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MEASURING TRENDS IN CHILD WELL-BEING: AN EVIDENCE-BASED APPROACH*

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ABSTRACT. This paper first reviews the goals of the founding documents of the social indicators and quality-of-life movements of the 1960s and 1970s. It next describes the current state of knowledge with respect to the founding goals of this field. The focus then turns to the topic of measuring changes in child and youth well-being in the United States over the past few decades. In particular, the evidence-based approach used in the construction of the recently developed composite Child and Youth Well-Being Index (CWI) is described. Some findings from the CWI regarding changes in child and youth well-being in the period 1975–2004 are reported. Trends in the CWI then are compared with data on trends in subjective well-being of high school seniors – similarities of trends in these two series provide validating support for the interpretation of the CWI as an index of changes in the quality-of-life of children and youth. Using data on some additional indicator series, most of which were initiated in the 1990s, an Expanded CWI is then described. The qualitative pattern of change in the expanded CWI is shown to be similar to that of the basic CWI, except that the expanded CWI shows a more pronounced decline in the early-1990s and a slower rate of improvement into the early-2000s. The paper concludes with some possible directions for future work.

KEY WORDS: child well-being, indices, quality of life

Every generation of adults, and American adults in particular, has been concerned about the conditions of their children and youth (Moore, 1999). From the stagflation and socially turbulent days of the 1970s in the US through the decline of the rust belt industries and transition to the information age in the 1980s to the relatively prosperous *e*-economy and multicultural years of the late-1990s followed by the uncertain early years of the 21st century, Americans have fretted over the material circumstances of the nation's children, their health and safety, their educational progress, and

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their moral development. Are their fears and concerns warranted? How do we know whether circumstances of life for children in the United States are bad and worsening, or good and improving? On what basis can the public and its leaders form opinions and draw conclusions?

Since the 1960s, researchers in social indicators/quality-of-life measurement have argued that well-measured and consistently collected social indicators provide a way to monitor the condition of groups in society, including children and families, today and over time (Land, 2000). The information thus provided can be strategic in forming the ways we think about important issues in our personal lives and the life of the nation. Indicators of child and youth well-being, in particular, are used by child advocacy groups, policy makers, researchers, the media, and service providers to serve a number of purposes. In three instances:

- to describe the condition of children,
- to monitor or track child outcomes, and
- to set goals,

the use of indicators is well within the long-established "public enlightenment" function of social indicators. And while there are notable gaps and inadequacies in existing child and family well-being indicators in the United States (Moore, 1999; Ben-Arieh, 2000), there are also literally dozens of data series and indicators from which to form opinions and draw conclusions (see, e.g., Brown, 1997). In the face of this surfeit of data, we address a crucial part of the public enlightenment function, namely, the summarization question via the development of composite indices.

The objectives of this paper are three-fold. First, we review the "holy words" of the founding documents and founders of the social indicators and quality-of-life movements of the 1960s and 1970s. It will be seen that these statements regarding goals for social indicators and their uses are ambitious indeed. Second, we take up the question: Where are we now? We review the current state of our knowledge base with respect to the goals of the founding figures of our field. Third, as an illustration of current practice, we focus on some recent work in which we have been engaged on the development of an index of child and youth well-being in the United States and on the measurement of trends therein over the past quarter century. In particular, we describe the evidence-based approach used in the construction of the recently developed composite Child and Youth Well-Being Index (CWI). Some findings from the CWI regarding changes in child and youth well-being in the period 1975–2004 are reported. Trends in the CWI then are compared with data on trends in subjective well-being of high school seniors

in order to assess the validity of the CWI as an index of changes in the quality of life of children and youth. Using data on some additional indicator series that were initiated in the 1990s, we also describe an Expanded CWI and examine trends therein. The paper concludes with some possibilities for future work.

