wreaked havoc with everyday lifeworlds and working-class communities (Bartha 2013; Burawoy and Verdery 1999; Hann 2002; Kalb 2019). Dunn (2008) highlighted how the collapse of the socialist state's regulatory capacity was an essential factor behind Georgia's botulism epidemic in the 1990s. Pilkington and Sharifullina (2009) documented how exploitative social networks mediate the risk environment of deindustrialization and facilitate drug use in northern Russia. Kideckel (2008) showed how the collapse of working-class culture and the "subalternization" of post-

socialist workers caused mental and physical harm among miners and chemical workers in Romania. Parsons (2014) also demonstrated the negative health consequences of social isolation and the disruption of work identity in Russia in the 1990s: post-socialist workers “died unconnected, unbound, unmoored” (Parsons 2014:24).

However, the existing evidence has not reached a consensus. Many policies were happening at once, across a heterogeneous set of cases, making it very hard to identify causality or even adjudicate different explanations. Even more sophisticated, quasi-experimental designs do not have real data on mechanisms or how variables might interact and cannot be used to map complex causal pathways between upstream determinants and health outcomes. Qualitative studies made significant headways into researching the adverse health effect of community disruption, but much remains unclear about the complex interaction of social and individual pathways of ill health. New qualitative evidence can complement this literature, offering empirically-informed ways to theorize the fundamental causes of the deaths of despair in post-socialist Eastern Europe.

To make sense of the embodied experience of deindustrialization, the article builds on the approach of fundamental causes of health developed by medical sociologists (Freese and Lutfey 2011; Link and Phelan 1995; Phelan et al. 2010) and the psychosocial stress approach (Aneshensel 1992; Thoits 1995). According to Link and Phelan (1995), social class is the most apparent fundamental cause of health inequality, whose negative health effect reproduces health inequality even if information on negative health behavior accumulates. The problem with theories and policies focusing on material wellbeing and health behavior is that they only grasp the downstream, proximate causes behind undesirable health outcomes. However, these are “merely surface, not fundamental, causes” (Daw 2015:1596). Fundamental causes influence the broad contexts in which individuals live and work and the social networks that individuals belong to, shaping the

risk factors and lifestyles to which individuals are exposed (Masters et al. 2012). Addressing a downstream cause without fixing the upstream causes leads to the reproduction of ill health and health inequality. For example, when the manufacturer Purdue Pharmaceutical finally decided to change the formula of OxyContin—a potent opioid pain killer—in response to its widespread abuse, OxyContin abusers simply switched to heroin and fentanyl. Thus, deaths from heroin replaced deaths from prescription drugs, but the overall number of drug-related deaths of despair did not decline; with 90% of overdose deaths happening among workers without a college degree (Case and Deaton 2020:115-20). Changing one downstream behavioral factor did not eliminate the underlying factors associated with social class and economic dislocation that contributed to the demand for drugs.

In this article, we hypothesize that deindustrialization might be such a fundamental cause of ill health, including deaths of despair. Deindustrialization might affect health through multiple channels, influencing individual and collective resources through social and individual pathways. Echoing the long-term mechanisms outlined by Link and Phelan, the negative social consequences of deindustrialization might persist in the long-run, going beyond the most direct individual pathways such as job or income loss, continuing to affect health even decades after plant closings (Nosrati et al. 2018; Strangleman 2017). Even if jobs expand and individuals' income starts to increase as the economic deprivation effect of plant closures abates, and even if knowledge about the negative consequences of smoking or drinking accumulates, deindustrialization may still produce ill health and contribute to health inequality through other social pathways and upstream mechanisms that persist.

Stress is a critical component of the mechanism linking deindustrialization to health. Deindustrialization acts both as an adverse life event (acute stressor)—inflicting short-term

difficulty—and increases chronic stress (Thoits 1995:54), which causes medium- and long-term challenges requiring significant behavioral change. This chronic stress proliferates through life domains, the life course, and across generations (Thoits 2010:45). The accumulation of stressors eventually depletes individuals' physical or psychological coping resources (Thoits 1995:59), negatively affecting psychological health, as well as immune and cardiovascular systems (McEwen and Stellar 1993). Chronic stressors also induce harmful health behavior, such as alcohol (Cooper et al. 1992), and drug abuse (Boardman et al. 2001), or overeating (Torres and Nowson 2007).

Data and methods

Our approach is influenced by the *extended case method* developed by Michael Burawoy. The goal of the extended case method is to “locate everyday life in its extralocal and historical context” (Burawoy 1998:4). Burawoy developed his method in response to other approaches to qualitative research, such grounded theory, which have a tendency to remain contained in their sites, bracketing global and historical processes (Burawoy 2003; Timmermans and Tavory 2012). Like Burawoy, we are interested in finding theoretical ways of seeing the global in the local, “to extract the general from the unique...by building on preexisting theory” (Burawoy 1998). The extended case method involves deconstructing existing theoretical premises that do not fit the data and reconstructing theory to make better sense of the lived experience of the interviewees. We are also inspired by *mechanism-based theorizing* that calls for mid-level theories to map the causal mechanisms linking “invisible,” underlying phenomena to empirical observations (Hedström and Swedberg 1998). Instead of participant observation, we rely on recorded qualitative interviews as the primary source of empirical data. We pay close attention to the careful methodological steps

required to abstract from a single case by revising and integrating existing theories and mapping the causal mechanisms between underlying theoretical constructs and observable phenomena.

More specifically, we apply *theory-building process-tracing*, which seeks to build a midrange theory describing generalizable causal mechanisms,³ without claiming that the detected causal mechanisms provide a full explanation of the outcome (Beach and Pedersen 2013:16). We provide a complex causal narrative about the short-term increase in death rates and the long-term increase in health inequality in Hungary's rustbelt. This causal narrative is partial—it offers insight into neglected mechanisms but does not fully explain the health outcomes. In practical terms, the theory-building process tracing involved reading, deconstructing, and constructing theory in parallel to empirical work. Our initial hypotheses revolved around the health consequences of unemployment, privatization, foreign and domestic ownership. However, analyzing the interviews, the theme of deindustrialization emerged as a more fundamental cause of health outcomes. Further details—including a discussion of the limitations of the methodological strategy—are provided in the online methodological appendix.

Fieldwork

The qualitative fieldwork formed part of the Hungarian arm of the Privatization and Mortality (PrivMort) project, an indirect demographic, retrospective multi-country cohort study studying the health effect of the post-socialist economic transformation (Irdam et al. 2016; Scheiring et al. 2020). The rationale of the semi-structured interviews was to extend the quantitative multilevel modeling, with in-depth insight into the mechanisms linking the lived experience of privatization and industrial change to population health.

Four former socialist industrial towns in Hungary were identified based on their economic profiles, as shown in Figure 1: Ajka, Dunaújváros, Salgótarján, Szerencs. All of these towns

experienced varied privatization strategies (dominant foreign, dominant domestic, prolonged state ownership), as well as significant deindustrialization exceeding a 25% decline in the manufacturing workforce. Two of the towns (Salgótarján, Szerencs) stood out with a severe manufacturing collapse exceeding 50%. These four towns represent typical medium-sized rustbelt towns; 30% of Hungarians live in such medium-sized towns. We do not suggest that the four towns represent the national experience with the transformation, but they exemplify significant deindustrialization scenarios.

Figure 1 about here

With the help of six research assistants, 82 semi-structured interviews were conducted with workers in these four towns between September 2016 and January 2017. We used snowball sampling. The first eight interviewees were identified through the authors' networks through local trade unions and civic associations. The interviewees were asked to recommend further interviewees at the end of the interviews. Occasionally, interviewees were also randomly asked on markets in the towns to participate in an interview later in their homes. Thus, the overwhelming majority of the interviewees are from outside of the initial networks. We selected interviewees to have a reasonable variation in individuals' demographic, health, political and economic characteristics and to be able to compare their experiences before and after the transition. Accordingly, those born in the 1980s or later were excluded.

The majority of the respondents were semi-skilled and skilled manual workers; we did not conduct interviews with farmers, high-level managers, or technicians. Interview quotes indicate the most typical job that interviewees held around the onset of plant closures in the early 1990s. Table 1 provides an overview of the interviewees' demographic characteristics. Half of the interviewees (40 people) experienced unemployment at some point between 1989 and 2017, 21

interviewees were directly laid off due to plant closure, 19 were laid off without or before plant closure. Seventeen interviewees reached retirement age at their company, and a further seven interviewees could retire early.

