

**Michael R. Kramer, Eric B. Schneider, Jennifer B. Kane,
Claire Margerison-Zilko, Jessica Jones-Smith, Katherine
King, Pamela Davis-Kean and Joseph G. Grzywacz**
**Getting under the skin: children's health
disparities as embodiment of social class**

**Article (Accepted version)
(Refereed)**

Original citation:

Kramer, Michael R., Schneider, Eric B., Kane, Jennifer B., Margerison-Zilko, Claire, Jones-Smith, Jessica, King, Katherine, Davis-Kean, Pamela and Grzywacz, Joseph G. (2017) *Getting under the skin: children's health disparities as embodiment of social class*. Population Research and Policy Review . ISSN 0167-5923

DOI: [10.1007/s11113-017-9431-7](https://doi.org/10.1007/s11113-017-9431-7)

© 2017 Springer Science+Business Media Dordrecht

This version available at: <http://eprints.lse.ac.uk/73325/>

Available in LSE Research Online: April 2017

LSE has developed LSE Research Online so that users may access research output of the School. Copyright © and Moral Rights for the papers on this site are retained by the individual authors and/or other copyright owners. Users may download and/or print one copy of any article(s) in LSE Research Online to facilitate their private study or for non-commercial research. You may not engage in further distribution of the material or use it for any profit-making activities or any commercial gain. You may freely distribute the URL (<http://eprints.lse.ac.uk>) of the LSE Research Online website.

This document is the author's final accepted version of the journal article. There may be differences between this version and the published version. You are advised to consult the publisher's version if you wish to cite from it.

TITLE: Getting Under the Skin: Children's Health Disparities as Embodiment of Social Class

AUTHORS:

Michael R. Kramer, PhD [*corresponding author*]

Department of Epidemiology, Rollins School of Public Health, Emory University

1518 Clifton Road, NE

Atlanta, GA 30322

(404) 727-9818

mkram02@emory.edu

Eric B. Schneider, DPhil, MPhil

Department of Economic History, London School of Economics and Political Science

Jennifer B. Kane, Ph.D.

Department of Sociology, University California, Irvine

Claire Margerison-Zilko, MPH, PhD

Department of Epidemiology and Biostatistics, College of Human Medicine, Michigan State
University

Jessica Jones-Smith, PhD, MPH

Department of International Health, Johns Hopkins Bloomberg School of Public Health

Katherine King, PhD

Department of Community and Family Medicine, Duke University

Pamela Davis-Kean, PhD

Department of Psychology, University of Michigan

Joseph G. Grzywacz, PhD

Department of Family & Child Sciences, Florida State University;

WORD COUNT (without references): 9,099

NUMBER OF FIGURES: 1

RUNNING HEAD: Social Class Under the Skin

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65

TITLE: Getting Under the Skin: Children’s Health Disparities as Embodiment of Social Class

WORD COUNT (without references): 9,099

NUMBER OF FIGURES: 1

RUNNING HEAD: Social Class Under the Skin

1
2
3
4 ABSTRACT
5

6 Social class gradients in children’s health and development are ubiquitous across time and
7
8 geography. The authors develop a conceptual framework relating three actions of class—material
9 allocation, salient group identity, and inter-group conflict—to the reproduction of class-based
10 disparities in child health. A core proposition is that the actions of class stratification create
11 variation in children’s mesosystems and microsystems in distinct locations in the ecology of
12 everyday life. Variation in mesosystems (e.g., health care, neighborhoods) and microsystems
13 (e.g., family structure, housing) become manifest in a wide variety of specific experiences and
14 environments that produce the behavioral and biological antecedents to health and disease among
15 children. The framework is explored via a review of theoretical and empirical contributions from
16 multiple disciplines and high-priority areas for future research are highlighted.
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33

34 KEYWORDS
35

36
37 Children’s health
38

39
40 Social class
41

42
43 Health status disparity
44

45
46 Social theory
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65

1
2
3
4
5
6
7
8 Getting Under the Skin: Children’s Health Disparities as Embodiment of Social Class
9

10 **PREAMBLE**
11

12
13 This paper arises out of a workshop convened in the summer of 2015 by the *Eunice Kennedy*
14
15 *Shriver* National Institute of Child Health and Human Development, of the National Institutes of
16
17 Health in the United States, and the Economic and Social Research Council and Research
18
19 Councils UK from the United Kingdom. The meeting of early career and established
20
21 investigators was titled, “How the social environment gets under the skin – developmental
22
23 perspectives” and included representatives from demography, economics, epidemiology, family
24
25 studies, history, psychology, and sociology. One of several working groups from this meeting
26
27 coalesced around an interest in conceptualizing, defining and measuring the broader
28
29 socioeconomic environment as it pertains to children’s health. What emerged was a realization of
30
31 the extent of disciplinary differences in language and frame, as well as an appreciation for the
32
33 richness of a transdisciplinary perspective on something as complex as social class and health.
34
35 The product of a year-long discussion and debate is this broad survey of the multileveled and
36
37 multidimensional mechanisms and processes by which socioeconomic experiences and processes
38
39 ‘get under the skin’ to affect children’s health and development.
40
41
42
43
44
45
46
47
48
49
50

51 **INTRODUCTION**
52

53
54 Social class gradients in health are ubiquitous across time and geography. An awareness that
55
56 social status or position is related to individuals’ health is evident in the writings of Hippocrates,
57
58 and has been quantitatively described in populations since Petty and Graunt in the 17th century,
59
60
61
62
63
64
65

1
2
3
4 and Farr in the 19th century counted and summarized deaths and death rates (N. Krieger, 2011).
5
6 From these earliest systematic collections of population health data was evidence that individuals
7
8 and groups with greater power, wealth, and prestige typically have better outcomes than those
9
10 with less or without. These patterns persist into the early 21st century both within and between
11
12 nations for wide-ranging processes and outcomes including cancers, chronic diseases, infectious
13
14 diseases, and neurodevelopment.
15
16
17

18
19 Concern for social class variation among children engages the concern of scientists,
20
21 policymakers and families for at least three reasons. First, children occupy a privileged space in
22
23 most industrialized cultures, being both protected throughout childhood and valued for their
24
25 future potential. Therefore harm done to children is less tolerated than similar harm done to
26
27 adults. Second, children ‘receive’ their social class from their families, and as such they are not
28
29 causally responsible for their status in life. Finally, rapid growth and developmental plasticity
30
31 make children particularly sensitive to the stimuli of their environments, with lifelong
32
33 consequences. Stimuli and exposures during critical developmental windows, or cumulatively
34
35 across childhood can illicit disease and disease processes that persist into adulthood.
36
37
38
39
40
41

42 The literature documenting and describing the presence of social, economic, and class
43
44 disparities in child health is abundant. However the literature aiming to explain the how and
45
46 why—mechanisms and pathways—of the production and maintenance of class gradients in
47
48 health through time and across geography is less complete. Therefore the structure of this paper
49
50 integrates the pairing of theory with functional and operational mechanisms and processes. We
51
52 begin by providing a broad overview of the theoretical foundations of social class, leading to a
53
54 conceptual framework of children’s health and class-based health disparities that is influenced by
55
56 bioecological theory. In order to further animate the conceptual framework we provide brief and
57
58
59
60
61
62
63
64
65

1
2
3
4 illustrative examples of empirical research examining the production of class-based gradients in
5
6 child health. This serves both to summarize key findings and to highlight potential gaps in the
7
8 literature that are implied by the conceptual framework.
9

10 11 **FOUNDATIONS**

12 13 *Theoretical Foundations -- Social Class*

14
15
16
17
18 Social class refers to the “horizontal stratification of a population” (Gordon, 1949, p. 265) on
19
20 the basis of factors such as wealth, income, occupation, status, group identification, level of
21
22 consumption, or family background. Social class is distinct from other sources of stratification
23
24 in the population stemming from gender, racial or ethnic identity, and religion, although the
25
26 intersection of class identities with other sources of identity produce additional variation (Bauer,
27
28 2014). Social class has strong sociological roots, and has been conceptualized in two primary
29
30 ways. A Marxist viewpoint conceptualizes social class in relation to the means of production,
31
32 particularly in terms of whether an individual owns/controls a business, or is a laborer/worker in
33
34 that business. The second primary conceptualization of social class conceives of social class in
35
36 terms of a market’s relative distribution of social resources and life chances (Weber, 1978).
37
38

39
40
41
42 Common to both conceptualizations of social class is the social relationships underlying
43
44 stratified groups: social class is not an inherent characteristic of individual persons, but rather
45
46 emerges through social encounters between individuals and groups, for example between owners
47
48 and workers, producers and consumers, or individuals and the distributive forces of the market
49
50
51
52 (N. Krieger, Williams, & Moss, 1997; J. W. Lynch & Kaplan, 2000).
53
54

55
56
57
58 Measurement and subsequent delineation of social class location remains a fundamental
59
60 challenge to research—particularly as it relates to understanding exactly how social class affects
61
62

1
2
3
4 children's health outcomes. As Wright (2007) suggests, a central explanation for the
5
6 measurement challenge arises from the multidimensionality of social class. Wright contends that
7
8 social class has six distinct functions or social actions: 'distributional location', 'subjectively
9
10 salient groups', 'life chances', 'antagonistic conflicts', 'historical variation', and 'emancipation'.
11
12 From these we suggest that a subset of three actions of class are particularly relevant for
13
14 understanding child health disparities. 'Distributional location' and 'life chances' both refer to
15
16 the allocation of or opportunity to acquire material resources. 'Subjectively salient groups'
17
18 refers to the manner by which group affiliation informs identity and location within a structure of
19
20 inequality. Finally, 'antagonistic conflict' seeks to explain how social cleavages create real and
21
22 powerful antagonism between groups of people.
23
24
25
26
27
28

29
30 These three actions of social class become clearer when placing them in the context of
31
32 current theory exploring macrosystemic dynamics and processes as they relate to health. The
33
34 allocation of, or opportunity to, acquire material resources action is paralleled by "fundamental
35
36 cause" theory or the belief that social stratification of individuals within society leads to variation
37
38 in the money, knowledge, power, and interpersonal resources necessary to prevent and manage
39
40 illness, resulting in social disparities in health (Link & Phelan, 1995; Phelan, Link, & Tehranifar,
41
42 2010). A second theoretical approach dealing with distribution and life chances emerges from
43
44 political economy, focusing not only on the social hierarchy of resources, status, and power, but
45
46 on the political and social production of inequality (Navarro & Muntaner, 2004). This
47
48 perspective goes beyond asking about the health consequences of being poor or non-poor to
49
50 asking why and how some groups come to have less (or more) than others (N. Krieger, 2011).
51
52 Political economy draws attention to the values, priorities, and structures of systems which
53
54 produce the context in which children develop. A third theoretical frame focuses more on salient
55
56
57
58
59
60
61
62
63
64
65

1
2
3
4 group identification and inter-group conflict, and the role of relative position within a social
5
6 hierarchy as the driving force for social class health patterning (Wilkinson & Pickett, 2007).