1. FOUNDING GOALS

To understand where we are today with respect to scholarly efforts to define and measure the quality of life and its changes over time and with respect to the development of social indicators for that purpose, it is useful to recall some key definitions from our predecessors. To begin with, the term *social indicators* was born and given its initial meaning in an attempt, undertaken in the early 1960s by the American Academy of Arts and Sciences for the National Aeronautics and Space Administration, to detect and anticipate the nature and magnitude of the second-order consequences of the space program for American society (Land, 1983, p. 2; Noll and Zapf, 1994, p. 1). Frustrated by the lack of sufficient data to detect such effects and the absence of a systematic conceptual framework and methodology for analysis, some of those involved in the Academy project attempted to develop a system of social indicators with which to detect and anticipate social change as well as to evaluate specific programs and determine their impact. The results of this part of the Academy project were published in a volume (Bauer, 1966) bearing the name *Social Indicators* and the following definition:

> "... *social indicators* – statistics, statistical series, and all other forms of evidence – that enable us to assess where we stand and are going with respect to our values and goals..." (Bauer, 1966, p. 1)

It should be noted that the appearance of the Bauer volume was not an isolated event. Several other influential publications commented on the lack of a system for charting social change and advocated that the U.S. government establish a "system of social accounts" that would facilitate a cost–benefit analysis of more than the market-related aspects of society already indexed by the National Income and Product Accounts (see, e.g., National Commission on Technology, Automation and Economic Progress, 1966; Sheldon and Moore, 1968).

The need for social indicators also was emphasized by the publication of the 101-page *Toward a Social Report (TSR)* on the last day of the Johnson administration in 1969. Conceived of as a prototypical counterpart to the annual economic reports of the president, each of its seven chapters

addressed major issues in an important area of social concern (health and illness; social mobility; the physical environment; income and poverty; public order and safety; learning, science, and art; and participation and alienation) and provided its readers with an assessment of prevalent conditions. In an Appendix that addressed the question of how we can do better social reporting in the future, Mancur Olson, the principal author of *TSR*, put forward the following influential definition:

"A *social indicator*... may be defined to be a statistic of direct normative interest which facilitates concise, comprehensive and balanced judgments about the condition of major aspects of a society." (USDHEW, 1969, p. 97)

In brief, *TSR* firmly established the link of social indicators to the idea of systematic reporting on social issues for the purpose of public enlightenment about how we are doing with respect to certain social conditions.

Another major pathway and avenue of exploration to the measurement of social indicators was opened in 1976 with the publication of a book entitled *The Quality of American Life: Perceptions, Evaluations, and Satisfactions* by Angus Campbell, Philip E. Converse, and Willard L. Rodgers. As signaled in the subtitle of the book, these social psychologists proposed to monitor the conditions of life by attempting to measure the *experiences* of individuals with the conditions of life, or as they put it:

"... we propose... to 'monitor the *quality of American life*' ... our concern was with the experience of life rather than the conditions of life... [we] define the quality of life experience mainly in terms of satisfaction [with life and specific life domains]." (Campbell et al., 1976, pp. 7, 9)

In brief, the key emphasis of this definition is on the measurement of human experiences of social conditions.

2. THE CURRENT STATE OF THE ART

Various observers (e.g., Land, 2000; Noll, 2002) have noted that these "founding definitions" of the social indicators and quality-of-life concepts have led to two major lines of development over the past 30-plus years: (1) objective social indicators, and (2) subjective well-being indicators.

2.1. *Objective social indicators*

The development of "objective" social indicators began with the Bauer (1966) volume and extends to the present. The emphasis is on the development of statistics that reflect important "social conditions" and the monitoring of trends in a range of "areas of social concern" over time. The key undefined terms here require the identification of:

- the "social conditions" to be measured, and
- the "areas of social concern" for which trends are to be monitored.

Since the 1970s, the primary approach to the identification and definition processes has been through the creation of "expert" panels of social scientists, statisticians, and citizens. These panels have applied a variety of approaches to their work, such as:

- the "indicators of social change" approach (Sheldon and Moore, 1968);
- the Swedish "level of living" approach (Erickson, 1974); and
- the "goals commissions" approach (e.g., the *U.S. Healthy People 2010* Goals; see USDHHS, 2000).