Table 1 about here

The interviews were based on a semi-structured questionnaire (see online appendix). The questions included basic demographic and labor market characteristics and open-ended questions about the lived experience of economic change (family life histories, health status, perceptions about the towns' recent economic history, perceptions about the broader society). Interviewees talked about their own experience and the health of close relatives, including deceased ones. Interviews lasted 120 minutes on average. The total corpus of the 82 interviews is 816,118 words long, encompassing 2000 typed pages in Hungarian (available from authors upon request).

Analysis

The resulting interviews were explored through a recursive, iterative thematic analysis process (Braun and Clarke 2006) using NVivo 12. First, we randomly selected ten interviews and read them carefully to understand the inner context of the texts and map emerging themes. Second, after reading all of the interviews, they were coded for labor market, demographic, and vital information, which was recorded in spreadsheets. In the third wave, the interviews were coded for health and mental health-related themes. In the fourth round, the interviews were thoroughly read again and coded for socioeconomic themes. Initially, we were particularly interested in the lived experience of unemployment, privatization, and foreign investment. However, reading the interviews made it clear that social processes related to deindustrialization were more vital than we suspected.

In parallel to coding the interviews, we also processed the literature that seemed relevant to the emerging themes. We used insights from the existing literature to “re-case” themes that emerged from the interviews. We also carried out several rounds of text searches looking for frequently used words and their synonyms to further the consistency and reliability of the coding. Finally, to rule out cherry-picking, we identified the thematic frequencies of coded texts (number of theme nodes and number of interviewees referring to the theme). We identified the weight of each theme as the percentage of interviewees referring to the theme (the percentages are not mutually exclusive).

To provide an overview of how workers talk about health, economic change and deindustrialization, we analyzed the frequency of words in the parts of the interview corpus that revolve around the theme of health. After eliminating filler words (such as connectives, prepositions, pronouns), unified concepts were created for words that have a similar meaning. The occurrence of each condensed concept was then counted using NVivo.

Results

The context of health and lifestyle

To ascertain what might influence health and lifestyle, first, we looked at how interviewees talk about health. Figure 2 presents the most frequently used 80 words in the sections of the interviews that revolve around health (a word frequency table is presented in the methodological appendix; see Table A3). The figure shows that the meanings that interviewees associate with health are not produced in a social vacuum. Interviewees’ labor market experiences provide the narrower context, while national and town-level socio-economic processes provide the broader context.

Figure 2 about here

Health and mental health themes often occur in parallel, with several interviewees interpreting physical illnesses through the lens of stress and depression. Besides words such as illness, feelings, trouble, home, or died, interviewees also often use words concerning the labor market, such as work, worker, boss, job, jobless, fired, nightshift, or pension. Mental health-related words are quite frequent, like hurts, stress, trauma, shame, desperate, nervous, humiliating, or horrible. When interviewees talk about health, they also frequently talk about the companies and the broader economic background, as revealed by the frequent use of expressions like regime change, state, privatization, shutdown, or factory. This overview suggests that the experience of economic dislocation influences health and lifestyle.

To further entangle how the lived experience of economic dislocation might influence health, we created theoretically-relevant codes derived from the interview data. Table 2 provides an overview of the thematic map of the interviews, indicating the frequency of interviewees talking about the specific theme. Because the interviews were based on open-ended questions, not all interviewees talked about the same topics; the emerging topics reflect a degree of spontaneity. Thus, these frequencies are not a representative survey, but they indicate that the topics and the quotes below are not cherry-picked.

Table 2 about here

Concerning health lifestyles, 7% of the interviewees talked about how working-class culture was associated with drinking. This suggests that the behavioral argument is relevant for understanding the post-socialist deaths of despair epidemic. However, we found little evidence for the overwhelming weight of the socialist drinking culture. A significant proportion (15%) of the interviewees—both occasional and regular drinkers—mentioned having access to home-made

palinka (a spirit distilled from fruits) or wine, making it less likely that the price of alcohol would have a significant effect on their drinking habits.⁴ Several interviewees (7%) also directly mentioned stress as a crucial environmental factor behind their drinking habits:

Workers used to have a good life. They earned their living with hard work.

They could have their kids educated, and many people saw this as the ultimate goal. People could handle life better. In the 1990s, this changed completely. I saw drugs and alcoholism increasing among desperate people. They did not have money for bread but found ways to buy booze.

(Skilled worker, Coal Mine, Ajka)

Though some interviewees readily link health and health behavior to social factors, most often, the underlying stressors have to be teased out indirectly. The most significant health-related theme that emerged from the interviews again underpins the relevance of psychosocial stress as a mechanism: 50% of the interviewees mentioned feeling some form of depression, which might include emotional distress in the context of lay discourses. The reference to stress is also common (35%). Concerning physical health problems, the diseases of the circulatory system stand out (28%), which is also often related to psychosocial stress.

Figure 3 about here

Figure 3 presents an overview of our six-mechanism model of how deindustrialization causes ill health and dangerous health behaviors, indicating individual (continuous lines) and social pathways (dashed lines) of impact. We identified six mechanisms that operate by interacting with stress, coping, and health behavior: (1) economic deprivation (unemployment, income loss, indebtedness), (2) work-related pressures (work-load, precarity), (3) the disruption of social identities (work, place, gender identities), (4) social inequalities (income, racial and power

inequalities), (5) the disruption of community services (health, culture, sports services), (6) the destruction of community ties (informal social support, social capital). These mechanisms produce psychosocial stress and reduce coping resources, while the accumulated experience of being unable to cope with stress produces despair in the long run (defined by powerlessness and loss of hope). Psychosocial stress, lack of coping resources, and despair co-cause dangerous health behaviors, ill health, and ultimately deaths of despair.

Among these components, health behavior and economic deprivation might be considered downstream causes in the fundamental cause framework. These are proximate causes that tend to operate already in the short term and are often targeted by policy. At the other end of the scale, i.e., the mechanisms that operate in the longest period, we find the disruption of social identities, the destruction of community ties, and desperation, which arises over a more extended period as individuals repeatedly experience the inability to cope with stressful change. Work-related pressures and social inequalities emerge in the medium term but might also have long-term health consequences. Together, these might be considered upstream causes.

(1) Economic deprivation

Late socialism in Hungary was a welfare dictatorship based on a redistributive mixed economy (Szelényi 1991), which allowed for a stable, predictable environment, the fulfilment of basic needs, and low inequalities (Hann 2019). Although many interviewees complained without prompting about economic inefficiencies and political repression, everyday lives were more profoundly influenced by the experience of permanent employment, low inequality, and the security of housing, which provided for a solid material base of life. Macro problems associated with state-socialist economies, such as slow technological advancement, were not experienced at the level of individual lives as threatening or problematic.

Although 37% of interviewees recalled having high expectations of the transition to capitalism, it turned out to be a negative experience for the majority. A large part (44%) of the interviewees talked about the devastating experience of mass plant closures, which directly or indirectly affected their lives. Ten interviewees talked about personally experiencing severe financial difficulty. However, the issue of indebtedness stood out (43%). A low salary often leads to unsustainable debts. Interviewees often talk about indebtedness in a generational context: while older interviewees could secure their housing during socialism before 1990, following the complete privatization of public housing, younger interviewees had to take out unsustainably high loans to buy a house, with their parents supporting them. An interviewee talked about how she felt ashamed that her mother helps her out with paying back the loans: “my mother has a good pension; however, it is a shame that my retired mother supports me” (Office assistant, Szerencs, School).