7
8
9 Thus, in this perspective, it is not an absolute level of material resources that produce health, but
10
11 instead the presence of status inequality between groups, and the psychosocial stress resulting
12
13 from awareness of one's location within a more or less unequal hierarchy.
14
15

16 17 ***Theoretical foundations – bioecological model of human development*** 18

19
20 The conceptual framework guiding this manuscript (see Figure) is fundamentally informed
21
22 by bioecological theory of human development (Bronfenbrenner & Ceci, 1994). A
23
24 developmental theory is essential for understanding variation in children's health, like health
25
26 disparities, because health is a manifestation of development. Regardless of whether the focus is
27
28 on infant birth weight, motor vehicle-related childhood fatality among toddlers, or any number of
29
30 specific conditions like diabetes or asthma; children's health risks and problems typically
31
32 develop over time, thereby necessitating a developmental theory.
33
34
35
36
37

38 The proposed model uses three core ideas from bio-ecological theory. First, our model
39
40 adopts the concept of proximal process as the primary engine for child health. Bio-ecological
41
42 theory contends that human development occurs through *proximal processes*, which are defined
43
44 as progressively more complex interactions between the child and the persons, objects, and
45
46 symbols in the child's environment. For example, the American Academy of Pediatrics (AAP)
47
48 recommendation for child feeding represents a codified proximal process. The AAP
49
50 recommends exclusive breastfeeding for the first six months of life (bottle feeding breastmilk or
51
52 formula is also considered appropriate), with the gradual introduction of solid foods around six
53
54 months of age, and the addition of healthy snacks around 9 months of age. In this case the
55
56 proximal process is an interaction between the child and the parent (i.e., feeding behavior) that
57
58
59
60
61
62
63
64
65

1
2
3
4 becomes increasingly complex (i.e., gradual growth in dietary diversity) and is presumed to
5
6 contribute to optimal physical growth. A simple extension of this idea to child health more
7
8 broadly suggests that poor health or morbidity results from stagnant or pathogenic interactions
9
10 between the child and his or her environment such as those illustrated by a parent who provides
11
12 no solid food to their child for the first year of life, or more extreme conditions such as abuse or
13
14 maltreatment.
15
16
17
18
19

20 [Figure about here]
21

22
23 A second feature of bio-ecological theory reflected in the proposed framework (Figure) is the
24
25 recognition that child development (health) results from nested interactions. This feature is
26
27 visually depicted in our model in terms of “child health” being nested within the Family and
28
29 Home Microsystem, with the nesting represented by the same geometric shape used to identify
30
31 “child health” and distinct elements of family and home. Further, the Family and Home
32
33 Microsystem is nested within Children’s Primary Mesosystems, a feature illustrated in the model
34
35 by the placement of the microsystem within the three dimensional space of the mesosystem.
36
37 Finally, both the Family and Home Microsystem and Children’s Primary Mesosystems are
38
39 nested within systems of social stratification represented in terms of social class in our model.
40
41
42
43
44

45 The third and last feature of bio-ecological theory captured in this framework is the premise
46
47 that proximal processes, the drivers of development (health), can be promoted or inhibited by
48
49 more distal features of children’s environments. This feature is reflected by the arrows flowing
50
51 from left to right (Figure). Social class and its core actions are posited to operate through two
52
53 parallel levels of children’s environments. The first level influenced by social class is the
54
55 mesosystem, which is conceived of as the institutions and establishments that children and their
56
57 families interact with on a regular basis. Primary mesosystems in children’s lives include
58
59
60
61
62
63
64
65

1
2
3
4 schools (childcare through formal education), the health care delivery system, neighborhoods,
5
6 and employment opportunities for parents. The actions of social class shape Children’s Primary
7
8 Mesosystems, albeit in complex ways which are illustrated by the “bent arrows”. Just as light
9
10 entering and exiting a prism is bent based on its naturally-occurring or engineered angles,
11
12 likewise the effects of social class on children are “bent” or otherwise modified depending on
13
14 naturally-occurring or engineered features of children’s mesosystems. Children’s Primary
15
16 Mesosystems, in turn affect the Family and Home Microsystem and the subsequent proximal
17
18 processes contributing to child health.
19
20
21
22
23

24
25 A quintessential point of the proposed framework is that it steps beyond describing, toward
26
27 explaining social class variation in children’s health. That is, social class recreates itself through
28
29 a multistep process. In the first step, social class contributes to the financial and material
30
31 resources and the sociopolitical dynamics of Children’s Primary Mesosystems, which, in turn,
32
33 shape children’s Family and Home Microsystems in the second step. In the third and final step,
34
35 interactions within children’s families and home set proximal processes relevant to health and
36
37 illness into motion to create children’s health outcomes. Social class can then be recreated
38
39 because differences in children’s health at birth and accentuated throughout childhood influence
40
41 the social class children acquire as adults (A. Case, Fertig, & Paxson, 2005; Richards, Chapple-
42
43 McGruder, Williams, & Kramer, 2015; Taylor, Repetti, & Seeman, 1997).
44
45
46
47
48

49 **EMPIRICAL REVIEW**

50
51
52 In order to highlight empirical evidence relevant to the theoretical foundations presented
53
54 above, we briefly review literature illustrating current knowledge for the manner by which class
55
56 patterns child health. Our review is limited to empirical evidence from high-income countries,
57
58 recognizing that the manner in which social and economic stratification are experienced in low-
59
60
61
62
63
64
65

1
2
3
4 and middle-income countries could be substantially different. An overarching objective is to
5
6 view the extant literature through the lens of the multi-dimensional actions of class as
7
8 characterized by Wright. Therefore we take this opportunity to characterize current evidence for
9
10 how these actions of class might be embodied as child health, as well as pointing out areas where
11
12 fuller examination of the mechanisms connecting class and health might be informative. To aid
13
14 in focus and coherence in this section, we limit our review to child physical health outcomes.
15
16 This in no way suggests that class is not relevant to cognitive, socioemotional, or mental health
17
18 of children; on the contrary we believe these are inter-connected with physical health. We hope
19
20 that the issues raised in the illustrations and discussions that follow can be readily translated
21
22 beyond physical health.
23
24
25
26
27
28

29 ***Mesosystemic forces that shape child's environment and family interactions***

30 Employment

31
32
33
34 Parental employment is a resource that is not evenly distributed in society, but yet has
35
36 substantial health implications for children. Recent evaluations of the Great Recession provide
37
38 clear evidence that job loss and unemployment was not equally shared, but rather concentrated in
39
40 areas with high concentrations of racial and ethnic minorities and individuals with low
41
42 educational attainment (Thiede & Monnat, 2016). Areas with elevated unemployment
43
44 experience greater unintentional injury of children (McClure, Kegler, Davey, & Clay, 2015),
45
46 elevated preterm births (Messer et al., 2008), greater initiation of marijuana by adolescents
47
48 (Tucker, Pollard, de la Haye, Kennedy, & Green, 2013), and more child maltreatment (Raissian,
49
50 2015). These results, connected with others wherein area unemployment is combined with other
51
52 metrics of area socioeconomic deprivation and linked to health outcomes like morality (Singh &
53
54 Kogan, 2007) suggest that jobs are a resource, that when scarce, impedes healthy child outcomes.
55
56
57
58
59
60
61
62
63
64
65

1
2
3
4 Jobs are also a distribution channel for additional resources at both the macro and micro
5
6 levels. At the macro level community job loss has effects for all children, even those whose
7
8 parents retain their jobs because higher unemployment compromises tax revenues resulting in
9
10 lower governmental allocations for local health departments (Ye, Leep, & Newman, 2015) as
11
12 well as education (Gassman-Pines, Gibson-Davis, & Ananat, 2015). Additionally, jobs are also
13
14 used to distribute financial resources like earnings and health insurance. Indeed, employment-
15
16 based insurance is the primary source of insurance coverage for Americans (Fronstin, 2013) and
17
18 substantial evidence documents a close link between job loss and being uninsured (Doty, Collins,
19
20 Robertson, & Garber, 2011; Lavarreda, Snyder, & Brown, 2013). Other resources that are built
21
22 into jobs, such as work schedules that can be “flexed” to accommodate children’s needs and are
23
24 advocated for promoting breastfeeding (Bettinelli, 2012; Hawkins, Griffiths, Dezateux, Law, &
25
26 Millennium Cohort Study Child Health, 2007), are frequently less available to individuals in
27
28 lower social classes (Heymann, 2001).
29
30
31
32
33
34

35
36 Substantially less research has considered the link of other actions of social class through
37
38 employment to child health. Theory and research elaborated in the *Parenting* section of this
39
40 manuscript documents the possibility of social class variation in parenting that may socialize
41
42 children to better affiliate with salient occupational groups (white versus blue collar), and
43
44 potentially serve as a source of intergroup conflict between these occupational groups. If the
45
46 labor force continues to bifurcate with increasing value placed on science, technology,
47
48 engineering and math (STEM) fields, pressures placed on children to acquire the characteristics
49
50 of STEM professionals (i.e., salient group affiliation) may create fertile ground for negative
51
52 health outcomes in both the short and long term (Saw, Berenbaum, & Okazaki, 2013; Shen, Liao,
53
54 Abraham, & Weng, 2014). These are promising areas for future research.
55
56
57
58
59
60
61
62
63
64
65

1
2
3
4 Health care system distribution, access, and quality
5
6

7 Access to and interaction with the health care system is shaped by family socioeconomic
8 position and is likely to contribute to class-based inequities in children’s physical health
9 (Millman, 1993). Access to health care is measured in a variety of ways (Penchansky & Thomas,
10 1981), including having health insurance, access to a usual source of care, or utilization of
11 needed services (Strickland, Jones, Ghandour, Kogan, & Newacheck, 2011). Children from
12 families with lower incomes are less likely to have health insurance, less likely to have had a
13 medical office visit or utilized a hospital outpatient center in the last year (Simpson et al., 2005),
14 and less likely to get all the recommended vaccines (Christakis, Mell, Wright, Davis, & Connell,
15 2000; Health, Services, Health, & Services, 2003) as compared children from families with
16 higher incomes. Lower income children are also more likely than higher income children to have
17 made trips to the emergency room, had problems getting a necessary treatment or had a referral
18 to a specialist (Simpson et al., 2005), more likely to have delayed care (Olson, Tang, &
19 Newacheck, 2005), experienced increased risk for hospitalizations (Christakis, Mell, Koepsell,
20 Zimmerman, & Connell, 2001), and have higher likelihood of ruptured appendicitis (Jablonski &
21 Guagliardo, 2005).
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43

44 These differences in access to, and utilization of, care exist despite the fact that, in the US,
45 lower income children are eligible to enroll in public insurance through either Children’s
46 Medicaid or the Children’s Health Insurance Program (CHIP). As of 2013, an estimated 88% of
47 income-eligible children were enrolled in the program (The Urban Institute, 2015). Beginning in
48 January 2014, the Affordable Care Act extended Medicaid eligibility to low income adults (those
49 with incomes <138% of the federal poverty line) in the 32 states that opted into the Medicaid
50 expansion component and provided subsidies for lower-middle income families in all states to
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65

1
2
3
4 purchase insurance, thus potentially covering many more lower-middle income children. It is not
5
6 yet clear whether having non-Medicaid/CHIP insurance will help ameliorate the inequities in
7
8 getting timely preventive and medical care. Unlike Children’s Medicaid and CHIP, often private
9
10 medical insurance through employers or purchased through the ACA requires premiums,
11
12 deductibles, and co-pays for office visits and medications that can act as a deterrent to seeking
13
14 care for lower income families.
15
16
17
18

19
20 In this context inequities in access to quality health care may stem primarily from class-based
21
22 resource allocation processes—for lower middle and middle income children, the high monetary
23
24 cost of co-pays and premiums are a cost barrier, and for children covered by public health
25
26 insurance, the monetary cost of health insurance is not the only cost of health care visits.
27
28 Additional costs include lost wages, transportation costs, and time costs. Other resource
29
30 allocation pathways could include the shortage of health service providers that accept patients
31
32 with public insurance (Devoe et al., 2007) or more broadly the presence of geographic health
33
34 professional shortage areas (Spelke, Zertuche, & Rochat, 2016; Wang & Luo, 2005). However at
35
36 the intersection of race and class, other actions of class may be at play including inter-group
37
38 conflict and salient group membership in accessing and delivering high quality healthcare.
39
40 African American populations, who are disproportionately represented among those with low-
41
42 incomes, have experienced repeated betrayals of trust by medical and research communities and
43
44 continue to experience discrimination in the medical setting which likely contributes to higher
45
46 levels of distrust of medical professionals seen among these populations (Rajakumar, Thomas,
47
48 Musa, Almarino, & Garza, 2009). This distrust may lead to delaying preventative care or
49
50 treatment.
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65

1
2
3
4 Strengthening causal inference for the relationship between access to health care and health
5
6 outcomes requires methods or designs that can overcoming the major sources of confounding
7
8 that exist between the insured and uninsured populations (Hadley, 2003). Both the Medicaid
9
10 expansion component and the provision of subsidies to purchase health care could be leveraged
11
12 as natural or quasi-experiments in order to better understand the impact of access to care on
13
14 health. A handful of studies have begun to examine the impacts of ACA on health outcomes.
15
16 These have focused primarily on adult health since adults' insurance coverage is most affected;
17
18 however, future studies should examine whether child health responds to changes in parents
19
20 health coverage through the ACA as lack of insurance has been cited as a source of family stress
21
22 and a barrier around providing optimal care for children (Devoe et al., 2007).
23
24
25
26
27
28