The key element of this approach is that the experts must achieve consensus. Specifically, as Noll (2002, p. 175) notes, there must be consensus on:

- the conditions and areas of concern to be measured;
- good and bad conditions; and
- the directions in which society should move.

These, of course, are strong requirements. And, in its reliance on "expert" panels, the objective social indicators tradition is always open to the criticism that the conditions identified have not been corroborated as relevant to how people actually experience happiness, life satisfaction, and subjective well-being. This criticism motivates the other major tradition of work on the measurement of the quality of life.

2.2. *Subjective well-being and indicators*

This line of development commenced with the Campbell et al. (1976) volume cited above and the Andrews and Withey (1976) volume, *Social Indicators of Well-Being: Americans' Perceptions of Life Quality* published in the same year. As noted above, the key element of this approach is on the use of various social science research techniques, including in-depth interviews, focus-group discussions, clinical studies, and samples surveys to study how people define their happiness and satisfaction with life and the social conditions of life that they experience on a day-to-day basis.

In the three decades since the publication of the path-breaking studies by Campbell et al. (1976) and Andrews and Withey (1976) volumes, many studies of subjective well-being have been conducted. Generally, these studies show that subjective well-being is an individual's summary of the positive experiences in life, consisting of three components:

- global life satisfaction,
- positive affect, and
- negative affect (Diener, 1994).

Global life satisfaction is a person's evaluation of his or her life as a whole, which may be over and above judgments about family, friends, and work or school (Huebner, 1991).

To put it simply, we today are the beneficiaries of these many studies, and, as a result, we know a lot more about what makes people happy and satisfied with life today than in the early-1970s. In particular, Cummins (1996, 1997) reached the following conclusions about the quality of life based on comparisons of findings across numerous subjective well-being studies:

- there is a potential for tremendous variety of assessments of satisfaction with life experiences, with individuals often differing in their ratings of importance of the key elements associated with their life satisfactions and happiness;
- but, at the same time, the accumulation of findings across many studies shows that certain domains of well-being occur over and over again;
- there also is a fairly high degree of similarity among individuals on the relative weightings given to these domains in determining overall life satisfaction;
- and, perhaps most interestingly, there is a lot of similarity between the domains of well-being identified in subjective well-being studies and the areas of concern identified by expert panels in objective social indicators studies.

This naturally leads to the:

Question: Can the empirical findings from subjective well-being studies about domains of well-being be used to inform the construction of summary quality-of-life indices? In other words, rather than relying solely on the opinions of expert panels, can we use the accumulated body of empirical findings from subjective well-being studies in a manner similar to the use of research findings or best evidence to inform decisions in clinical and public health in modern evidence-based medicine (see, e.g., Jenicek, 2003)? Thus we ask: Can subjective well-being studies be used to make composite or summary quality-of-life indices *more evidence-based* not only in the use of empirical data, but also in the selection of the domains of well-being and indicators used in their construction? Put more figuratively, can we bring these two social indicators/quality-of-life research traditions into intersection so that we may construct composite social indicators that are more

firmly grounded in what we have learned about subjective well-being over the past three decades? Our answer to these rhetorical questions is "yes" and we will illustrate how this can be done by reviewing some of our recent work on the development of a composite index of child and youth well-being.

3. THE CHILD AND YOUTH WELL-BEING INDEX

As an example of the possibility of using our current heritage of subjective well-being studies to construct better social indicators, consider the recently developed CWI to measure changes in child and youth well-being in the United States over the period from 1975 to the present (Land et al., 2001; Land, 2004; Lamb et al., 2005; Meadows et al., 2005). The CWI is:

- a composite measure of trends over time in the well-being of America's children and young people,
- that consists of several interrelated summary indices of annual time series of numerous social indicators of the well-being of children and youth in the United States.

The general objective of the CWI summary indices is to:

- give a sense of the overall direction of change in the well-being of children and youth in the U.S. as compared to two base years, 1975 and 1985.