As plants were closed down, the loss of jobs or the fear of job loss became permanent features of everyday lives, as discussed by 16% of the interviewees. A widowed wife reports a typical trajectory consisting of job loss, stress, and alcoholism:

You know, this came with the regime change. Many families experienced the same story as us. My man was good at his job. Then he was fired. You know, when he lost his job, he could not handle it. He was totally beaten mentally. He drove himself into the ground. He drank, then his ulcer perforated. (Middle manager, Szerencs, State Food Cooperative)

Interviewees frequently talk about the shame of unemployment. A former clerk at the Dunaújváros Steelworks felt that being fired only one year before retirement after a life of hard work to save her boss’s relative from getting fired was a grave injustice. She started to cry again when recollecting her memories:

I felt stumped, trumped upon; they humiliated me so much. When you feel like you could retire with dignity after forty years of hard work, and I couldn't just get over it. I had to attend these sessions. And I was angry at the world for a very long time. Angry at people. I didn't really speak to anyone at that time. I felt violated. I felt stigmatized. (Clerk, Steelworks, Dunaújváros)

Some interviewees also talked about acquaintances having committed suicide in response to the shame and mental distress caused by unemployment:

I worked there as a security guard for two and a half years in the 1990s. During those years, many people were fired. Four of them committed suicide at home. They hanged themselves after they were fired. (Skilled manual worker, Steelworks, Salgótarján)

(2) Work-related pressures

Keeping one's job was no guarantee of better health. 20% of the interviewees talked openly about their experience that the jobs that emerged parallel to deindustrialization were more precarious, with less predictable rhythm and more stress. A former skilled worker, who left his company during its downsizing and has started to work as a self-employed entrepreneur (his business was still operating at the time of the interview), said the following:

Before the regime change, life was much better (laughs). We could have a rest. You knew you had a safe job, secure income, a way to make a living. You knew you could go on holiday; you could raise your kids. You weren't indebted. You could live a decent normal life. You were healthy; you were

not stressed. Nowadays, we're under huge stress. I can hardly get any sleep these days. (Skilled manual worker, Alumina Factory, Ajka)

32% of the interviewees referred to a feeling of vulnerability, feeling unsafe as their life seems to be unpredictable: "When you know a certain bad thing, it's better, but the uncertainty, that's the worst" (Unskilled worker, Ajka, Coal Mine). A worker at a telecommunications company complained about the destabilization of his work routine:

We had a system for everything, for instance, eating. Almost everybody ate at the same time, together. Then the company closed down this department. Then at the new job, we had no regular meals anymore. I usually drove and worked hundreds of kilometers like this. I missed the community, to have a hot meal together, or a good breakfast. I did not feel healthy. So, I went to the doctor. It turned out I had this problem, rectal cancer. (Skilled manual worker, Salgótarján, National Post Telecommunications Division)

A significant share (27%) of the interviewees talked about unfair treatment and exploitation. Some also complained about the lack of fringe benefits or health insurance as they were forced to work undocumented:

There was this small company I was working for, and I thought I was, you know, working legally, registered. And you know, they sort of forgot to pay my health insurance. And I got pneumonia, and I went to the doctor, and the dear doctor tells me: "what should I do with you now, how should I assign you to sick leave?" He tells me I don't have health insurance. And

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I was like: “whaaat, that cannot be true, what the hell?” (Skilled worker, Ajka, Alumina Factory)

Increased work intensity also gets under the skin by increasing chronic stress, as discussed by 35% of the interviewees. Deindustrialization wiped out jobs, leading to a chronic oversupply of labor, which propels interviewees to work harder and tolerate unfair treatment, overwork, and precariousness. Overwork under increasingly unpredictable circumstances is a frequently cited reason for stress:

My husband also used to work as a truck driver for a private company. I don't want to name which one. The entrepreneur found all kinds of reasons to reduce their salary even below the minimum wage. And they made them drive 300 hours a month. And if you say no, they fire you and hire another one willing to work that much. This leads to all kinds of health problems. People working that much for so little, they can't get regenerate. (Skilled worker, Hospital, Ajka)

(3) *Social identity*

Socialism, especially in the regional industrial strongholds, resulted in a complex industrial lifeworld with the working class at its core, leading to strong work, class, and place identities. Socialist companies were mostly large, integrated companies with a well-recognized brand, which imbued industrial towns with a strong sense of place, local pride. “We were Steelworks employees; this used to mean a lot” (Middle manager, Steelworks, Dunaújváros). “The working class in Szerencs, the people who used to work in the Sugar Factory, were gentlemen” (Clerk, OTP Bank, Szerencs).

Deindustrialization and deaths of despair

Deindustrialization disrupted these place identities (22%). For example, the town of Szerencs identified itself as the town of sugar and chocolate. When Nestle restructured its companies globally, it stopped chocolate production in Szerencs, which hurt interviewees' pride, "you know what they left here, they left here the production of dog food" (Clerk, OTP Bank, Szerencs).

Interviewees recalled the closure of the sugar factory in Szerencs as a profoundly traumatic event, with words reflecting the embodied pain of jobless workers: "When they shut down the plant it was like if someone cut my neck artery" (Foreman, Sugar Factory, Szerencs). People recalled the plants' closure in other towns with the same vivid, often biological imaginary, referring to illness or dying. Deindustrialization also drives away young people, leading to a profound depopulation, with 25% of the interviewees talking about the distressing experience of shrinkage. As the towns shrink and young people leave, those who stay behind are enmeshed in a feeling of abandonment and spatial traumatization:

Children were playing here; kids used to play football or hide and seek.

You could hear the children playing. Now there is only silence. (Skilled worker, Steelworks, Salgótarján)

The main street used to be a lively place, full of people. Now it's empty.

Shop windows are boarded up. This town is dead. It's totally dead.

It's sterile like a moonscape. (Clerk, OTP Bank, Szerencs)

26% of workers reported positive work identity in the past but increased difficulties with attaining a positive identity through work after the regime change. Men were particularly vulnerable against the weakening or loss of work identity. A widowed interviewee (Middle manager, Szerencs, State Food Cooperative) recalled crying that, for some time, she was able to

make more money than her precariously employed husband, but she did not tell him not to hurt him.

The lived experience of deindustrialization was tightly interwoven with the loss of working-class culture. Being a member of an organized working class allowed for a sense of freedom, paradoxically, even in an authoritarian regime:

If there were such a working class today, I would be happy to join it. It was great to be in the workers' movement. You were freer. This is still in our hearts. And now, I think it does not exist anymore. This free social movement does not exist. (Skilled manual worker, Salgótarján, Power Plant)

Many interviewees also connected the increased competition for jobs with the weakness of the working class. An overwhelming majority, 72% of the interviewees, thought that the working class disintegrated, class as a collective identity ceased to exist: "There is a working class, as I am part of it. However, we do not call it the working class anymore" (Skilled manual worker, Steelworks, Dunaújváros).

(4) Social inequality

The way interviewees talk about inequalities significantly differs from the scholarly discussion of the topic: no one mentioned the word "inequality." However, in their own words, interviewees describe a devastating experience of growing disparities. Deindustrialization and the transition from socialism to capitalism represented new hardships and insecurities for the majority, identifying former industrial and agricultural workers as the victims. 38% talked about the victims emphatically, often in the first-person plural. Frequently, interviewees talk about the Roma as victims, who had the opportunity to work before the regime change but were laid off with the mass

plant closures. However, some interviewees blamed the victims for their lot. This is especially true in the case of the Roma, as interviewees try to distance themselves from the ethnicized underclass. Only three interviewees talked positively about the new economic opportunities and the potential to get rich. Some mentioned finding well-paying jobs due to their willingness to educate themselves. Interviewees were divided about foreign investors; an equal share (35%) saw them positively and negatively.

A significant share (27%) talked about the new rich negatively, mostly in the context of plant closures and privatization. As workers were laid off, former managers amassed personal wealth as Hungary's new bourgeoisie was created. Stories of dispossession, theft, "economic colonization" by foreign investors, and irresponsible management are frequent topics concerning downsized companies' fates. Most interviewees see these growing inequalities as deeply unjust:

Those who were making the decisions, the inner circle, those in the right place at the right time, won with the transition. I couldn't have bought the machines I was working with. Those valuable machines. They could, for nothing. This was deeply unjust. (Skilled manual worker, Steelworks, Salgótarján)

Interviewees compared their situation with the fate of newly forged elites, whom they saw as emerging from their former bosses' ranks. Under socialism, inequalities were low, cultural and material differences between workers and supervisors were moderate. The lack of inability to keep up with expected living standards exerted intense pressure on interviewees' self-worth, representing a chronic stress source. Several interviewees associate sliding downwards with shame.