29 Neighborhood conditions

30
31
32 Because of historical processes of racial and economic residential segregation, children living
33
34 in poor families often live in impoverished neighborhoods (Kramer & Hogue, 2009; Reardon &
35
36 Bischoff, 2011). This means that poverty is not only an individual or family experience, but to
37
38 the extent that high poverty neighborhoods have fewer amenities and greater social discord, it is
39
40 also a community experience. In the U.S. in particular, poverty and race go hand-in-hand to
41
42 impact children's neighborhood contexts; whereas only 1.4% of white children live in both poor
43
44 families and poor neighborhoods, 16.8% of black children experience this "double jeopardy"
45
46
47 (Osypuk & Acevedo-Garcia, 2010).
48
49
50
51

52
53 Empirically, neighborhood environments have been linked to a wide range of child health
54
55 outcomes including body mass index (BMI) (Chen & Paterson, 2006), overweight and obesity
56
57 (Alvarado, 2016; Borrell, Graham, & Joseph, 2016; Sharifi et al., 2016), asthma and (McGrath,
58
59 Matthews, & Brady, 2006) and blood pressure. (T. Leventhal & Brooks-Gunn, 2004). Much
60
61
62
63
64
65

1
2
3
4 work reports that women living in disadvantaged neighborhoods are more likely to deliver
5
6 infants preterm or low birth weights (Culhane & Elo, 2005; Margerison-Zilko et al., 2015; Masi,
7
8 Hawkey, Piotrowski, & Pickett, 2007; Morenoff, 2003; Ncube, Enquobahrie, Albert, Herrick, &
9
10 Burke, 2016; O'Campo et al., 2008; Vos, Posthumus, Bonsel, Steegers, & Denktas, 2014),
11
12 suggesting possible intergenerational effects of neighborhood context, whereby the influence of
13
14 disadvantaged environments on child health begins *in utero* or prior to conception. A small body
15
16 of research has examined the specific pathways by which early-life neighborhood exposures
17
18 influence children's health. Chen and Paterson (2006) report that lower neighborhood
19
20 socioeconomic status is associated with lower basal cortisol in adolescence, suggesting that
21
22 neighborhood disadvantage may dysregulate the hypothalamic-pituitary-adrenal (HPA) axis,
23
24 which is in turn associated with regulation of many physiological processes and health outcomes.
25
26
27
28
29
30

31
32 The 'neighborhood effects' literature has been critiqued on numerous counts (Oakes, 2004)
33
34 including differentiation of selection versus causation, the challenge of identifying effects when
35
36 there are few poor individuals living in salubrious environments (structural confounding), and
37
38 measurement of contextual versus compositional features of neighborhoods (Arcaya et al., 2016;
39
40 Schempf & Kaufman, 2012). Beyond addressing the challenges of causal inference, there are
41
42 opportunities for enriching the conceptualization of class-based neighborhood effects with
43
44 respect to the proximal processes for child health. Much of the neighborhood effects literature
45
46 implicitly or explicitly posits that the drivers of neighborhood health gradients are distributional
47
48 in nature, focusing on the allocation of resources and services to neighborhoods. However
49
50 neighborhoods also represent relational spaces where salient group identity and inter-group
51
52 conflict may play out in ways that impact child health (Cummins, Curtis, Diez-Roux, &
53
54 Macintyre, 2007; Macintyre, Ellaway, & Cummins, 2002) .
55
56
57
58
59
60
61
62
63
64
65

1
2
3
4 An example of the importance of salient group identity in neighborhoods concerns the
5
6 production of local social norms. Neighborhood, community, and school social norms influence
7
8 health behaviors such as tobacco and alcohol use among adolescents (Chuang, Ennett, Bauman,
9
10 & Foshee, 2005, 2009; Eisenberg & Forster, 2003; Ennett, Flewelling, Lindrooth, & Norton,
11
12 1997; Frohlich, Potvin, Gauvin, & Chabot, 2002; Lipperman-Kreda, Grube, & Paschall, 2010;
13
14 Lovato et al., 2010). The notion of salient groups may also come into play as a moderator of
15
16 “neighborhood effects” if individuals’ interactions with their neighborhood’s service, physical,
17
18 or social environment differs depending on their affiliation with other salient class-based groups.
19
20 For example, the role of school environments on children’s BMI appears to differ by household-
21
22 or neighborhood-level socioeconomic status (Carroll-Scott et al., 2015).
23
24
25
26
27
28

29
30 Much less attention has been paid to investigating the role of class-based antagonistic or
31
32 inter-group conflict within neighborhoods and their effects on child health. For example, one line
33
34 of inquiry could investigate how potentially conflict-generating processes such as gentrification
35
36 and urban re-development, affordable housing, zoning, ordinances regarding property upkeep,
37
38 policing programs (e.g., “stop and frisk”, decriminalization of marijuana), etc. affect the health
39
40 of both the “beneficiaries” and “victims” of such programs. A few studies have attempted to
41
42 explore the effects of neighborhood change and gentrification on birth outcomes (Huynh &
43
44 Maroko, 2014; Margerison-Zilko et al., 2015), but this work is in its infancy and remains in need
45
46 of advances in exposure measurement and replication.
47
48
49
50

51
52 The relatively large literature on factors such as social capital, social control, and collective
53
54 efficacy could represent actions relevant to both salient group identity and inter-group conflict
55
56 processes of class. Because collective efficacy may be strengthened in areas of racial, ethnic, or
57
58 class homogeneity, identification with salient groups could promote cohesion. On the other hand,
59
60
61
62
63
64
65

1
2
3
4 cross-class efforts at social control—for example around expectations for behavioral or aesthetic
5 norms such as yard care—could result in inter-group conflict. While some empirical work has
6 found that social cohesion, social control, and/or collective efficacy are associated with better
7 health in adults, little work has examined these characteristics with respect to children’s physical
8 health. Such work could follow the model of Donnelly and colleagues (2016) who found that
9 adolescents who grew up in neighborhoods with high collective efficacy exhibited fewer
10 depression and anxiety symptoms compared to those who grew up in neighborhoods with lower
11 collective efficacy.
12
13

14 Education System

15
16 Educational attainment is one of the strongest predictors of adult morbidity and mortality
17 (Hummer & Lariscy, 2011), and the expansion of compulsory education has been called among
18 the most important health intervention instituted in countries around the globe (Desai & Alva,
19 1998; Machado-Rodrigues et al., 2014). While the association between education and health and
20 longevity is widely documented, debate about the causal direction of education and health exists
21 (J. L. Lynch & von Hippel, 2016). The lifecourse and transgenerational reproduction of
22 education and health represent complex dynamics, and while health selection and residual
23 confounding are not unimportant, the bulk of the evidence is consistent with a causal beneficial
24 effect of greater education on health (Heckman, 2006; Montez & Friedman, 2015).
25
26

27
28 Though the link between education and cognitive development in children is most evident,
29 educational policies and institutions can also directly impact child physical health through
30 policies of mandatory vaccination or physical exams, and programs promoting physical
31 education and nutrition. For example, schools can facilitate the delivery of services to children
32 who are food insecure and lack health and dental care. In the U.S., the National School Lunch
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65

1
2
3
4 Program (NSLP) provides free or subsidized lunch (and often breakfast) for families at or below
5
6 185 percent of the federal poverty line (National School Lunch Program, 2012). Research has
7
8 suggested that food insecurity is associated with obesity, lower energy, and more internalizing
9
10 behavior problems in children (Weinreb et al., 2002); therefore providing meals during the
11
12 school months may reduce negative health outcomes, improve concentration and provide a
13
14 reliable source of nutrition and food for low-income children..
15
16
17
18

19
20 Educational systems also afford opportunities for children to be tested for vision, dental, and
21
22 health issues through various screening programs. Most of these screenings are mandated by
23
24 states and provide an avenue for identification and referral for identified with conditions that
25
26 may be problematic to their learning. Unfortunately, the effectiveness and the amount of services
27
28 vary from state to state with many of the highest need schools providing fewer services. Even
29
30 though the infrastructure exists for providing services across class groups, as discussed
31
32 previously in the section on neighborhood effects, there are still stark differences in how these
33
34 children fare in poorer schools with large income gaps in achievement and unmet needs still
35
36 present (Reardon, 2011).
37
38
39
40
41

42 Beyond the service environment of schools, the quality of school infrastructure could also
43
44 affect health in class-dependent manner. Poorly funded schools are often built in areas and of
45
46 materials that may be high in toxicants (e.g. lead and mercury) that have consequences for
47
48 achievement (Miranda, Kim, Reiter, Galeano, & Maxson, 2009) and behavior (Dietrich,
49
50 Douglas, Succop, Berger, & Bornschein, 2001). There appear to be no safe levels of lead
51
52 exposure for the developing child (Centers for Disease Control and Prevention, 2012) and lead
53
54 can be found in old buildings and contaminated soil. Almost every major city in the U.S. is
55
56 dealing with the issue of lead exposure (Amato et al., 2012) in children and how both the home
57
58
59
60
61
62
63
64
65

1
2
3
4 and school environment relate to exposure is important for understanding class disparities in
5
6 children's health.
7
8

9
10 Services such as school lunches and health screening represent one way that educational
11
12 institutions and education-related policy seek to buffer or address disparities in the allocation of
13
14 resources to children. The programs are successful to the extent that supply of needed services
15
16 meet the distribution and intensity of demand. One emerging area of relevance for class and
17
18 race-based disparities that arise from a different action of class is concern about the 'school to
19
20 prison pipeline' and the disproportionate representation of poor black boys in school disciplinary
21
22 events (Wald & Losen, 2003). One explanation for the disparate rate of school suspension of
23
24 low income black and Latino children is conflicting expectations about 'normal' behavior and
25
26 unequal tolerance for deviation from class-based norms (Skiba, R.S., Nardo, & Peterson, 2002).
27
28
29
30

31 32 *Microsystemic forces that shape children's interaction within family contexts*

33 34 Parenting and Family Resource Management

35
36
37
38
39 Kohn and Schooler (1983) were among the first to comment upon and document social class
40
41 variation in parenting activities. They argued that parents in middle- and upper-class families
42
43 valued promoting children's independence, decision-making and self-direction, whereas lower-
44
45 class families valued or prioritized children's deference to authority, rule-following and
46
47 conformity. Kohn and Schooler surmised these distinct parenting values were held to prepare
48
49 children for the occupation they would likely occupy in the future. Subsequent research has used
50
51 class-based differences in parenting style to explain associations between childhood
52
53 socioeconomic status and child and adult health outcomes including BMI trajectories (Lane,
54
55
56
57
58
59
60
61
62
63
64
65

1
2
3
4 Bluestone, & Burke, 2013), and adult metabolic function (Lehman, Taylor, Kiefe, & Seeman,
5
6
7 2005).

8
9
10 Lareau (2002) presented compelling ethnographic evidence suggesting that middle-class
11
12 parents take a fundamentally different approach to parenting than working class parents, and that
13
14 differences in parenting were manifest in children’s own beliefs. “Concerted cultivation,” the
15
16 form of parenting manifest by middle class parents, was characterized in terms of purposeful
17
18 nurturance of children’s special gifts and interests through organized and structured activities.
19
20 Children raised under this parenting model articulated feeling “special” because of the activities
21
22 organized by their parents, and feeling “bored” if time was not sufficiently filled with structured
23
24 activities. By contrast, “accomplishment of natural growth,” the approach to parenting observed
25
26 by lower class families, was characterized in terms of parents providing basic care and allowing
27
28 the child to grow. Children raised under this parenting model had a more “go with the flow”
29
30 everyday experience that responded more to emergent experiences than planned events.
31
32
33
34
35

36
37 Analysis of the Early Childhood Longitudinal Study, Kindergarten Class (ECLS-K)
38
39 reported that fully 50% of the variance in their measure of “concerted cultivation” was explained
40
41 by multiple indicators of socioeconomic status, with the strongest effect leveraged by parental
42
43 educational attainment (Cheadle & Amato, 2011). This logic is consistent with Wright’s notion
44
45 of subjectively salient experiences. That is, class generates children’s subjectively salient
46
47 experiences—one of which can be exposure to systematically different parenting styles or
48
49 practices; this exposure helps steer children’s identity as being located on the lower (or higher)
50
51 end of a system of economic stratification.
52
53
54
55
56
57
58
59
60
61
62
63
64
65