The CWI is designed to address questions such as the following:

- Overall, on average, how did child and youth well-being in the U.S. change in the last quarter of the 20th century and beyond?
- Did it improve or deteriorate?
- By approximately how much?
- In which domains of social life?
- For specific age groups?
- For particular race/ethnic groups?
- For each of the sexes?
- And did race/ethnic group and sex disparities increase or decrease?

3.1. *Methods of construction*

Annual time series data (from vital statistics and sample surveys) have been assembled on some 28 national-level Key Indicators in seven quality-of-life domains:

- Family economic well-being,
- Health,

- Safety/behavioral concerns,
- Educational attainment (productive activity),
- Community connectedness (participation in schooling or work institutions),
- Social relationships (with family and peers), and
- Emotional/spiritual well-being.

With some variations in labels and content, these seven domains of quality of life have been well-established as recurring time after time in over two decades of empirical research in numerous subjective well-being studies (Cummins 1996, 1997). Furthermore, while the model of subjective well-being and life satisfaction initially was developed on samples of adults, it has been found to be applicable to children and adolescents aged eight and above (Huebner 1997, 2004). And these seven domains of well-being also have been found, in one form or another, in studies of the well-being of these younger persons.

The 28 Key Indicators used in the construction of the CWI are identified with brief descriptions in Table I. A full description and justification for the use of the Key Indicators in the construction of the CWI is given in Land et al. (2001).

To calculate the CWI, each of the 28 time series of the Key Indicators is indexed by a base year (1975 or 1985). The base year value of the indicator is assigned a value of 100 and subsequent values of the indicator are taken as percentage changes in the index. The directions of the indicators are oriented so that a value greater (lesser) than 100 in subsequent years means the social condition measured has improved (deteriorated). The 28 indexed Key Indicator time series are grouped into the seven domains of well-being (as indicated in Table I; for a full description of the Key Indicators and their groupings into the seven domains, see Land et al., 2001) by equal weighting to compute the domain-specific Index values for each year. The seven domain-specific Indices then are grouped into an equally weighted CWI value for each year. In the absence of a set of unequal weights that achieves high consensus among the members of a society, Hagerty and Land (2006) show that an equal-weighting strategy for composite/summary indicators of well-being is privileged in the sense that it minimizes disagreement among all possible individuals' weights.

Since it builds on the subjective well-being empirical research base in its identification of domains of well-being to be measured and the assignment of Key Indicators to the domains as well as in the use of empirical observations on the values of the indicators for each year, the CWI can be viewed

TABLE I

Twenty-eight key national indicators of child and youth well-being in the United States

Family economic well-being domain:	1. Poverty Rate – all families with children
	2. Secure parental employment rate
	3. Median annual income – all families with children
Family economic well-being and health domains:*	4. Rate of children with health insurance coverage
Family economic well-being and social relationships domains:*	1. Rate of children in families headed by a single parent
Social relationships domain:	2. Rate of children who have moved within the last year
Health domain:	1. Infant mortality rate
	2. Low birth weight rate
	3. Mortality rate, ages 1–19
	4. Rate of children with very good or excellent heath (as reported by their parents)
	5. Rate of children with activity limitations (as reported by their parents)
	6. Rate of overweight children and adolescents, ages 6–19
Health and behavioral concerns domains:*	1. Teenage birth rate, ages 10–17
Safety/behavioral concerns domain:	2. Rate of violent crime victimization, ages 12–17
	3. Rate of violent crime offenders, ages 12–19
	4. Rate of cigarette smoking, Grade 12
	5. Rate of alcoholic drinking, Grade 12
	6. Rate of illicit drug use, Grade 12
Educational attainment domain:	1. Reading test scores, ages 9,13, 17
	2. Mathematics test scores, ages 9, 13, 17
Community connectedness and educational attainment domains:*	1. Rate of preschool enrollment, ages 3–4
	2. Rate of persons who have received a high school diploma, ages 18–24
	3. Rate of youths not working and not in school, ages 16–19
	4. Rate of persons who have received a Bachelor's Degree, Ages 25–29
	5. Rate of voting in presidential elections, ages 18–24