Some also associate these financial inequalities with political inequality. The weakness of trade unions, the dissolution of working-class communities, and the sense of losing control over political processes are intertwined:

Even if they have rights, they have no money to pay for the court, have no money to hang on when they are dismissed. Who has money has rights. So, you cannot enforce your rights. (Skilled manual worker, Ajka, Alumina Factory)

(5) Community services

Running parallel to the individual narratives of loss are the wounds that communities suffer, diminishing collective resources, such as community services. Companies' community services included holidays, housing, schooling, training, sports, cultural services, and factory doctors. Companies and trade unions owned outlets at beloved recreational spots in the country that people could visit each year free or for a greatly subsidized price. Everyone was covered by social insurance; thus, people could go on sick leave if they were ill. Town-level sports and cultural services were connected to the companies, and deindustrialization killed local sports and cultural life:

There was a separate community house, the Bányász Culture Home. I had a season ticket to the Petőfi Theatre. The firm subsidized the season ticket; we went for 10-11 years, every season. There was significant sports activity, the Ajka Miner Sports Club, with three football pitches. The Glass Factory also had a sports facility, and there was the so-called Aluminum Sports Club. These were fierce competitors. Can you imagine a match between them in the town? (Miner, Coal Mine, Ajka)

One-third of the interviewees described it as a painful experience that as companies were shut down or privatized, these services were eliminated:

We could do sports, participate in cultural events. Compared to how much we made, we could go on excursions, on holiday. And now that the world has expanded, I cannot feel it now because I have not many opportunities here. (Middle manager, Szerencs, Sugar Factory)

Four interviewees also cited factory doctors as essential checks on their health. As factory doctors were dismissed and labor market precarity increased, some interviewees reported to have less chance to meet a doctor:

Back in those days, there was the factory doctor. We visited him every year. Nowadays, there is no factory doctor. I don't dare to go to the G.P. I don't dare to go on sick pay, you know, not to get fired. (Skilled worker, Aluminum Factory, Ajka)

Interviewees often talk about the closure of these services as part of community degradation and urban shrinkage. The loss of vibrant cultural and sports life is a sign of abandonment, of being left behind in a disadvantaged region: “We were abandoned. This region was abandoned, they don't care about us” (Unskilled worker, Power plant, Salgótarján).

(6) The destruction of communities

Communities—social capital—represent another crucial form of collective resources. A large share, 41% of interviewees reported positive associations regarding communities at the companies they used to work for. Interviewees often described the companies or their smaller collectives as families, where people could trust each other and count on each other. “*Kaláka*” is a Hungarian expression referring to voluntary self-help among friends and acquaintances, who

would typically help each other building their homes (mentioned by 15%). These company-based communities were spontaneous circles of friends, but the socialist state facilitated them through various feasts, cultural events, and community activities through the socialist brigades' movement⁵ (28% talked about the brigades positively). People joined these brigades, organized holidays and company competitions, and renovated schools.

Working-class communities were not always beneficial for individuals. Some also reported that strong bonds among workers also facilitated the culture of drinking: "People working with hot steel, they get thirsty, and there were lots of pubs to visit" (Skilled manual worker, Steelworks, Dunaújváros). However, for most interviewees, the communities that evolved around companies played an important role in psychological health, identity formation, and material benefit. The most apparent material benefit of these communal ties was that they facilitated job search during the post-socialist transformation. 30% of the interviewees mentioned community ties as the most critical coping resource amidst labor market turmoil; connections emerged as essential assets in an increasingly informalized economy: "Today, connections are of enormous value, not just in this town, but in the whole world" (skilled worker, Steelworks, Dunaújváros).

Thus, for most interviewees, the loss of communities was a traumatic process. The closure of companies weakened workplace communities by increasing hostilities as the competition got fiercer for increasingly scarce resources such as jobs. The fear of joblessness had a long-term impact on the moral fabric of communities:

These conflicts, they had an impact on people. This turned people against each other. The thing that you should get fired, I don't want to get fired. I don't want my family to be insecure. It's your family that should be

insecure, not mine. So, in a sense, this was a fight for survival. (Foreman, Sugar Factory, Szerencs)

Changing moral narratives about worthiness also facilitated alienation. Traditional work and class identities lost their grip, and a new consumer culture emerged, and many subjects report that the race for accumulating consumer goods turned people against each other. This does not necessarily mean that people disliked the new consumer culture, but it means that consumerism facilitated the breakup of communities:

This race, this drive to prove you're more worthy, this impacted communities. I was also like this. I felt better. I felt more than others because I was among the first couple of people in Szerencs to buy a VHS recorder. (Skilled worker, Sugar Factory, Szerencs)

A third frequently mentioned cause of the destruction of communities was self-induced social isolation. Interviewees, who lost their job were alienated from their friends because of their perception of low self-worth. One of the interviewees talked about how social isolation gradually engulfed her as the shame of unemployment drove her away from meeting friends:

It didn't matter that I had lots of friends and acquaintances, I told several of them and asked for help, but I felt it didn't work out. So, I left it. And then after some time, I didn't tell anyone. I didn't want to embarrass anyone. I just avoided them. (Middle manager, Sugar Factory, Szerencs)

Finally, the precarity of labor relations that arose with deindustrialization also severely strain the closest communities, i.e., families. Several interviewees revealed that financial problems directly led to animosity within the family:

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We had a perfect marriage, indeed. And when one tries to give the same as they were used to give, and cannot manage, people start having disagreements. Then, one only sees from the inside that this has to be ended because otherwise, it will not end well. (Skilled worker, Ajka, Coal Mine)

Despair

Despair is not a separate upstream mechanism in our model, but a long-term consequence of the interaction of stress and reduced coping, which are driven by the upstream mechanism. As consecutive experiences of uncontrollable vulnerability, insecurity and injustice accumulate, as interviewees repeatedly perceive being unable to cope with stressful change, hopelessness engulfs them: “I don’t want anyone to feel like this. The shame, the troubles, the bills, the powerlessness. I couldn’t sleep. It’s horrible” (Clerk, State Food Cooperative, Salgótarján). Many interviewees said that things did not get better for them over the years. Although the worse phase of deindustrialization was over by the end of the 1990s, life did not get better: “In the 1990s we were hopeful, but it did not change, and then from around 2005 it is just going down again” (Clerk, Primary School, Szerencs). 27% of the interviewees lost hope a decade after mass plant closings.

This despair covers interviewees’ personal lives and the lives of their communities and society in general. Many interviewees reported that they feel themselves at the whim of forces beyond their control, which fuels anger and frustration. Although the sample contained interviewees with higher than average social capital, only 5% of the interviewees said they felt they could influence social change through influencing local or national politics. 43% of the interviewees explicitly reported having no control over society’s fate in general. 17% felt the elites abandoned them. As a former pharmacy clerk put it, “freedom is like they took off the dog’s chains, but the dog hasn’t got any food to eat.”

Others also connect their despair to the overall situation of the country, which makes it even more challenging to cope with difficulties, even three decades after the start of regime change and two decades after the majority of mines and industrial plants were closed down:

When you have a democracy, you have to make sacrifices. And we made sacrifices. The problem is that we still keep on only making sacrifices. We're still sliding downwards. You could try to endure this with willpower, but I think that's not fair, this is not OK, and it won't get any better. (Former miner and security guard, Coal Mine, Ajka)

Discussion

Deaths of despair in Hungary's rustbelt

The interviews analyzed in this article suggest that deindustrialization is a fundamental cause of ill health, associated with the temporary drop in male workers' life expectancy in the first half of the 1990s and the growing health inequalities after that. These findings imply that scholarly research concerning deindustrialization needs to change. Research needs to pay more attention to the less-direct but still important individual pathways (work-related pressures, and the disruption of identities) and social pathways (the dislocation of communities, community services, the increase in inequality) and chronic psychosocial stress that proliferates through life domains and generations. The interviews analyzed here show that deindustrialization does not directly lead to higher welfare through more efficient use of resources, and neither does foreign investment offset its negative consequences, in line with existing research (Scheiring et al. 2018b). The interviews also revealed that unemployment and falling incomes represent a health risk primarily not because of absolute material deprivation but because of the shame and stress associated with them. The

interviews also suggest that negative health behavior is not merely inherited as part of a path-dependent cultural legacy and is not confined to “uneducated” workers with “limited cognitive capacities.” Drug and alcohol abuse worsened with macroeconomic disruption and also affected relatively well-off, relatively more educated interviewees. The interviewees connected health and health behavior to the social environment.