1
2
3
4 Parenting is closely related to the topic of family resource management, which, according to
5
6 the National Council of Family Relations, focuses on “decisions individuals and families make
7
8 about developing and allocating physical, psychological and social resources such as time,
9
10 money, material assets, and energy.” Lareau’s (2002) work on class variation applies here as
11
12 well. “Concerted cultivation” parenting expends more financial resources and structured time; by
13
14 contrast, maintenance of kinship networks with family, including liberal opportunity for
15
16 emergent play and interaction with older and younger peers within the family is exercised more
17
18 deliberately by parents embracing “accomplishment of natural growth.”
19
20
21
22
23

24 Although not written under the general framework of “family resource management,” *Wither*
25
26 *Opportunities* (Duncan & Murnane, 2011) draws substantial attention to how socioeconomic
27
28 status creates substantial differences in how distinct household resources are allocated. This logic
29
30 aligns closely with Wright’s view of class as generating an unequal allocation of resources
31
32 and/or life chances. When the focus is placed on using financial resources to provide children
33
34 with enriching experiences like sports or travel, individuals in the upper quintiles of household
35
36 earnings spend between four and 10-times the amount of money (on sports and travel,
37
38 respectively) than individuals in comparably sized families in the lowest quintiles of household
39
40 earnings (Kaushal, Magnuson, & Waldfogel, 2011). In terms of the allocation of family time,
41
42 mothers with higher levels of educational attainment spend more time engaging in literacy
43
44 activities with their children and taking them to novel locations like museums (Phillips, 2011).
45
46 The increasing emphasis placed on allocating time and financial resources to enriching children’s
47
48 development has contributed to an expansion of the academic achievement gap between rich and
49
50 poor (Reardon, 2011) and leads some to contend that “class differences in childrearing is on the
51
52 rise” (Miller, 2015).
53
54
55
56
57
58
59
60
61
62
63
64
65

1
2
3
4 No research we know of has explored the notion of class as generating subjectively salient
5
6 groups when examining parenting practices and child health. The extant literature relating class-
7
8 based parenting activities to children’s health inequalities is more closely aligned with Wright’s
9
10 view of class as producing an uneven allocation of resources and life chances. One prime
11
12 example is that parents of different social classes vary in their ability to ensure access to healthy
13
14 foods and also engage in varied feeding practices; both are key factors shaping children’s diet
15
16 and development of healthy eating habits—two critical proximal processes—which are then
17
18 reflected in outcomes such as overweight or obesity (Rhee, 2008). Overall, this literature is
19
20 relatively nascent and deserves further attention; additionally, exploring class through the lens of
21
22 subjectively salient groups would enrich future research on this topic.
23
24
25
26
27
28

29 Family structure, stability, and interpersonal dynamics

30
31

32 Family structure – in terms of number and relationship of caregivers –is strongly associated
33
34 with socioeconomic status, and has been consistently associated with indicators of child health
35
36 and development. Children living in single or stepparent homes are generally in worse health
37
38 (Bramlett & Blumberg, 2007; Carr & Springer, 2010; Mauldon, 1990; Montgomery, Kiely, &
39
40 Pappas, 1996), show elevated levels of health vulnerability (Dawson, 1991), participate in fewer
41
42 routine medical and dental visits (Anne Case & Paxson, 2001), and have worse access to
43
44 preventative health care (Gorman & Braverman, 2008) than their counterparts living in two
45
46 biological parent families. Child health is further stratified by parental cohabitation status. For
47
48 example the risk of asthma diagnosis is highest among children of single mothers, intermediate
49
50 among children of cohabiting mothers, and lowest among children of married mothers (Harknett,
51
52 2009). A similar pattern is evident for birth weight: the highest weights at birth are found among
53
54
55
56
57
58
59
60
61
62
63
64
65

1
2
3
4 infants born to married mothers, intermediate weights among infants born to cohabiting mothers,
5
6 and lowest weights among infants born to single mothers (Kane, 2016).
7
8

9 Much of the literature on families in the U.S. has transitioned away from simple dichotomies
10 of biological parent families versus all other types (single parent, step family, gay/lesbian
11 family), and now commonly distinguish families according to other criteria related to family
12 processes and parental dynamics, such as parental stability, father involvement, and/or quality of
13 parental relationships (Carr & Springer, 2010). For example, instability in parental relationships
14 is associated with worse child health (Bzostek & Beck, 2011) and family instability mediates at
15 least a portion of the association between maternal depression and lower levels of childhood
16 health (Turney, 2011). Father’s multiple-partner fertility is also linked with poorer childhood
17 health, and this association is mediated at least at in part by a reduction in the frequency of
18 father’s engagement with his child on a weekly basis (Bronte-Tinkew, Horowitz, & Scott, 2009).
19 However higher levels of engagement of fathers who reside in the home—regardless of whether
20 they are biological or “social” fathers (meaning, men who are romantically involved with the
21 mother and take on the social role of fatherhood)—are positively associated with child health
22 (Bzostek, 2008). No studies we are aware of have examined children’s physical health across
23 heterosexual and gay/lesbian families, but, there is evidence suggesting children’s mental health
24 is not significantly different across heterosexual parent families and same-sex parent families
25 (Patterson, 2006; Stacey & Biblarz, 2001).
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49

50 Siblings are also an integral part of families-of-origin, and potentially make important
51 contributions to children’s health. Older siblings can function as an additional source of learning
52 and socialization for younger siblings, and can directly and indirectly influence the behaviors and
53 attitudes of younger siblings, which may in turn be linked with health. Sibling interactions can
54
55
56
57
58
59
60
61
62
63
64
65

1
2
3
4 spur social-cognitive development while sibling conflict is linked with deviance and substance
5 use (McHale, Updegraff, & Whiteman, 2012); presence or absence of high-quality sibling
6 relationships, comprised of warmth, closeness, and lack of conflict, also mediate the association
7 between single-parent family structure and children's substance abuse, sexual risk behaviors, and
8 risk of contracting a sexually transmitted infection (East & Khoo, 2005). Having multiple
9 siblings is generally associated with a dilution of family resources (McHale et al., 2012); this
10 may also adversely impact a child's health.
11
12
13
14
15
16
17
18
19
20

21 As with other microsystem processes, much of the literature on class, family structure and
22 child health has been grounded in a life chances and/or unequal distribution of resources
23 framework. In contrast, we suspect the class actions of subjectively salient groups could generate
24 new insights. Social classes generate subjectively salient experiences such as growing up in an
25 economically disadvantaged single parent family. These experiences in turn critically shape the
26 schema people use to locate themselves and others within a system of economic stratification.
27
28 As an example, we speculate social isolation and support at the family-level could reflect class-
29 based processes generating subjectively salient experiences, such as multiple spells of
30 unemployment that prompts a series of residential moves, putting family members at risk of
31 social isolation. At a more basic level, social isolation and social support have powerful and
32 enduring effects on health. The literature on adult health shows this very clearly [see for example
33 (House, Landis, & Umberson, 1988; House, Umberson, & Landis, 1988)]. Some evidence along
34 these lines has been shown for health early on in the life course. Low-income children whose
35 mothers are socially isolated exhibit higher rates of serious accidents, injuries, and poisonings
36 (Leininger, Ryan, & Kalil, 2009). Maternal perceptions of instrumental support predict higher
37 levels of child health (Turney, 2013), whereas greater household chaos (meaning, a crowded,
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65

1
2
3
4 noisy, and unpredictable environment) predict lower levels of child health (Dush, Schmeer, &
5
6 Taylor, 2013). In sum, health is likely maximized among children who belong to a family in
7
8 which both the parent-child and sibling relationships are characterized by high levels of
9
10 closeness and warmth, as well as high levels of social support which may buffer the child from
11
12 the full effects of stressful events.
13

14 15 16 Housing 17 18

19
20 While family structure, dynamics, and resources are primary elements of the microsystem,
21
22 the intimate physical context of family life is the home, and this environment is also part of
23
24 children's microsystems. As a source of protection from the elements, animals and insects, and a
25
26 place to safely store valuables and food, housing is—in Maslow's hierarchy of needs—a
27
28 fundamental human necessity. A lack of housing, or, homelessness, is associated with higher
29
30 levels of food insecurity and poor nutrition for children, as well as increased behavioral problems
31
32 and developmental delays, relative to housed poor children (Wood, Valdez, Hayashi, & Shen,
33
34 1990). For housed children, the quality and stability of the built structure and utility services
35
36 provided to households can also affect health. Quinn and colleagues (2010) found that children
37
38 living in homes with more infrastructure and service stressors had lower self-rated health,
39
40 reduced controllability of asthma, and more unplanned medical visits. Exposure to dust mites
41
42 and indoor air mold appear to increase risk for the development and exacerbation of asthma in
43
44 children (Jaakkola, Hwang, & Jaakkola, 2005; Johnston, 2000). There is also strong evidence for
45
46 the negative effect of specific toxicants in the home, such as lead, on children's health outcomes.
47
48 Lead paint dust is well-known to cause severe and irreversible cognitive development problems
49
50 (J. Krieger & Higgins, 2002) and surveillance data indicates that dangerously high levels of lead
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65

1
2
3
4 are 12 times as common for low income children compared to higher income children (6% vs
5
6
7 0.5%) (Raymond, Wheeler, & Brown, 2014).
8

9
10 Crowding is an additional housing feature that is more prevalent among lower-income
11
12 populations and has been associated with increased risk for childhood respiratory (Baker, Taylor,
13
14 & Henderson, 1998) and gastrointestinal diseases (McCallion et al., 1996), potentially due to a
15
16 higher degree of infectious disease transmission among individuals living in crowded conditions
17
18 (Tama Leventhal & Newman, 2010). Crowding has also been associated with inadequate sleep
19
20 among adults (Chambers, Pichardo, & Rosenbaum, 2014) and lack of personal space is thought
21
22 to contribute to social and emotional challenges among adults and children; however, few studies
23
24 have looked at this specifically (Tama Leventhal & Newman, 2010). Housing quality and
25
26 instability can also indirectly affect children's health through their impact on family processes
27
28 such as high levels of parental stress or depression and increased parental conflict (in the wake of
29
30 job loss or persistent poverty for example) (Haurin, Parcel, & Haurin, 2002; Tama Leventhal &
31
32 Newman, 2010).
33
34
35
36
37
38

39
40 Overall, the literature on class-based differences in housing and child health rely on an
41
42 allocation and distribution action of class as the motivating process. Whether salient group
43
44 affiliation (e.g. from residence in particular housing class such as public housing) or inter-group
45
46 conflict (e.g. as might arise in mixed income housing developments) further transmits class
47
48 differences to child health disparities is unclear but potentially enlightening.
49
50
51
52
53
54
55

56 Embodying social environments
57
58
59
60
61
62
63
64
65

1
2
3
4 In summary there is varied evidence for the manner in which the actions of social class shape
5
6 and affect the meso- and microsystem environments to which children are most exposed. To the
7
8 extent that the class-based influence on these environments affects the critical proximal
9
10 processes of child health and development, the social environment may be physically embodied
11
12 as illness or wellness. These processes are evident across the lifecourse of individuals, but
13
14 because of the transgenerational nature of class, may also be communicated from one generation
15
16 to the next. Most efforts to examine the actions of class implicitly frame the question in terms of
17
18 differential allocation or distribution of necessary resources. This is clearly a potent and intuitive
19
20 action. However opportunities may exist for further understanding actions of class – and possible
21
22 unintended consequences of social policies – including the production of salient group
23
24 experiences and antagonistic inter-group conflicts. If these sources of experience also serve as
25
26 proximal processes they too become part of the reproduction of class and class-based health
27
28 disparities.
29
30
31
32
33
34
35
36
37
38
39

40 **HIGH PROFILE TARGETS FOR FUTURE RESEARCH**

41
42
43 In the end, what contributions are made by this high level review focused on how social class
44
45 “gets under the skin” to affect children’s health, and what next steps are needed? First, although
46
47 the idea of socioeconomic differences in children’s health is not new (e.g. Evans, Miller, &
48
49 Seeman, 2012), this paper provides one way to organize the broad domains of relevant research
50
51 and theory across multiple disciplines into a coherent conceptual model. The fact that there is
52
53 clear theoretical rationale and corroborating empirical evidence for many of the pathways
54
55 proposed in the model (Figure) speaks to its potential utility for building an integrated
56
57 understanding of population variability in children’s health. Second, despite its high level nature,
58
59
60
61
62
63
64
65