TABLE I
Continued

Emotional/spiritual well-being:	1. Suicide rate, ages 10–19 2. Rate of weekly religious attendance, Grade 12 3. Percent who report religion as being very important, Grade 12

Note 1: A few key indicators can be assigned to two domains. For these, the * denotes the domain-specific index to which the indicators are assigned for computation purposes. Explanations for the domain assignments are given in Land et al. (2001). Note 2: Unless otherwise noted, indicators refer to children ages 0–17. Note 3: With the exception of the indicators of health insurance coverage, subjective health assessments, and activity limitations, which begin 1987, 1984, and 1984, respectively, all of the indicator series date back at least to 1975. Note 4: Most of the indicator series in the table are reported annually. The exceptions are the reading and test scores (from the National Assessment of Educational Progress (NAEP)), the obesity prevalence rates (from the National Health and Nutrition Examination Surveys (NHANES)), and the voting in presidential election years percentages (which necessarily occur on 4-year cycles). The NAEP test scores originally began on a 5-year cycle in 1975, changed to a 2-year cycle in 1985, and then changed to a 4-year cycle in 1999. Since these time series change quite smoothly, however, they quite easily can be interpolated to an annual basis. The obesity data from the NHANES studies were collected in cycles spanning the years 1971–1974, 1976–1980, 1988–1994, and 1999–2000. To fit with the annual spacing of the other time series in the table, these data also have been interpolated for the intervening years. And, similarly, the voting percentages were interpolated to an annual basis from the four-year cycles of presidential elections.

as an *evidence-based well-being measure of trends in averages of the social conditions encountered by children and youth in the United States across recent decades*.

3.2. *Some empirical findings using the CWI*

With the CWI defined and operationalized as described above, it can be used to measure changes in child and youth well-being as Land et al. (2001) have shown. In the following sections, a number of findings on these changes are briefly sketched.

3.2.1. *A domain-specific report card for 2003*. To begin with, for each year for which we have complete data on all or nearly all of the 28 Key Indicators in the CWI, we can compute a "report card" that shows the extent and direction of change in each of the seven domain-specific indices relative to the base year of the Index. For instance, for the year 2003, we currently have complete data on 24 of the 28 Key Indicators. Based on statistical time series models, we have projected the values for the remaining four indicators for 2003; we have found that these models provide quite accurate estimates of the values of the Key Indicators one or two time periods beyond the latest year of an observed data point. Using these data for 2003, we now can compare changes in the domain-specific indices from the year 2002 to 2003, with the changes taken as a percentage of the 1975 base year values of the Key Indicators. This report card shows the following:

Domain	Change from 2002 to 2003 as a percent of base year1975 value
Family economic well-being	−1.78
Health	−1.31
Safety/behavioral	−0.25
Educational attainment	+0.22
Community connectedness	+0.94
Social relationships	+0.56
Emotional/spiritual	−2.37

In brief, the family economic well-being domain index, which was affected by an economic slowdown/recession in 2002 and its impact on the material well-being of families with children, shows a decline of 1.78% from 2002 to 2003, with changes measured relative to 1975 base year values. The health

domain declined 1.31% from 2002 to 2003, in part due to increases in the rate of child and youth obesity. The emotional/spiritual domain index, which is affected by teenage suicide rates, shows a deterioration of about 2%, while the safety/behavioral domain index has a very slight decline. These declines are offset, however, by improvements in the community connectedness, educational attainment, and social relationships domain indices.

3.2.2. *Trends in child well-being from 1975 into the early 21st century*. How do the domain-specific changes from 2002 to 2003, as shown above in the report card, combine to measure overall changes in child well-being in 2003, relative to the 1975 base year, and in comparison to other years since 1975? Figure 1 shows the overall composite CWI from 1975 to 2004.