Based on the fundamental cause approach, we might think of economic deprivation and health behavior as downstream, short-term causes. The long-lasting negative health consequences of deindustrialization cannot be understood by solely focusing on these surface mechanisms. The interviews revealed several additional processes crucial for workers’ health in rustbelt areas. Based on fundamental cause theory, these processes might be conceptualized as upstream causes or “metamechanisms” (Luthey and Freese 2005), which contribute to the medium-and long-term reproduction of relatively worse health in deindustrialized areas even as overall wellbeing improves. The interviews revealed that work-related pressures—the increased workload, the unpredictability of the future, the increasing precariousness of employment, and the destabilization of working time—are crucial stress sources. The interviews also revealed the importance of the disruption of social identities. As deindustrialization wipes out employment opportunities in manufacturing, it becomes increasingly difficult to gain recognition through hard work. This has a significantly negative, gender-specific effect on working class men. Deindustrialization also violates spatial identity, the sense of place. Shrining rustbelt towns evoke a sense of loss, depression, spatial stigma, and trauma. The loss of working-class culture and identity has also been associated with the rise of nationalism in rustbelt towns (Scheiring 2020).

Growing social inequalities were perceived as unjust, while downward mobility and relative deprivation were often associated with shame. Some non-Roma interviewees were open

to an ethnicized view of poverty, blaming the Roma for their fate, which exacerbates the negative consequences of the growing ethnic divide in employment.⁶ These social inequalities are stressful for the individual, lead to unequal access to coping resources, and increase political inequality. The interviews also showed the profound importance of the *collapse of community services*. The loss of sports, cultural, holiday services, and the increasing difficulty of visiting company doctors reduce people's coping resources. The mass closure of industrial plants also leads to the destruction of communities when the intensified competition in the labor market increases hostilities in families and broader communities. Finally, the persistent presence of social stressors associated with deindustrialization and the interviewees' diminishing ability to cope with them fuels despair. This desperation puts additional strain on the ability to cope with stressful change and exacerbates health inequalities.

Some of these processes are specific to post-socialist countries. Deindustrialization unfolded as part of the transition from socialism to capitalism. Respondents found the "plundering" of privatized companies outrageous, hurting their moral self-conceptions. Corruption is not a post-socialist issue, but privatization opened up the way to a condensed experience of it. This experience is analogous to the transition from organized capitalism to neoliberal capitalism in the U.S., with "corporate raiders" also perceived by workers as hostile, irresponsible managers (Bluestone and Harrison 1982). Company-based services were also a particular feature of socialist economies, including health care, childcare, holiday facilities, cultural and recreational services, or company housing (Schmidt and Ritter 2013:47-50). However, deindustrialization is also associated with the loss of community services in Western rustbelts, through a loss of union services, and through a decline in the tax base of cities.

The collapse of state socialism also led to a particularly violent form of ideological and symbolic displacement of workers (Kalb 2019; Kideckel 2008; Ost 2000; Scheiring 2020; Stenning 2005). The rise of neoliberal consumer culture contributed to the loss of working-class solidarity. This process started in the 1980s, under Hungary's consumption-oriented "goulash socialism" (Fehérváry 2013). However, this symbolic denigration differs from similar processes in the West only in its intensity, not qualitatively (Lamont 2019). Finally, while Roma communities are concentrated in rural small towns in Hungary, Black communities tend to be concentrated in inner-city neighborhoods in the U.S. However, the impact of the first wave of deindustrialization that disproportionately hit the Roma and Blacks is on the whole quite similar (Wilson 1990). As a consequence of deindustrialization, spatial and ethnic/racial inequalities became intertwined both in Hungary and in the U.S., catalyzing racial segregation.

It is also important to note that the deindustrialization of Eastern European economies is not a unique historical event and cannot be explained away by the inefficiencies of the bloated socialist industries. Although researchers often portray emerging economies as on the "receiving end" of deindustrialization in advanced countries (Kollmeyer 2009), manufacturing employment has also started to decline in emerging economies around the world (Brady et al. 2011), just like in advanced economies. Trade liberalization, the collapse of internal demand, and the draconian bankruptcy law in Hungary played an essential role behind the excessive destruction of domestic industrial capacities (Amsden et al. 1994). The interaction of these policy mistakes and global integration echoes the experience of premature deindustrialization in other emerging economies (Rodrik 2016).

Deindustrialization as a fundamental cause of deaths of despair

The existing quantitative (Nosrati et al. 2018; Walsh et al. 2009) and qualitative (Mackenzie et al. 2017; McIvor 2019) research on deindustrialization in Western Europe and the U.S. revealed similarly complex causal mechanisms as found in Hungary. These include increased psychosocial stress, disrupted identities, and loss of social cohesion and communities. Echoing the interviewees' experience, existing research also showed that deindustrialization and the shift to neoliberal capitalism are conjoined, and their health effect is intertwined (Collins and McCartney 2011). Thus, the synthetic six-mechanisms framework developed in this article might be applied to other cases also, taking into account the cultural, economic, and institutional specificities.

Economic deprivation (1) is the most immediate effect of deindustrialization, experienced by individuals and their families affected by industrial plant closures within a few months. However, economic deprivation also has medium- and long-term repercussions. Demand in the service sector cannot easily replace the rapid decline of labor demand in manufacturing because most skills acquired in manufacturing “travel very poorly to service occupations” (Iversen and Cusack 2011:326). Thus, deindustrialization is a leading cause of protracted unemployment (Kollmeyer and Pichler 2013) and poverty (Brady and Wallace 2001). The adverse health effect of unemployment is well established (see the review by Anderson and Winefield 2011). Sudden loss of income creates multiple new stresses, such as family instability, increased food insecurity, difficulties with paying the mortgage, rent, or utilities, negatively affecting health (Pedulla and Newman 2011; Sherman 2013). These processes can result in greater criminal activity and the “criminalization of poverty,” which increases incarceration, further exacerbating the negative health consequences of deindustrialization (Nosrati et al. 2018; Wildeman 2012). The negative

health consequences of economic deprivation proliferate through the lifecycle (Willson et al. 2007) and through generations, as mothers' unemployment during pregnancy correlates with lower birthweights (Scharber 2014).

The literature also confirms interviewees' experience that deindustrialization increases various forms of *work-related pressures* (2) by shifting risks from companies onto workers (Iversen and Cusack 2011). Like economic deprivation, this mechanism opens up very quickly in the course of deindustrialization but can have medium and long-term repercussions too. Even those who remain in employment often have to move into less desirable, more casual, non-unionized work, such as low-paid service jobs. Precarious employment (Quinlan et al. 2001) and instability in work time schedules correlate with ill health (Schneider and Harknett 2019). Manufacturing jobs were often unionized jobs, service sector jobs are less so, leading to de-unionization (Lee 2005). Higher unionization is associated with better health (Reynolds and Brady 2012). De-unionization is associated with increased working poverty, the erosion of fringe benefits, and the destabilization of work arrangements (Brady et al. 2013).

The experience of the *disruption of social identities* (3), such as class, work, gender, and place-based identities, also has backing in the literature. *Work identity* is central to workers' self-conception: they derive a positive sense of self from disciplined, hard industrial work (Lamont 2000). Deindustrialization erodes the possibility to attain identity through hard industrial work, while neoliberalism increases the symbolic value society puts on material success, leading to a crisis of self-worth among workers (Lamont 2019), contributing to social isolation, lower self-esteem, depression, and other mental health problems (Charlesworth et al. 2004). Low self-esteem can also decrease the willingness to utilize the available social safety net (Sherman 2013). Work

and *gender identity* are often deeply intertwined, especially for working-class men, who internalize the demands of the role of the breadwinner (Komarovsky 2004[1971]).

Class identity has an ambivalent association with health. Class identities forged in manufacturing and mining often entailed a neglect of industrial hazards, health problems, and pollution (Cockerham et al. 2002; Lewin 2019). However, this argument overlooks the fact that working-class culture has also contributed to social integration and socialization; it provided identity, helping individuals cope with shame and stressful economic change (MacKenzie et al. 2006; Peacock et al. 2013). Neoliberal deindustrialization weakens working-class identity, symbolically devaluing, often stigmatizing manufacturing workers, denigrating industrial victims of neoliberalism as “culturally lacking” (Lamont 2019).

The extant literature has also demonstrated that deindustrialization injures people’s sense of *place-based identity*. Manufacturing companies lend a special status to local communities, imbuing the sites of production with pride. The closure of manufacturing capacities can erode this local pride, leading to a sense of abandonment, a feeling of being left behind (Popay et al. 2003). People in stigmatized, deprived areas often retreat from the public realm into the private sphere (Garthwaite 2019); they seem to have more mental health problems and suffer from decreased coping capacity (Ross 2000; Thomas 2016).