1
2
3
4 this review points to several discrete ideas, such as the importance of the conceptual meaning of
5
6 social class and its diverse modes of action that have unique and distinct implications for
7
8 children’s health. Another discrete and unique point uncovered by this review is the diverse
9
10 means by which social class “gets under the skin”. Psychosocial stress and the biologic sequelae
11
12 are meaningful and deserving of attention. However, we also highlight other conceptually more
13
14 direct and potentially actionable pathways, such as paraoccupational exposure to disease agents
15
16 or differential exposure or vulnerability to environmental toxicants (e.g., proximity to hazardous
17
18 sites), aging infrastructure (e.g., recent Flint water problems), and poor housing stocks. Finally,
19
20 this review illustrates the complexity of child health and development and the corresponding
21
22 need to work across boundaries separating disciplines and the worlds of “discovery” and
23
24 “practice” to protect the health of all children.
25
26
27
28
29
30

31
32 Contributions notwithstanding, this review highlights multiple areas for additional work.
33
34 The upcoming areas highlight ways of operationalizing Wright’s actions of social class and
35
36 “high priority” areas for future basic and policy research. The identified items are considered
37
38 “high priority” for several different reasons; either because the item addresses a basic critical gap
39
40 in the knowledge base, because it would generate substantial impact, or because it would open
41
42 doors that have historically been closed.
43
44
45
46

47 Operationalizing Wright’s Actions of Social Class 48 49

50 The framework linking social class to child health and the evidence provided in the empirical
51
52 review above highlight the importance of creating theoretical and empirical clarity about how the
53
54 three different actions of social class influence child health. Thus, it is necessary to consider how
55
56 one might operationalize the framework and what difficulties might arise in the process. The
57
58 biggest lesson from our framework is that researchers should use different indicators of social
59
60
61
62
63
64
65

1
2
3
4 class depending on the actions being tested. Some health pathways will call for distributional
5
6 indicators such as income, wealth, or education; others will need to be more focused on salient
7
8 groups or antagonistic conflicts using occupational prestige or latent classifications of groups as
9
10 indicators. In addition, researchers need to be sensitive to the way that different spatial and
11
12 temporal scales influence indicators of social class. For instance, social class might be
13
14 operationalized at the level of individual persons, households, or spatially across neighborhoods,
15
16 each reflecting a distinct manifestation of social class, and each measuring different aspects of
17
18 the distribution of resources, status and power. Similarly, many measures are temporally
19
20 dynamic throughout the life course of an individual, across generations within families, and
21
22 through history of successive cohorts, necessitating attention to the timing of measurement
23
24 (Kane & Lam, 2011).
25
26
27
28
29
30

31
32 For example, technological progress has shifted the relative social position of people with
33
34 different levels of educational attainment. Cohorts born in the early twentieth century in the
35
36 United States had low high school and college completion rates of approximately 10 and 6 per
37
38 cent respectively (Bailey & Dynarski, 2011). The relative prevalence and earnings of each group
39
40 has changed dramatically as more people attended secondary schools and universities. High
41
42 school graduates have seen a relative decline in their wage premium compared to 8th grade
43
44 graduates from 35 percent in the early twentieth century to 20 percent or less by the end of the
45
46 twentieth century. College graduates, on the other hand, have seen an increase in their wage
47
48 premium versus high school graduates from 31 percent in 1950 to 62 percent in 2005 suggesting
49
50 an increase in the relative status and resources returned from a fixed level of education (Goldin
51
52 & Katz, 2000, 2007). These variations over time are also matched by spatial variations in high
53
54 school and college completion rates and the relative status and wage premium of degrees (Goldin
55
56
57
58
59
60
61
62
63
64
65

1
2
3
4 & Katz, 2000; Snyder & Dillow, 2015). Cohort and period influences on these various indicators
5
6 of social class highlight the importance of contextualizing studies in time and space when
7
8 analyzing how social class influences child health; explicitly examining cohort and period
9
10 patterns in child health trends may contribute to our understanding of the dynamics of child
11
12 health disparities.
13
14

15 16 17 Basic Research 18 19

20 The first high priority area for research is the need for more studies that use experimental or
21
22 quasi-experimental designs. The vast majority of studies covered in this review are based on
23
24 observational, albeit complex observational, designs such as those deployed in the National
25
26 Longitudinal Study of Adolescent to Adult Health (Add Health) and Early Childhood
27
28 Longitudinal Program (ECLS) studies that use rigorous sampling procedures and multimodal
29
30 data collection techniques. Nevertheless, strong causal inference demands random assignment to
31
32 change agents or designs that mimic these features. Experimental studies of overt attempts to
33
34 manipulate some feature of socioeconomic position do exist. The Perry Preschool Project, for
35
36 example, allocated educational resources and family wrap-around services to promote parental
37
38 labor force engagement in low-income families. The program essentially simulated an upward
39
40 shift in social position through the provision of sustained high-quality childcare for low income
41
42 children and resources to enhance human capital for parents. Long-term evaluations of the Perry
43
44 Preschool Project demonstrate a substantial return on investment in terms of benefits to
45
46 individual children and broader societal benefits (Heckman, Moon, Pinto, Savelyev, & Yavitz,
47
48 2010; Nores, Belfield, Barnett, & Schweinhart, 2005). In contrast results from the Moving to
49
50 Opportunity program, another simulation of an upward shift in social position by allowing
51
52 impoverished families to move into better (albeit still low income) neighborhoods, are mixed.
53
54
55
56
57
58
59
60
61
62
63
64
65

1
2
3
4 Specifically, results indicated greater rates of depression and other behavioral health outcomes
5
6 (i.e., PTSD and conduct disorder) among boys who moved, but reduced rates of depression and
7
8 conduct disorder among girls who moved (Kessler et al., 2014). More recent results suggest
9
10 economic effects in young adulthood varied by the age of the child at the time of intervention,
11
12 with positive economic outcomes in young adulthood for children who moved before age 13, but
13
14 either null or detrimental effects for moves after age 13 (Chetty, Hendren, & Katz, 2015).
15
16 Together, these findings highlight the complex, and often unintended consequences of social
17
18 interventions and the importance of their timing in the life course.
19
20
21
22
23

24 Experiments like the Perry Preschool Project and the Moving to Opportunity program make a
25
26 valuable contribution to the literature, but they also have shortcomings. A simple shortcoming is
27
28 that “health” is an atypical outcome in many of these projects; consequently, research designed
29
30 to delineate variation in meaningful and age-appropriate health outcomes across assignment
31
32 groups is needed. Perhaps the greatest shortcoming of existing experimental work is the inability
33
34 to attend to distinct putative effects of competing elements or actions of social class. Building on
35
36 Wright’s work we propose three distinct functions or modes of action, minimally, (Figure) that
37
38 require isolation to understand how manipulations to social position may produce health
39
40 outcomes. Consider, for example, the complex and presumably counter-intuitive findings from
41
42 Kessler and colleagues (2014) evaluation of the Moving to Opportunity program: residential
43
44 relocation is ripe with stressors ranging from the simple moving logistics, to all the nuances of
45
46 acquiring familiarity in your new community (e.g., finding products in the local supermarket,
47
48 finding your way to basic services) and the social stressors of losing contact with some
49
50 acquaintances while trying to build new ones. This reality highlights a basic confound in the
51
52 Moving to Opportunity experimental group: they all “benefited from resource allocation” but
53
54
55
56
57
58
59
60
61
62
63
64
65

1
2
3
4 they were also all reallocated (to varying degrees) to a different social group and confronted with
5
6 sources of group conflict.
7
8

9
10 Data linkage initiatives (and the resulting ‘Big Data’) are another high priority research
11
12 activity stimulated by this review. Definitive studies designed to capture nuanced conceptual
13
14 features of the actions of class, multiple pathways to child health, an array of developmentally
15
16 appropriate health outcomes, and the myriad of possible behavioral and biological mediators are
17
18 typically not feasible. Moreover, even if feasible, collecting these data in a single study would
19
20 be inefficient because they already exist in several distinct areas such as income tax returns,
21
22 school records, electronic medical records, personal health information maintained in proprietary
23
24 applications (e.g., physical activity apps such as Fitbit, INike, Runkeeper), county land use
25
26 records and other sources that will undoubtedly grow as technology expands. Consequently, the
27
28 current problem is not necessarily the absence of data, but rather the ability to harvest and
29
30 integrate existing data. Indeed advancements in bioinformatics and expansion of comprehensive
31
32 health information exchanges provide substantial potential for linking studies of the social world
33
34 with useful child health outcomes. Of course such tools are not a panacea, recognizing that
35
36 medical records are not typically collected for research purposes, and that information
37
38 maintained in health information exchanges is only relevant to users of health services.
39
40 Nevertheless, recognizing that some health information exchanges like those by major insurers
41
42 such as Kaiser Permanente boast greater than 90% of covered lives within specific catchment
43
44 areas, harnessing the strength of these tools for research is necessary.
45
46
47
48
49
50
51
52

53 54 Policy Research 55

56
57 Research to identify potential competing or conflicting commitments within policies is
58
59 needed. Policy makers interested in protecting or promoting children’s health oftentimes have
60
61
62
63
64
65

1
2
3
4 multiple commitments to balance. Self-evidently, the development of any given policy whose
5
6 express purpose is to improve child health demonstrates a commitment to child health.
7
8
9 However, in the real world riddled with limited resources, competing world views on who is
10
11 responsible for child health, and what “health” really means, any policy maker will quickly
12
13 confront other commitments. Possible competing commitments can be pragmatic (e.g., concerns
14
15 about losing the next election), moralistic (e.g., all children deserve basic health care),
16
17 ideological (e.g., the ability to provide services under the policy should be determined through a
18
19 competitive process), or political (e.g., I want to keep a friendly relationship with “Entity A”,
20
21 who opposes the proposed policy). While some commitments may compete, others may clearly
22
23 conflict. Consider, for example, federal policy supporting Head Start. The policy is clearly
24
25 committed to children (and families) living in poverty. Nevertheless competing commitments
26
27 related to accountability, such as grantees’ ability to meet performance standards (e.g. section
28
29 641A to Title 42 of US Code 9836A) and requirements for active parent involvement (e.g.
30
31 section 642 of Title 42 of US Code 9837) can result in Head Start agencies screening out
32
33 children who are most in need.
34
35
36
37
38
39
40

41 Research or critical analyses of underlying conceptual mechanisms targeted in policies
42
43 intended to benefit children’s health (either in the short or long term) is needed. As others have
44
45 noted (Komro, Burris, & Wagenaar, 2014), very few policies have been evaluated for their
46
47 putative effects on child and family health outcomes. One illustration of this need is the
48
49 conflicting and counter-intuitive adolescent mental and behavioral health findings previously
50
51 described from the Moving to Opportunity program (Kessler et al., 2014). The findings that
52
53 male adolescents receiving the opportunity to move to a better neighborhood experienced poorer
54
55 (rather than better) mental and behavioral health outcomes than their peers in the control group
56
57
58
59
60
61
62
63
64
65

1
2
3
4 does not make sense from a “Class as Inadequate Access to Resources” perspective. But, the
5
6 results make more sense when viewed from a “Class as group affiliation” or “Class as group
7
8 conflict” perspectives. Similarly, the putative value of various policy approaches to “school
9
10 choice”, whether through voucher systems to private schools or transportation options within
11
12 district, such policies are predicated on a view of class wherein access to resources is viewed as
13
14 the key criterion, whereas consequences resulting from disruptions to group affiliation and
15
16 potential shifts in group conflict are given less attention. Conversely, policy attempts driven
17
18 more by perspectives of class as group affiliation or attempts to minimize group conflict, such as
19
20 strategies to build social capital have been presumed to yield greater health benefits than those
21
22 focused on resource allocation (Scheffler & Brown, 2008). Researchers should evaluate ongoing
23
24 and new policy experiments like state’s willingness to adopt Medicaid expansion, school choice
25
26 and the array of social welfare programs to determine whether or how they are affecting
27
28 children’s health (Komro et al., 2014). More importantly, such results—informed by analysis
29
30 plans that capture variation in the distinct modes of action underlying social class—would ensure
31
32 delivery of clear information to decision makers as to why specific elements of, or entire,
33
34 policies help or harm children’s health.
35
36
37
38
39
40
41
42
43

44 In sum, explaining the ubiquitous finding of social class gradients in child health is complex
45
46 and the possible causes operate across many levels and domains; yet the posited causal processes
47
48 producing the gradient need not be seen as a ‘black box’ of invisible steps. Our conceptual
49
50 model is certainly a vast over-simplification, but by bringing together the theoretical perspectives
51
52 and empirical evidence of multiple disciplines it offers one possible view of testable (and in
53
54 some cases actionable) pathways and mechanisms by which social class ‘gets under the skin’ to
55
56 affect children’s health and development.
57
58
59
60
61
62
63
64
65