It can be seen from Figure 1 that the value of the Index for 2003 is 103.69 and 104.26 for 2002 – indicating that overall child well-being in the United States was a bit higher in 2003 and 2002 than in 1975 (i.e., by about 3–4%). Overall, across the decades, the CWI shows a major decline in child well-being that began in 1982 and bottomed out in 1993. Since 1994, the Index has been in a sustained uptrend.

To understand these changes in the overall composite CWI, it is useful to examine trends over time in the domain-specific summary indices. These are shown in Figure 2.

The domain-specific indices in Figure 2 show that much of the decline in child well-being in the early-1980s was due to downturns in the social relationships and emotional/spiritual domains of well-being. In the mid-1980s, there also was a decline in the safety/behavioral concerns domain. By comparison, the family economic well-being domain index shows the imprint of the economic recessions of the early-1980s, the early-1990s, and the early-2000s, and the health domain index shows a sustained decline since about the mid-1980s (more about this below). Since the early-1990s, however, several domain indices, including the family economic well-being, safety/behavioral, community connectedness, and emotional/spiritual well-being domains, have shown fairly sustained increases. This movement, in concert, of these four domains of well-being is what accounts for the rise in the overall CWI shown previously in Figure 1.

As noted, the health domain index has shown a general decline since the mid-1980s. A large part of this decline is due to the impact of an increasing prevalence of obesity among children and youth. In an effort to assess the impact of the increasing obesity trend, Figure 2a reports the result of a sensitivity analysis. It shows the sensitivity of the health domain index to

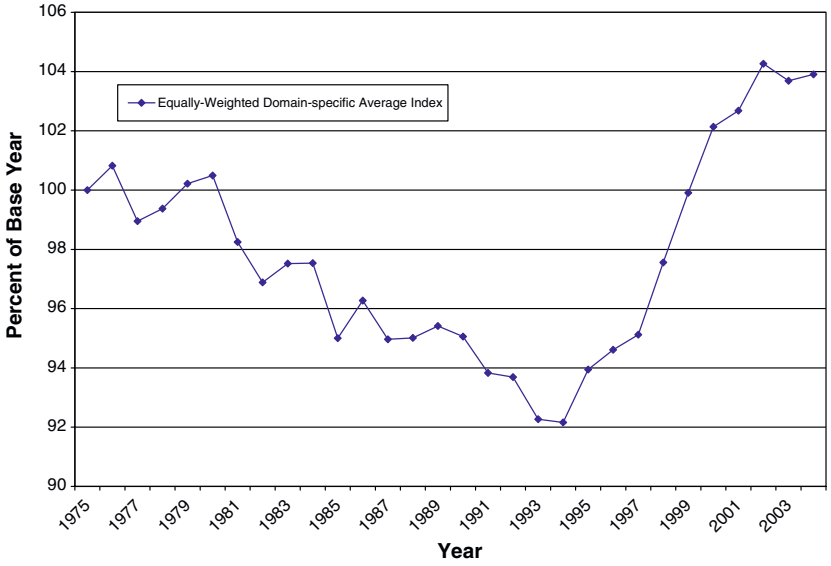

Fig. 1. Composite CWI, 1975–2004.

whether or not the obesity indicator – namely, the prevalence rate of overweight children and adolescents/teenagers – is included in the index.

In brief, Figure 2a demonstrates a relatively large impact of the inclusion/exclusion of the obesity indicator on the health domain. Specifically, with the obesity indicator included in the health domain, it decreases by about 24% from 1981 to 2001. By contrast, with the obesity indicator not included, the health domain shows values that generally are well above 1975 base year values until the early-1990s followed by a decline to 1993–1994 and the subsequent increase to recent years.

The Key Indicators included in the CWI, as identified in Table I, span an entire age range of child and youth – from birth to young adulthood. Given this, another exercise in sensitivity analysis of the CWI consists of grouping the Key Indicators into smaller age ranges. Figure 3 shows the components of the CWI grouped into three age groups, namely, *infants/preschoolers* (ages 0–5), *childhood* (ages 6–11), and the *adolescent/teenage years/young adults* (ages 12–25). Correspondingly, Figure 3a displays the results of a sensitivity analysis for the childhood well-being index in Figure 3 – with and without the obesity indicator.