One of the most well-documented aspects of the deindustrialization-health association is the role of *social inequalities* (4), i.e., income disparities across class and race, and political inequalities, which might increase ill health over a few years (medium-term) or longer. The industrial sector typically offers higher wages than the service sector, where wages are lower and more unequal. Deindustrialization is associated with rising *income inequality* because it entails the movement of workers from industry to services (Alderson and Nielsen 2002; Moller et al. 2009).

Industrial jobs were essential for the upward social mobility of young members of the working-class (Maas and van Leeuwen 2016); thus, deindustrialization increases long-term inequality by closing a crucial upward mobility channel. De-unionization, associated with deindustrialization, also increases inequality along class and racial lines (Rosenfeld and Kleykamp 2012). *Class, racial and ethnic inequalities* are intertwined, worsening health inequalities between racial/ethnic groups. It is widely acknowledged that social inequalities are a robust predictor of worse physical and mental health through increasing distress, chronic stress, and reducing access to collective coping resources (Wilkinson and Pickett 2020).

Deindustrialization also polarizes the labor market spatially, engendering *geographical inequality*, often leading to regional lock-in and political neglect of left-behind areas (Lord and Price 1992; McQuarrie 2017). By furthering de-unionization, the loss of collective resources, social polarization, and increasing labor market competition, deindustrialization also increases *political inequality*. People's capacity to influence political decision-making is essential for improving access to health care (Bloor 2002; Friedman and Mottiar 2005). Consequently, the decline of such democratic political capacities might be associated with worse health outcomes. The collapse of political capacities might also intensify racial discrimination or segregation, as happened in Hungary (Schafft and Brown 2014).

The extant literature also shows that deindustrialization might *disrupt community services* (5). Community services play a crucial role in aiding individuals to cope with stressful changes (Thoits 2010). Deindustrialization seems to be one of the crucial factors behind the decline of health insurance coverage in the U.S., as service sector jobs are less unionized and more precarious (Renner and Navarro 1989). Companies provide some of these services directly, and they contribute to others through taxation. These effects were even more operative in socialist

companies, which provided a host of community services. However, industrial companies typically provided more fringe benefits and community services also in the industrial areas of the West compared to precarious service-sector jobs (Licht 1998). The destruction of these services compounds the stress effect of deindustrialization.

The literature on deindustrialization has long established its negative consequences for *communities* (6) and the associated ways of life (Bluestone and Harrison 1982; Pahl 1984), typically affecting health over the long-term. Deindustrialization disrupts communities by increasing social inequalities and socio-cultural distance, intensifying the competition for scarce resources that decreases workers' solidarity, by eliminating industrial workplaces as crucial sites of community formation, contributing to de-unionization, and increasing shame among the unemployed that leads to social isolation. Crucially, deindustrialization's adverse impact on communities is also felt by subsequent generations born after mass closings, leading to a continued decline of working-class culture (Strangleman et al. 2014). Social integration, community ties, and social capital help individuals cope with stress, while community destruction has the opposite effect (Jetten et al. 2012; Walkerdine and Jimenez 2012). The adverse health effect of low levels of community cohesion also proliferates through generations (Morenoff 2003).

Finally, the literature also confirms that the repeated experience with stress coupled with individuals' reduced capacity to cope might fuel *despair*, loss of hope, and powerlessness. Psychologists have long recognized the crucial role of hope and the belief in the coherence of life in increasing people's capacity to survive even the most demanding, stressful situations (Eggerman and Panter-Brick 2010). As the psychologist, Viktor Frankl, who survived Auschwitz and later developed logotherapy, writes: "striving to find a meaning in one's life is the primary motivational force in man" (Frankl 2006[1959]:99). In contrast, hopelessness, the loss of belief in the future, a

lack of belief that life holds something to look forward to, is one of the most potent causes of depression, suicide, or adverse health behavior, leading to deaths of despair (Case and Deaton 2020). Sociologists have noted that, through the process of “structural amplification,” undesirable life events tend to erode the sense of control and increase powerlessness, which increases the vulnerability to stressors (Koltai and Stuckler 2020; Ross et al. 2001).

Conclusions

Workers left behind in rustbelt areas suffer from worse health for multiple reasons, leading to what Case and Deaton (2020) called deaths of despair. Although Case and Deaton explained these deaths of despair by highlighting economic dislocations, others challenged this association. This controversy is also reflected in the literature on the post-socialist mortality crisis. Some argue that health lifestyles are determined by people’s access to unhealthy products (alcohol and drugs) or cultural legacies, which influence “cognitive capacities.” Other economists argue that deindustrialization is actually creative destruction; a necessary step towards improved wellbeing and healthier occupational environments. This article showed that the psychosocial shock created by deindustrialization—operating through six mechanisms—is an important but neglected fundamental cause of the deaths of despair epidemic that hit postsocialist countries in the 1990s.

The study also offers lessons for policy. Economic policies intended to “free up” markets to maximize growth, and health policies focusing only on healthy lifestyles are insufficient. Deindustrialization is a fundamental cause of ill health, which preserves the negative health consequences of industrial decline even as material conditions improve and knowledge on healthy lifestyles accumulates. Thus, in addition to standard and generous welfare provisions, active labor market policies and community regeneration programs could be necessary (Standing 2010).

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Beyond social policy, there is also a renewed role for industrial policy (Rodrik 2004). Health policy and industrial policy are not anathemas to each other (Shadlen and Fonseca 2013). Government intervention to promote industrial development can make health policies more effective. Complex strategies, such as the green new deal and regionally targeted industrial policies relying on the strategic collaboration between the private sector, the national and local government can contribute to creating sustainable jobs in rustbelt areas.

Notes

¹ These disciplinary limitations are also reflected in Case and Deaton's *Deaths of Despair* book. Influenced by the early sociological literature on adverse social consequences of deindustrialization (Kubrin et al. 2006; Wilson 1990), they highlight the centrality of economic dislocation as upstream determinant of health inequalities. However, instead of unpacking the complexities of these mechanisms and drawing the necessary theoretical and policy conclusions, they stress the exceptionality of the American experience (dovetailing with the behavioral argument about the availability of drugs), and conclude their book with a rather underwhelming set of propositions concentrating on the need for better regulation of pharmaceuticals and "genuinely free and competitive markets" (Case and Deaton 2020:213)

² As Case and Deaton (2020:40) note, deaths of despair (suicides, alcohol- and drug-related deaths) is a "convenient label, indicating the link with unhappiness, mental or behavioral health, and the lack of any infectious agent." Deaths of despair are by driven social dysfunctions induced by prolonged economic distress. They also note that heart disease also contributed to the growing life expectancy gap between college-educated and working-class whites. Though Case and Deaton retain the deaths of despair label for suicides, alcohol- and drug-related deaths, a significant part of cardiovascular diseases is also linked to the deaths of despair in two ways. Long-term opioid use, heavy drinking, and binge drinking can cause heart disease. Desperation and stress driven by economic dislocation are also increase the risk of cardiovascular problems.

³ Mechanisms are "constellations of entities and activities that are organized such that they regularly bring about a particular type of outcome" (Hedstrom 2005:25).

⁴ Hungary did not take part in the Gorbachev anti-alcohol campaign, which was limited to the Soviet Union, so there was no comparable rebound effect in the country.

⁵ Socialist brigades were informal groups organized by the companies and the party to facilitate the emergence of working-class culture and a socialist version of corporate identity. These brigades competed with each other in terms of work performance, but they also facilitated informal outings and community work.

⁶ Among the Roma, the employed/non-employed ratio, which was about 3:1 at the middle of the 1980s, was worse than 1:2 in 1993, leading to a significant ethnic gap in employment rates (Kertesi 2004).