1
2
3
4 **ACKNOWLEDGEMENTS**
5

6
7 The Eunice Kennedy Shriver National Institute Of Child Health & Human Development of the
8
9 National Institutes of Health provided support for WWW (K01HDxxxxxx), XXX (K99/R00
10
11 HDxxxxxx), YYY (R01HDxxxxx), and ZZZ (R01HDxxxxxx); AAA received support from National
12
13 Heart, Lung, and Blood Institute (K01HLxxxxxx); BBB received support from the Economic and
14
15 Social Research Council (xxxxx).
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65

1
2
3
4 REFERENCES
5
6
7
8
9

- 10 Alvarado, S. E. (2016). Neighborhood disadvantage and obesity across childhood and adolescence:
11 Evidence from the NLSY children and young adults cohort (1986-2010). *Soc Sci Res*, 57, 80-98.
12 doi:10.1016/j.ssresearch.2016.01.008
13
14
15
16
17 Amato, M. S., Moore, C. F., Magzamen, S., Imm, P., Havlena, J. A., Anderson, H. A., & Kanarek, M. S.
18 (2012). Lead exposure and educational proficiency: moderate lead exposure and educational
19 proficiency on end-of-grade examinations. *Annals of epidemiology*, 22(10), 738-743.
20
21
22
23
24 Arcaya, M. C., Tucker-Seeley, R. D., Kim, R., Schnake-Mahl, A., So, M., & Subramanian, S. V. (2016).
25 Research on neighborhood effects on health in the United States: A systematic review of study
26 characteristics. *Soc Sci Med*, 168, 16-29. doi:10.1016/j.socscimed.2016.08.047
27
28
29
30
31 Bailey, M. J., & Dynarski, S. M. (2011). *Gains and gaps: Changing inequality in US college entry and*
32 *completion*. NBER Working Papers, (17633).
33
34
35
36 Baker, D., Taylor, H., & Henderson, J. (1998). Inequality in infant morbidity: causes and consequences in
37 England in the 1990s. ALSPAC Study Team. Avon Longitudinal Study of Pregnancy and
38 Childhood. *Journal of epidemiology and community health*, 52(7), 451-458.
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65

- 1
2
3
4 Bramlett, M. D., & Blumberg, S. J. (2007). Family structure and children's physical and mental health.
5
6 *Health Affairs*, 26(2), 549-558.
7
8
9 Bronfenbrenner, U., & Ceci, S. J. (1994). Nature-nuture reconceptualized in developmental perspective:
10
11 A bioecological model. *Psychological Review*, 101(4), 568-586.
12
13 Bronte-Tinkew, J., Horowitz, A., & Scott, M. E. (2009). Fathering with multiple partners: Links to
14
15 children's well-being in early childhood. *Journal of Marriage and Family*, 71(3), 608-631.
16
17 Bzostek, S. H. (2008). Social Fathers and Child Well-Being. *Journal of Marriage and Family*, 70(4), 950-
18
19 961.
20
21
22 Bzostek, S. H., & Beck, A. N. (2011). Familial instability and young children's physical health. *Social*
23
24 *Science & Medicine*, 73(2), 282-292.
25
26 Carr, D., & Springer, K. W. (2010). Advances in families and health research in the 21st century. *Journal*
27
28 *of Marriage and Family*, 72(3), 743-761.
29
30
31 Carroll-Scott, A., Gilstad-Hayden, K., Rosenthal, L., Eldahan, A., McCaslin, C., Peters, S. M., &
32
33 Ickovics, J. R. (2015). Associations of Neighborhood and School Socioeconomic and Social
34
35 Contexts With Body Mass Index Among Urban Preadolescent Students. *Am J Public Health*,
36
37 105(12), 2496-2502. doi:10.2105/AJPH.2015.302882
38
39
40 Case, A., Fertig, A., & Paxson, C. (2005). The lasting impact of childhood health and circumstance. *J*
41
42 *Health Econ*, 24(2), 365-389. doi:10.1016/j.jhealeco.2004.09.008
43
44
45 Case, A., & Paxson, C. (2001). Mothers and others: who invests in children's health? *Journal of health*
46
47 *economics*, 20(3), 301-328.
48
49 Centers for Disease Control and Prevention. (2012). *CDC response to Advisory Committee on Childhood*
50
51 *Lead Poisoning Prevention recommendations in "Low Level Lead Exposure Harms Children: A*
52
53 *Renewed Call of Primary Prevention"*. Retrieved from Atlanta, GA:
54
55
56 Chambers, E. C., Pichardo, M. S., & Rosenbaum, E. (2014). Sleep and the housing and neighborhood
57
58 environment of urban Latino adults living in low-income housing: the AHOME study. *Behavioral*
59
60 *sleep medicine*, 1-16.
61
62
63
64
65

- 1
2
3
4 Cheadle, J. E., & Amato, P. R. (2011). A Quantitative Assessment of Lareau's Qualitative Conclusions
5
6 About Class, Race, and Parenting. *Journal of Family Issues*, 32(5), 679-706.
7
8
9 Chen, E., & Paterson, L. Q. (2006). Neighborhood, family, and subjective socioeconomic status: How do
10 they relate to adolescent health? *Health Psychol*, 25(6), 704-714. doi:10.1037/0278-
11 6133.25.6.704
12
13
14 Chetty, R., Hendren, N., & Katz, L. F. (2015). *The effects of exposure to better neighborhoods on*
15
16 *children: New evidence from the Moving to Opportunity experiment.* (w21156).
17
18
19 Christakis, D. A., Mell, L., Koepsell, T. D., Zimmerman, F. J., & Connell, F. A. (2001). Association of
20
21 lower continuity of care with greater risk of emergency department use and hospitalization in
22
23 children. *Pediatrics*, 107(3), 524-529.
24
25
26 Christakis, D. A., Mell, L., Wright, J. A., Davis, R., & Connell, F. A. (2000). The association between
27
28 greater continuity of care and timely measles-mumps-rubella vaccination. *Am J Public Health*,
29
30 90(6), 962-965.
31
32
33 Chuang, Y. C., Ennett, S. T., Bauman, K. E., & Foshee, V. A. (2005). Neighborhood influences on
34
35 adolescent cigarette and alcohol use: mediating effects through parent and peer behaviors. *J*
36
37 *Health Soc Behav*, 46(2), 187-204.
38
39
40 Chuang, Y. C., Ennett, S. T., Bauman, K. E., & Foshee, V. A. (2009). Relationships of adolescents'
41
42 perceptions of parental and peer behaviors with cigarette and alcohol use in different
43
44 neighborhood contexts. *J Youth Adolesc*, 38(10), 1388-1398. doi:10.1007/s10964-009-9424-x
45
46
47 Culhane, J. F., & Elo, I. T. (2005). Neighborhood context and reproductive health. *Am J Obstet Gynecol*,
48
49 192(5 Suppl), S22-29. doi:10.1016/j.ajog.2005.01.071
50
51
52 Cummins, S., Curtis, S., Diez-Roux, A. V., & Macintyre, S. (2007). Understanding and representing
53
54 'place' in health research: a relational approach. *Soc Sci Med*, 65(9), 1825-1838.
55
56 doi:10.1016/j.socscimed.2007.05.036
57
58 Dawson, D. A. (1991). Family structure and children's health and well-being: Data from the 1988
59
60 National Health Interview Survey on Child Health. *Journal of Marriage and the Family*, 573-584.
61
62
63
64
65

- 1
2
3
4 Desai, S., & Alva, S. (1998). Maternal education and child health: Is there a strong causal relationship?
5
6 *Demography*, 35(1), 71-81.
7
8
9 Devoe, J. E., Baez, A., Angier, H., Krois, L., Edlund, C., & Carney, P. A. (2007). Insurance + access not
10
11 equal to health care: typology of barriers to health care access for low-income families. *Ann Fam*
12
13 *Med*, 5(6), 511-518. doi:10.1370/afm.748
14
15 Dietrich, K. N., Douglas, R. M., Succop, P. A., Berger, O. G., & Bornschein, R. L. (2001). Early
16
17 exposure to lead and juvenile delinquency. *Neurotoxicology and teratology*, 23(6), 511-518.
18
19
20 Donnelly, L., McLanahan, S., Brooks-Gunn, J., Garfinkel, I., Wagner, B. G., Jacobsen, W. C., . . .
21
22 Gaydosh, L. (2016). Cohesive Neighborhoods Where Social Expectations Are Shared May Have
23
24 Positive Impact On Adolescent Mental Health. *Health Aff (Millwood)*, 35(11), 2083-2091.
25
26 doi:10.1377/hlthaff.2016.0721
27
28
29 Doty, M. M., Collins, S. R., Robertson, R., & Garber, T. (2011). When unemployed means uninsured: the
30
31 toll of job loss on health coverage, and how the Affordable Care Act will help. *Issue Brief*
32
33 *(Commonw Fund)*, 18, 1-18.
34
35
36 Duncan, G. J., & Murnane, R. J. (Eds.). (2011). *Whither opportunity?: rising inequality, schools, and*
37
38 *children's life chances*. New York: Russell Sage Foundation.
39
40
41 Dush, C. M. K., Schmeer, K. K., & Taylor, M. (2013). Chaos as a social determinant of child health:
42
43 Reciprocal associations? *Social Science & Medicine*, 95, 69-76.
44
45
46 East, P. L., & Khoo, S. T. (2005). Longitudinal pathways linking family factors and sibling relationship
47
48 qualities to adolescent substance use and sexual risk behaviors. *Journal of Family Psychology*,
49
50 19(4), 571.
51
52
53 Eisenberg, M. E., & Forster, J. L. (2003). Adolescent smoking behavior: measures of social norms. *Am J*
54
55 *Prev Med*, 25(2), 122-128.
56
57
58 Ennett, S. T., Flewelling, R. L., Lindrooth, R. C., & Norton, E. C. (1997). School and neighborhood
59
60 characteristics associated with school rates of alcohol, cigarette, and marijuana use. *J Health Soc*
61
62 *Behav*, 38(1), 55-71.
63
64
65

- 1
2
3
4 Evans, G. W., Miller, C. E., & Seeman, T. (2012). How poverty gets under the skin: A life course
5 perspective. In R. King & V. Maholmes (Eds.), *Oxford Handbook of Poverty and Child*
6
7 *Development*. Oxford: Oxford University Press.
8
9
- 10 Frohlich, K. L., Potvin, L., Gauvin, L., & Chabot, P. (2002). Youth smoking initiation: disentangling
11
12 context from composition. *Health Place*, 8(3), 155-166.
13
14
- 15 Fronstin, P. (2013). Sources of health insurance and characteristics of the uninsured: analysis of the
16
17 March 2013 Current Population Survey. *EBRI Issue Brief*(390), 1, 4-34.
18
19
- 20 Gassman-Pines, A., Gibson-Davis, C. M., & Ananat, E. O. (2015). How Economic Downturns Affect
21
22 Children's Development: An Interdisciplinary Perspective on Pathways of Influence. *Child*
23
24 *Development Perspectives*, 9(4), 233-238.
25
26
- 27 Goldin, C., & Katz, L. F. (2000). Education and Income in the Early Twentieth Century: Evidence from
28
29 the Prairies. *The Journal of Economic History*, 60(03), 782-818.
30
31
- 32 Goldin, C., & Katz, L. F. (2007). *The Race between Education and Technology: The Evolution of U.S.*
33
34 *Educational Wage Differentials, 1890 to 2005*. NBER Working Paper (12984).
35
36
- 37 Gordon, M. M. (1949). Social class in American sociology. *American Journal of Sociology*, 55, 262-268.
38
39
- 40 Gorman, B. K., & Braverman, J. (2008). Family structure differences in health care utilization among US
41
42 children. *Social Science & Medicine*, 67(11), 1766-1775.
43
44
- 45 Hadley, J. (2003). Sicker and poorer--the consequences of being uninsured: a review of the research on
46
47 the relationship between health insurance, medical care use, health, work, and income. *Med Care*
48
49 *Res Rev*, 60(2 Suppl), 3S-75S; discussion 76S-112S.
50
51
- 52 Harknett, K. (2009). Why are children with married parents healthier? The case of pediatric asthma.
53
54 *Population Research and Policy Review*, 28(3), 347-365.
55
56
- 57 Haurin, D. R., Parcel, T. L., & Haurin, R. J. (2002). Does homeownership affect child outcomes? *Real*
58
59 *Estate Economics*, 30(4), 635-666.
60
61
62
63
64
65

- 1
2
3
4 Hawkins, S. S., Griffiths, L. J., Dezateux, C., Law, C., & Millennium Cohort Study Child Health, G.
5
6 (2007). The impact of maternal employment on breast-feeding duration in the UK Millennium
7
8 Cohort Study. *Public Health Nutr*, *10*(9), 891-896. doi:10.1017/S1368980007226096
9
- 10 Health, U. D. o., Services, H., Health, U. D. o., & Services, H. (2003). National healthcare disparities
11
12 report. *Rockville (MD): Agency for Healthcare Research and Quality*.
- 13
14
15 Heckman, J. J. (2006). Skill formation and the economics of investing in disadvantaged children. *Science*,
16
17 *312*(5782), 1900-1902. doi:10.1126/science.1128898
18
- 19
20 Heckman, J. J., Moon, S. H., Pinto, R., Savelyev, P. A., & Yavitz, A. (2010). The rate of return to the
21
22 HighScope Perry Preschool Program. *Journal of public economics*, *94*, 114-128.
23
24 doi:10.1016/j.jpubeco.2009.11.001
25
- 26
27 Heymann, J. (2001). *The Widening Gap*. New York, NY: Basic Books.
- 28
29 House, J. S., Landis, K. R., & Umberson, D. (1988). Social relationships and health. *Science*, *241*(4865),
30
31 540-545.
32
- 33
34 House, J. S., Umberson, D., & Landis, K. R. (1988). Structures and processes of social support. *Annual*
35
36 *Review of Sociology*, 293-318.
- 37
38 Hummer, R. A., & Lariscy, J. T. (2011). Educational attainment and adult mortality. In R. G. Rogers & E.
39
40 M. Crimmins (Eds.), *International Handbook of Adult Mortality*. Netherlands: Springer.
- 41
42 Huynh, M., & Maroko, A. R. (2014). Gentrification and preterm birth in New York City, 2008-2010. *J*
43
44 *Urban Health*, *91*(1), 211-220. doi:10.1007/s11524-013-9823-x
45
- 46
47 Jaakkola, J. J., Hwang, B.-F., & Jaakkola, N. (2005). Home dampness and molds, parental atopy, and
48
49 asthma in childhood: a six-year population-based cohort study. *Environmental health*
50
51 *perspectives*, 357-361.
52
- 53
54 Jablonski, K. A., & Guagliardo, M. F. (2005). Pediatric appendicitis rupture rate: a national indicator of
55
56 disparities in healthcare access. *Popul Health Metr*, *3*(1), 4. doi:10.1186/1478-7954-3-4
57
- 58
59 Johnston, R. (2000). *Clearing the air: asthma and indoor air exposures*: Washington, DC: National
60
61 Academy Press.
62
63
64
65

- 1
2
3
4 Kane, J. B. (2016). Marriage Advantages in Perinatal Health: Evidence of Marriage Selection or Marriage
5
6 Protection? *Journal of Marriage and Family*, 78(1), 212-229.
7
8
9 Kane, J. B., & Lam, C. B. (2011). A Promising Approach to Future Biosocial Research on the Family:
10
11 Considering the Role of Temporal Context. In A. Booth, S. M. McHale, & N. S. Landale (Eds.),
12
13 *Biosocial Foundations of Family Processes* (pp. 247-264). New York, NY: Springer New York.
14
15
16 Kaushal, N., Magnuson, K., & Waldfogel, J. (2011). How is family income related to investments in
17
18 children's learning? In G. J. Duncan & R. J. Murnane (Eds.), *Whither Opportunity?: Rising*
19
20 *Inequality, Schools, and Children's Life Chances* (pp. 187-206). New York: Russell Sage.
21
22
23 Kessler, R. C., Duncan, G. J., Gennetian, L. A., Katz, L. F., Kling, J. R., Sampson, N. A., . . . Ludwig, J.
24
25 (2014). Associations of Housing Mobility Interventions for Children in High-Poverty
26
27 Neighborhoods With Subsequent Mental Disorders During Adolescence. *Jama-Journal of the*
28
29 *American Medical Association*, 311, 937-947. doi:10.1001/jama.2014.607
30
31
32 Kohn, M. L., & Schooler, C. (1983). *Work and personality: an inquiry into the impact of social*
33
34 *stratification*: Ablex Pub.
35
36
37 Komro, K. a., Burris, S., & Wagenaar, A. C. (2014). Social Determinants of Child Health: Concepts and
38
39 Measures for Future Research. *Health Behavior and Policy Review*, 1, 432-445.
40
41 doi:10.14485/HBPR.1.6.1
42
43
44 Kramer, M. R., & Hogue, C. R. (2009). Is segregation bad for your health? *Epidemiologic reviews*, 31,
45
46 178-194. doi:10.1093/epirev/mxp001
47
48
49 Krieger, J., & Higgins, D. L. (2002). Housing and health: time again for public health action. *American*
50
51 *Journal of Public Health*, 92(5), 758-768.
52
53
54 Krieger, N. (2011). *Epidemiology and the people's health: Theory and context*. New York: Oxford
55
56 University Press.
57
58
59 Krieger, N., Williams, D. R., & Moss, N. E. (1997). Measuring social class in US public health research:
60
61 Concepts, methodologies, and guidelines. *Annual Review of Public Health*, 18, 341-378.
62
63
64
65

- 1
2
3
4 Lane, S. P., Bluestone, C., & Burke, C. T. (2013). Trajectories of BMI from early childhood through early
5
6 adolescence: SES and psychosocial predictors. *Br J Health Psychol*, *18*(1), 66-82.
7
8 doi:10.1111/j.2044-8287.2012.02078.x
9
- 10 Lareau, A. (2002). Invisible inequality: Social class and childbearing in black families and white families.
11
12 *American Sociological Review*, *67*(5), 747-776.
13
14
- 15 Lavarreda, S. A., Snyder, S., & Brown, E. R. (2013). The effects of the Great Recession on health
16
17 insurance: changes in the uninsured population from 2007 to 2009. *Policy Brief UCLA Cent*
18
19 *Health Policy Res*(PB2013-5), 1-8.
20
21
- 22 Lehman, B. J., Taylor, S. E., Kiefe, C. I., & Seeman, T. E. (2005). Relation of childhood socioeconomic
23
24 status and family environment to adult metabolic functioning in the CARDIA study. *Psychosom*
25
26 *Med*, *67*(6), 846-854. doi:10.1097/01.psy.0000188443.48405.eb
27
28
- 29 Leininger, L. J., Ryan, R. M., & Kalil, A. (2009). Low-income mothers' social support and children's
30
31 injuries. *Social Science & Medicine*, *68*(12), 2113-2121.
32
- 33 Leventhal, T., & Brooks-Gunn, J. (2004). A randomized study of neighborhood effects on low-income
34
35 children's educational outcomes. *Dev Psychol*, *40*(4), 488-507. doi:10.1037/0012-1649.40.4.488
36
37
- 38 Leventhal, T., & Newman, S. (2010). Housing and child development. *Children and Youth Services*
39
40 *Review*, *32*(9), 1165-1174.
41
- 42 Link, B. G., & Phelan, J. (1995). Social conditions as fundamental causes of disease. *J Health Soc Behav*,
43
44 *Spec No*, 80-94.
45
46
- 47 Lipperman-Kreda, S., Grube, J. W., & Paschall, M. J. (2010). Community norms, enforcement of
48
49 minimum legal drinking age laws, personal beliefs and underage drinking: an explanatory model.
50
51 *J Community Health*, *35*(3), 249-257. doi:10.1007/s10900-010-9229-6
52
- 53 Lovato, C. Y., Zeisser, C., Campbell, H. S., Watts, A. W., Halpin, P., Thompson, M., . . . Brown, K. S.
54
55 (2010). Adolescent smoking: effect of school and community characteristics. *Am J Prev Med*,
56
57 *39*(6), 507-514. doi:10.1016/j.amepre.2010.08.019
58
59
60
61
62
63
64
65

- 1
2
3
4 Lynch, J. L., & von Hippel, P. T. (2016). An education gradient in health, a health gradient in education,
5
6 or a confounded gradient in both? *Soc Sci Med*, *154*, 18-27. doi:10.1016/j.socscimed.2016.02.029
7
8
9 Lynch, J. W., & Kaplan, G. A. (2000). Socioeconomic Factors. In L. F. Berkman & I. Kawachi (Eds.),
10
11 *Social Epidemiology* (pp. 13-35). New York: Oxford University Press.
12
13 Machado-Rodrigues, A. M., Santana, A., Gama, A., Mourão, I., Nogueira, H., Rosado, V., & Padez, C.
14
15 (2014). Parental perceptions of neighborhood environments, BMI, and active behaviors in girls
16
17 aged 7–9 years. *American Journal of Human Biology*, *26*(5), 670-675.
18
19
20 Macintyre, S., Ellaway, A., & Cummins, S. (2002). Place effects on health: how can we conceptualise,
21
22 operationalise and measure them? *Social Science & Medicine*, *55*(1), 125-139.
23
24 doi:10.1016/s0277-9536(01)00214-3
25
26 Margerison-Zilko, C., Cubbin, C., Jun, J., Marchi, K., Fingar, K., & Braveman, P. (2015). Beyond the
27
28 cross-sectional: neighborhood poverty histories and preterm birth. *Am J Public Health*, *105*(6),
29
30 1174-1180. doi:10.2105/ajph.2014.302441
31
32
33 Masi, C. M., Hawkey, L. C., Piotrowski, Z. H., & Pickett, K. E. (2007). Neighborhood economic
34
35 disadvantage, violent crime, group density, and pregnancy outcomes in a diverse, urban
36
37 population. *Soc Sci Med*, *65*(12), 2440-2457. doi:S0277-9536(07)00407-8 [pii]
38
39
40 10.1016/j.socscimed.2007.07.014 [doi]
41
42
43 Mauldon, J. (1990). The effect of marital disruption on children's health. *Demography*, *27*(3), 431-446.
44
45 McCallion, W., Murray, L., Bailie, A., Dalzell, A., O'Reilly, D., & Bamford, K. (1996). Helicobacter
46
47 pylori infection in children: relation with current household living conditions. *Gut*, *39*(1), 18-21.
48
49
50 McClure, R., Kegler, S., Davey, T., & Clay, F. (2015). Contextual Determinants of Childhood Injury: A
51
52 Systematic Review of Studies With Multilevel Analytic Methods. *Am J Public Health*, *105*(12),
53
54 e37-43. doi:10.2105/AJPH.2015.302883
55
56
57
58
59
60
61
62
63
64
65

- 1
2
3
4 McGrath, J. J., Matthews, K. A., & Brady, S. S. (2006). Individual versus neighborhood socioeconomic
5 status and race as predictors of adolescent ambulatory blood pressure and heart rate. *Soc Sci Med*,
6 63(6), 1442-1453. doi:10.1016/j.socscimed.2006.03.019
7
8
9
10
11 McHale, S. M., Updegraff, K. A., & Whiteman, S. D. (2012). Sibling relationships and influences in
12 childhood and adolescence. *Journal of Marriage and Family*, 74(5), 913-930.
13
14
15 Messer, L. C., Vinikoor, L. C., Laraia, B. A., Kaufman, J. S., Eyster, J., Holzman, C., . . . O'Campo, P.
16 (2008). Socioeconomic domains and associations with preterm birth. *Soc Sci Med*, 67(8), 1247-
17 1257. doi:10.1016/j.socscimed.2008.06.009
18
19
20
21
22 Miller, C. C. (2015, December 17). Class Differences in Child-Rearing Are on the Rise. *The New York*
23 *Times*.
24
25
26
27 Millman, M. (1993). Committee on Monitoring Access to Personal Health Care Services: Washington,
28 DC: National Academy Press.
29
30
31
32 Miranda, M. L., Kim, D., Reiter, J., Galeano, M. A. O., & Maxson, P. (2009). Environmental contributors
33 to the achievement gap. *NeuroToxicology*, 30, 1019-1024.
34
35
36
37 Montez, J. K., & Friedman, E. M. (2015). Educational attainment and adult health: under what conditions
38 is the association causal? *Soc Sci Med*, 127, 1-7. doi:10.1016/j.socscimed.2014.12.029
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
- National School Lunch Program. (2012). National School Lunch Program. Retrieved from
<http://www.fns.usda.gov/sites/default/files/NSLPFactSheet.pdf>
- Navarro, V., & Muntaner, C. (2004). *Political and economic determinants of populatin health and well-being: Controversies and developments*. Amityville, NY: Baywood Pub Co.