Tables and Figures

Table 1, Descriptive statistics of interviewees

	Average age	Age group (age in 1989)						Gender				Education				Total							
		10-20		21-30		31-40		41-50		51-60		Male		Female			Primary		Secondary		College		
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Ajka	34.1	1	5.0%	4	20.0%	11	55.0%	4	20.0%	0	0.0%	10	50.0%	10	50.0%	1	5.0%	17	85.0%	2	10.0%	20	100.0%
Dunaújváros	37.9	0	0.0%	3	23.1%	5	38.5%	4	30.8%	1	7.7%	9	69.2%	4	30.8%	0	0.0%	8	61.5%	5	38.5%	13	100.0%
Salgótarján	36.4	1	4.2%	5	20.8%	13	54.2%	2	8.3%	3	12.5%	14	58.3%	10	41.7%	1	4.2%	11	45.8%	12	50.0%	24	100.0%
Szerencs	33.9	1	4.0%	7	28.0%	12	48.0%	4	16.0%	1	4.0%	10	40.0%	15	60.0%	2	8.0%	16	64.0%	7	28.0%	25	100.0%
Total	35.6	3		19		41		14		5		43		39		4		52		26		82	

Table 2, Thematic overview of the interviews with frequencies

Theme	Interviewees		Theme	Interviewees	
	%	No.		%	No.
Health			Inequality		
smoking, regular smoker	46%	38	victims (negative, blaming)	11%	9
drinking, occasionally	35%	29	victims (positive, empathy)	38%	31
drinking, regularly	33%	27	winners (negative)	27%	22
drinking, socialist culture	7%	6	winners (positive)	4%	3
drinking, stress coping	7%	6	foreign investment (positive)	35%	29
drinking, access to homemade palinka/wine	15%	12	foreign investment (negative)	35%	29
depression	49%	40	colonization	10%	8
stress	35%	29	dispossession	27%	22
cancer	15%	12			
circulatory problems	28%	23	Communities		
joint and bone disorders	15%	12	community (positive past)	41%	34
problems of the digestive system	10%	8	community (negative present, destruction)	24%	20
respiratory problems	4%	3	brigade movement (positive past)	28%	23
			kaláka* (positive past)	15%	12
Economic deprivation			connections (positive present)	30%	25
plant closure (direct, indirect experience)	44%	36	hostilities (negative present)	11%	9
personal financial deprivation	12%	10	participates in social organization	33%	27
inflation & debts	43%	35	trade union (positive past)	29%	24
fear of job loss	16%	13	trade union (negative present)	38%	31
shame of deprivation	17%	14			

Note

* kaláka means something like “voluntary reciprocity-based self-help groups.”

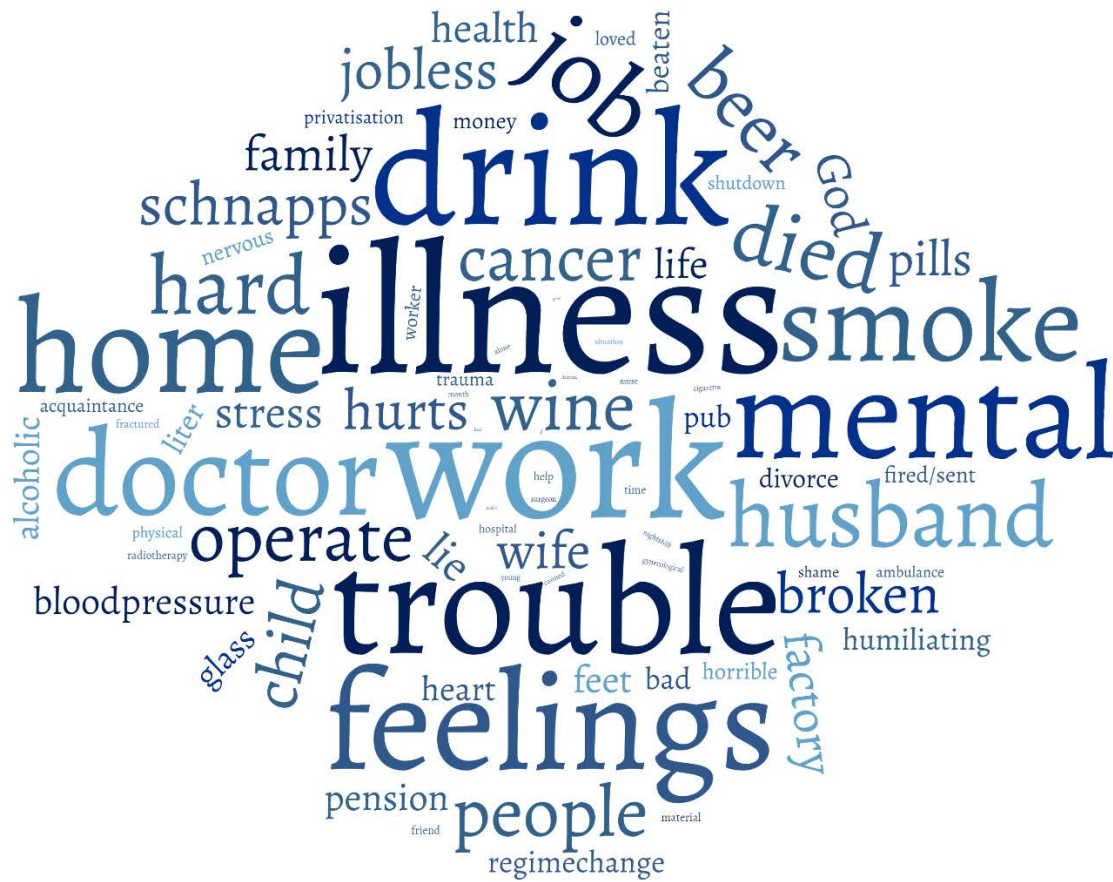
Table 2, Thematic overview of the interviews with frequencies (continued)

Theme	Interviewees		Theme	Interviewees	
	%	No.		%	
Work-related pressures			Community services		
vulnerability	32%	26	factory doctor (positive past, loss)	5%	4
unfair treatment	27%	22	holidays (positive past, loss)	32%	26
precarity	20%	16	housing (positive past, loss)	34%	28
work intensity	35%	29	training (positive past or present)	23%	19
			culture, sports services (positive past, loss)	22%	18
Social identities			Despair		
work identity (positive past, disruption)	26%	21	hope (positive past - 1990s)	37%	30
work identity (positive present, continuity)	6%	5	hope (negative present - desperation)	27%	22
place identity (positive past, disruption)	22%	18	efficacy (control over social change)	5%	4
shrinking town	24%	20	powerlessness (no control over change)	43%	35
class identity (disintegration)	72%	59	abandonment	17%	14
class identity (continuity)	5%	4			