- 1
2
3
4 Ncube, C. N., Enquobahrie, D. A., Albert, S. M., Herrick, A. L., & Burke, J. G. (2016). Association of
5
6 neighborhood context with offspring risk of preterm birth and low birthweight: A systematic
7
8 review and meta-analysis of population-based studies. *Soc Sci Med*, *153*, 156-164.
9
10 doi:10.1016/j.socscimed.2016.02.014
11
12
13 Nores, M., Belfield, C. R., Barnett, W. S., & Schweinhart, L. (2005). Updating the Economic Impacts of
14
15 the High/Scope Perry Preschool Program. *Educational Evaluation and Policy Analysis*, *27*, 245-
16
17 261. doi:10.3102/01623737027003245
18
19
20 O'Campo, P., Burke, J. G., Culhane, J., Elo, I. T., Eyster, J., Holzman, C., . . . Laraia, B. A. (2008).
21
22 Neighborhood deprivation and preterm birth among non-Hispanic Black and White women in
23
24 eight geographic areas in the United States. *Am J Epidemiol*, *167*(2), 155-163.
25
26 doi:10.1093/aje/kwm277
27
28
29 Oakes, J. M. (2004). The (mis)estimation of neighborhood effects: causal inference for a practicable
30
31 social epidemiology. *Soc Sci Med*, *58*(10), 1929-1952. doi:10.1016/j.socscimed.2003.08.004 [doi]
32
33 S0277953603004131 [pii]
34
35
36 Olson, L. M., Tang, S.-f. S., & Newacheck, P. W. (2005). Children in the United States with
37
38 discontinuous health insurance coverage. *New England Journal of Medicine*, *353*(4), 382-391.
39
40
41 Osypuk, T. L., & Acevedo-Garcia, D. (2010). Beyond individual neighborhoods: A geography of
42
43 opportunity perspective for understanding racial/ethnic health disparities. *Health Place*.
44
45 doi:10.1016/j.healthplace.2010.07.002
46
47
48 Patterson, C. J. (2006). Children of lesbian and gay parents. *Current directions in psychological science*,
49
50 *15*(5), 241-244.
51
52
53 Penchansky, R., & Thomas, J. W. (1981). The concept of access: definition and relationship to consumer
54
55 satisfaction. *Med Care*, *19*(2), 127-140.
56
57
58
59
60
61
62
63
64
65

- 1
2
3
4 Phelan, J. C., Link, B. G., & Tehranifar, P. (2010). Social conditions as fundamental causes of health
5 inequalities: theory, evidence, and policy implications. *J Health Soc Behav*, *51 Suppl*, S28-40.
6
7 doi:10.1177/0022146510383498
8
9
- 10 Phillips, M. (2011). Parenting, time use, and disparities in academic outcomes. In G. J. Duncan & R. J.
11 Murnane (Eds.), *Whither Opportunity?: Rising Inequality, Schools, and Children's Life Chances*.
12 New York: Russell Sage.
13
14
15
16
- 17 Quinn, K., Kaufman, J. S., Siddiqi, A., & Yeatts, K. B. (2010). Stress and the city: housing stressors are
18 associated with respiratory health among low socioeconomic status Chicago children. *Journal of*
19 *Urban Health*, *87*(4), 688-702.
20
21
22
23
- 24 Raissian, K. M. (2015). Does unemployment affect child abuse rates? Evidence from New York State.
25 *Child Abuse Negl*, *48*, 1-12. doi:10.1016/j.chiabu.2015.06.008
26
27
28
- 29 Rajakumar, K., Thomas, S. B., Musa, D., Almario, D., & Garza, M. A. (2009). Racial differences in
30 parents' distrust of medicine and research. *Arch Pediatr Adolesc Med*, *163*(2), 108-114.
31
32 doi:10.1001/archpediatrics.2008.521
33
34
- 35 Raymond, J., Wheeler, W., & Brown, M. J. (2014). Lead Screening and Prevalence of Blood Lead Levels
36 in Children Aged 1–2 Years — Child Blood Lead Surveillance System, United States, 2002–2010
37 and National Health and Nutrition Examination Survey, United States, 1999–2010. *Morbidity and*
38 *Mortality Weekly Report*, *63*(2), 36-42.
39
40
41
42
43
- 44 Reardon, S. F. (2011). The widening academic achievement gap between rich and poor: New evidence
45 and possible explanations. In G. J. Duncan & R. J. Murnane (Eds.), *Whither Opportunity?: Rising*
46 *Inequality, Schools, and Children's Life Chances*. New York: Russell Sage.
47
48
49
50
- 51 Reardon, S. F., & Bischoff, K. (2011). Income inequality and income segregation. *AJS; American journal*
52 *of sociology*, *116*(4), 489-514.
53
54
55
- 56 Rhee, K. (2008). Childhood overweight and the relationship between parent behaviors, parenting style,
57 and family functioning. *The ANNALS of the American Academy of Political and Social Science*,
58 *615*(1), 11-37.
59
60
61
62
63
64
65

- 1
2
3
4 Richards, J. L., Chapple-McGruder, T., Williams, B. L., & Kramer, M. R. (2015). Does neighborhood
5 deprivation modify the effect of preterm birth on children's first grade academic performance?
6
7
8
9 *Soc Sci Med*, 132, 122-131. doi:10.1016/j.socscimed.2015.03.032
- 10
11 Saw, A., Berenbaum, H., & Okazaki, S. (2013). Influences of personal standards and perceived parental
12 expectations on worry for Asian American and White American college students. *Anxiety Stress*
13
14
15 *Coping*, 26(2), 187-202. doi:10.1080/10615806.2012.668536
- 16
17
18 Scheffler, R. M., & Brown, T. T. (2008). Social capital, economics, and health: new evidence. *Health*
19
20
21 *Economics Policy and Law*, 3, 321-331. doi:10.1017/S1744133108004593
- 22
23
24 Schempf, A. H., & Kaufman, J. S. (2012). Accounting for context in studies of health inequalities: a
25
26
27 review and comparison of analytic approaches. *Ann Epidemiol*, 22(10), 683-690.
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
- Sharifi, M., Sequist, T. D., Rifas-Shiman, S. L., Melly, S. J., Duncan, D. T., Horan, C. M., . . . Taveras, E.
M. (2016). The role of neighborhood characteristics and the built environment in understanding
racial/ethnic disparities in childhood obesity. *Prev Med*, 91, 103-109.
doi:10.1016/j.ypmed.2016.07.009
- Shen, F. C., Liao, K. Y., Abraham, W. T., & Weng, C. Y. (2014). Parental pressure and support toward
Asian Americans' self-efficacy, outcome expectations, and interests in stereotypical occupations:
Living up to parental expectations and internalized stereotyping as mediators. *J Couns Psychol*,
61(2), 241-252. doi:10.1037/a0036219
- Simpson, L., Owens, P. L., Zodet, M. W., Chevarley, F. M., Dougherty, D., Elixhauser, A., &
McCormick, M. C. (2005). Health care for children and youth in the United States: annual report
on patterns of coverage, utilization, quality, and expenditures by income. *Ambulatory Pediatrics*,
5(1), 6-e20.
- Singh, G. K., & Kogan, M. D. (2007). Widening socioeconomic disparities in US childhood mortality,
1969-2000. *Am J Public Health*, 97(9), 1658-1665. doi:10.2105/AJPH.2006.087320

- 1
2
3
4 Skiba, R. J., R.S., M., Nardo, A. C., & Peterson, R. L. (2002). The color of discipline: Sources of racial
5
6 and gender disproportionality in school punishment. *Urban Review*, 34(4), 317-342.
7
8
9 Snyder, T. D., & Dillow, S. A. (2015). Digest of Education Statistics, 2013. Retrieved from
10
11 <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2015011>
12
13 Spelke, B., Zertuche, A. D., & Roachat, R. (2016). Obstetric Provider Maldistribution: Georgia, USA,
14
15 2011. *Matern Child Health J*, 20(7), 1333-1340. doi:10.1007/s10995-016-1999-8
16
17 Stacey, J., & Biblarz, T. J. (2001). (How) does the sexual orientation of parents matter? *American*
18
19 *Sociological Review*, 159-183.
20
21
22 Strickland, B. B., Jones, J. R., Ghandour, R. M., Kogan, M. D., & Newacheck, P. W. (2011). The medical
23
24 home: health care access and impact for children and youth in the United States. *Pediatrics*,
25
26 127(4), 604-611. doi:10.1542/peds.2009-3555
27
28 Taylor, S. E., Repetti, R. L., & Seeman, T. (1997). Health psychology: what is an unhealthy environment
29
30 and how does it get under the skin? *Annu Rev Psychol*, 48, 411-447.
31
32 doi:10.1146/annurev.psych.48.1.411
33
34
35 The Urban Institute. (2015). Tabulations of the Urban Institute Health Policy Center's ACS
36
37 Medicaid/CHIP Eligibility Simulation Model. Retrieved from
38
39 <http://www.insurekidsnow.gov/professionals/reports/index.html>
40
41
42 Thiede, B. C., & Monnat, S. M. (2016). The Great Recession and America's geography of
43
44 unemployment. *Demographic Research*, 35, 891-927.
45
46
47 Tucker, J. S., Pollard, M. S., de la Haye, K., Kennedy, D. P., & Green, H. D., Jr. (2013). Neighborhood
48
49 characteristics and the initiation of marijuana use and binge drinking. *Drug Alcohol Depend*,
50
51 128(1-2), 83-89. doi:10.1016/j.drugalcdep.2012.08.006
52
53
54 Turney, K. (2011). Maternal depression and childhood health inequalities. *Journal of Health and Social*
55
56 *Behavior*, 52(3), 314-332.
57
58
59 Turney, K. (2013). Perceived instrumental support and children's health across the early life course.
60
61 *Social Science & Medicine*, 95, 34-42.
62
63
64
65

- 1
2
3
4 Vos, A. A., Posthumus, A. G., Bonsel, G. J., Steegers, E. A., & Denktas, S. (2014). Deprived
5
6 neighborhoods and adverse perinatal outcome: a systematic review and meta-analysis. *Acta*
7
8 *Obstet Gynecol Scand*, 93(8), 727-740. doi:10.1111/aogs.12430
9
- 10 Wald, J., & Losen, D. J. (2003). Defining and redirecting a school-to-prison pipeline. *New Dir Youth*
11
12 *Dev*(99), 9-15. doi:10.1002/yd.51
13
14
- 15 Wang, F., & Luo, W. (2005). Assessing spatial and nonspatial factors for healthcare access: towards an
16
17 integrated approach to defining health professional shortage areas. *Health Place*, 11(2), 131-146.
18
19 doi:10.1016/j.healthplace.2004.02.003
20
21
- 22 Weber, M. (1978). *Economy and society: An outline of interpretive sociology*: Univ of California Press.
23
- 24 Weinreb, L., Wehler, C., Perloff, J., Scott, R., Hosmer, D., Sagor, L., & Gundersen, C. (2002). Hunger:
25
26 its impact on children's health and mental health. *Pediatrics*, 110(4), e41.
27
28
- 29 Wilkinson, R. G., & Pickett, K. E. (2007). The problems of relative deprivation: why some societies do
30
31 better than others. *Soc Sci Med*, 65(9), 1965-1978. doi:10.1016/j.socscimed.2007.05.041
32
33
- 34 Wood, D. L., Valdez, R. B., Hayashi, T., & Shen, A. (1990). Health of homeless children and housed,
35
36 poor children. *Pediatrics*, 86(6), 858-866.
37
- 38 Wright, E. O. (Ed.) (2007). *Approaches to Class Analysis*. New York: Cambridge University Press.
39
- 40 Ye, J., Leep, C., & Newman, S. (2015). Reductions of budgets, staffing, and programs among local health
41
42 departments: results from NACCHO's economic surveillance surveys, 2009-2013. *J Public*
43
44 *Health Manag Pract*, 21(2), 126-133. doi:10.1097/PHH.0000000000000074
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65

14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65

FIGURE. Conceptual framework for how social class relates to child health and development