Figure 1. Fieldwork map

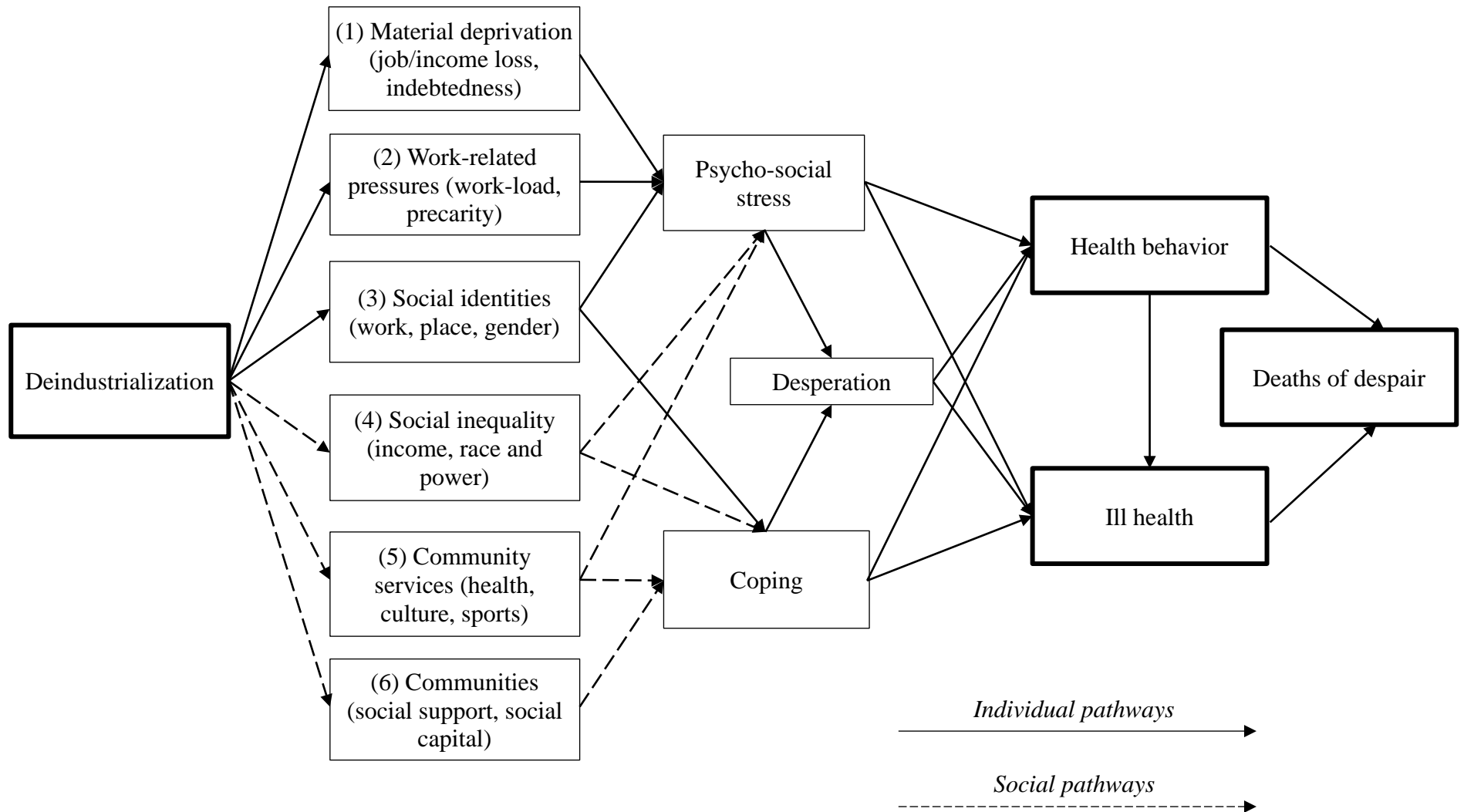


Figure 2. Health problems word cloud



Note: Most frequently used 80 words in interview paragraphs discussing interviewees' or relatives' health problems; filler words were eliminated, and synonyms were grouped. The size of the words represents frequency.

Figure 3. A six-mechanism model of deindustrialization as a fundamental cause of ill health and deaths of despair



Online methodological appendix

About the towns

Table A1. Socioeconomic characteristics of the four interview towns

	Deindustrialization (1989-1995)	Unemployment 1994	Death rate 1994	Population 1989	Population 2010
Ajka	Moderate (36.1%)	7.9	944	34,502	29,419
Dunaújváros	Moderate (27.6%)	7.8	1,027	62,533	48,187
Salgótarján	Severe (50%)	12.7	1,410	48,538	37,632
Szerencs	Severe (51.2%)	10.8	1,748	10,381	9,321

Source of data: Hungarian Central Statistical Office. Deindustrialization is measured as the percentage change in industrial employment to population ratio from 1989 to 1995. The death rate is deaths per 100.000 inhabitants

Table A1 presents an overview of the essential characteristics of the four towns where fieldwork was constructed. Ajka is a town in northwest Hungary with a long tradition in coal and bauxite mining and related industrial activities. In the 1990s, the town could attract some new private investors, mostly due to its geographical location. Its "moderate" level of deindustrialization (moderate by Hungarian standards) equaled to a 36.1% decrease in industrial employment between 1989 and 1995. Dunaújváros is a town south of Budapest. It is the youngest of the four municipalities, the home of the last significant ironworks operating in Hungary. Dunaújváros also experienced "moderate" deindustrialization in the 1990s (27.6%). Salgótarján is a town in the north of Hungary, a regional center with significant glass industry and machinery plants. It experienced a 50% loss in industrial employment between 1989 and 1995. Finally, Szerencs is a town in Eastern Hungary, the smallest town in the sample, a regional center of sugar and chocolate manufacturing.

Szerencs also underwent severe deindustrialization during the 1990s (51.2% decrease between 1989 and 1995).

About the interviewees

The study's first author conducted the first wave of interviews in the four towns, followed by further interviews conducted by research assistants trained by the author on site between September 2016 and January 2017. The starting pool of subjects was identified through local trade unions, civic associations, and political parties. The subjects were asked to recommend further interviewees at the end of the interviews. We faced substantial difficulties in gaining access to interview subjects. There is a very high level of mistrust in Hungary, and respondents tend to be wary when expressing their opinion on social issues. We tackled this issue by establishing contact with interview subjects through interpersonal networks, mainly using the snowball method. We also collected historical, economic, and political information about the towns to facilitate the conversation.

Most of the interviewees fit Goldthorpe's class category III (routine non-manual workers), V (lower grade technicians), VI (skilled manual workers), and VII (semi and unskilled manual workers). Altogether, 82 interviews were conducted; the subjects' average age was 35.6 in 1989, including three people below 20. The majority of the respondents were between 31 and 40 years old in 1989. Forty-three males and 39 females participated. The overwhelming majority reported having a general or vocational secondary degree (52 subjects), four people had a primary school degree, and 26 had a college or university degree (see the article's Table 1 for an overview).

About the interviews

Table A2 presents an overview of the semi-structured interview questionnaire. The questions were grouped into five sections, as described in Table A2. The conversations did not

follow a strictly preordained pattern but allowed a free conversation flow and encouraged the interviewees to recollect their experience and life histories freely.

Table A2. The structure of qualitative interviews

Domain	Questions
Basic personal information	Where did they live? What was their employment history? What happened to the company they were working for? Was it shut down or privatized? What was the financial situation of the family?
Health status	Did they have any health problems? Did they use any social assistance to cope with their condition? What was their health behavior like (drinking and smoking habits)?
Perceptions about the transition	Did they like their job, how was the community life at the company? How was the community life in the town? Did they have a say in the management of the company during different periods? How did they feel when unemployed, how did they try to cope with economic problems?
Perceptions about society	What do they think was responsible for the fate of their company? Did they have a say in the fate of the company or society in more general? Were they members of any social organization? Did they participate in any kind of social action to shape the regime change? How was their experience mediated by family or friends?
General perceptions about the transition	Did they feel belonging to any broader social category (such as class or nation), or was the transition predominantly an individual experience? Did they believe that things could get better? Did they experience a loss of hope? What do they think about foreign investors? Do they think anyone represents the interests of everyday people? What do they think about major political actors?

We tested the interviews in each town during multiple interviews in the presence of the research assistants. The interview questions were refined after the first answers were received. Interviews are anonymized, and every subject consented to the use of audio recording devices.

This sample has some limitations. First, subjects are better educated and have higher than average social capital than the national population average, which means the results are conservative estimations. Less educated and more isolated people were likely more adversely affected by deindustrialization. Second, migration could also introduce a potential bias. Those who migrated away from the surveyed towns were excluded from the study. If healthy people left the deindustrialized towns, this could result in a sample with more negative experiences with deindustrialization. If families who lost their fathers left the town, this would underestimate the negative consequences of deindustrialization. Third, recall bias can also influence the reliability of the interviews. The questions covered an extended period, which could potentially introduce distortions. We used multiple techniques to reduce this potential bias. Cognitive tests were also carried out at the beginning of the project to increase the questionnaire's clarity and efficiency. Introductory sentences before question sections were also used during the interviews, and this technique has been reported to increase recall precision. We also used indirect proxy questions for alcohol use questions if there was an indication the interviewee does not like to talk about alcohol consumption. We also asked interviewees to recall memorable life events, and historical events were also used to recall events in the distant past.

Table A3. Health problems word frequency table

Words (grouped)	Frequency	Words (grouped)	Frequency	Words (grouped)	Frequency
illness	57	health	14	cigarette	6
work	47	blood pressure	14	alone	6
drink	46	pension	14	young	6
trouble	44	feet	14	canned	6
feelings	41	glass	13	surgeon	6
mental	39	alcoholic	13	gynecological	6
home	39	heart	13	mouth	6
doctor	38	humiliating	12	situation	6
smoke	37	regime change	12	nightshift	6
job	33	pub	12	nurse	6
husband	28	beaten	12	alcohol	5
died	26	liter	12	desperate	5
hard	26	bad	12	gone	5
beer	24	divorce	11	head	5
people	23	money	10	son	5
wine	23	horrible	10	hole	5
operate	23	fired/sent	10	ulcer	5
cancer	22	nervous	10	water	5
child	21	ambulance	9	mother	5
schnapps	20	trauma	9	get through	4
hurts	19	privatization	9	boss	4
broken	19	loved	9	economically	4
jobless	19	shutdown	9	childhood	4
wife	18	worker	9	fuck	4
pills	17	acquaintance	9	cold	4
God	17	physical	8	catheter	4
family	17	shame	8	hand	4
plant	17	time	7	lymph	4
life	16	hospital	7	solve	4
stress	16	help	7	poor	4
lie	16	friend	7	blowpipe	4
		material	7	survive	4
		fractured	7	state	4
		radiotherapy	7		

Note: Most frequently used 100 words in interview paragraphs discussing interviewees' or relatives' health problems; filler words were eliminated, and synonyms were grouped.

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