In Figure 3, it can be seen that the well-being index specialized to the infant/preschool years – wherein the main components of the index are health and family economic well-being indicators – shows a fairly steady

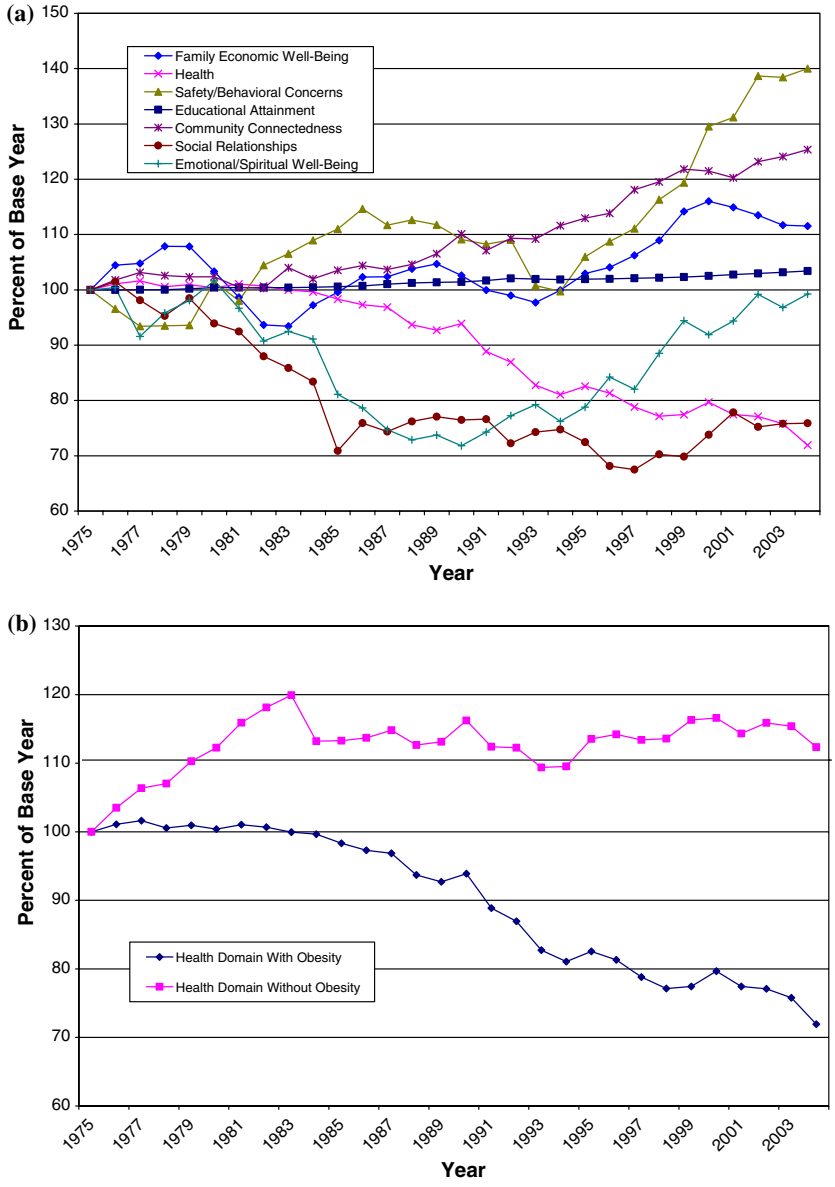

Fig. 2. (a) Domain-specific summary indices, 1975–2004. (b) Health domain with and without obesity, 1975–2004.

increase over the years, up to about 29% above 1975 base year values by 2002. By comparison, the well-being index specialized to the adolescent/teenage/young adult ages exhibits the impact of declines in the safety/

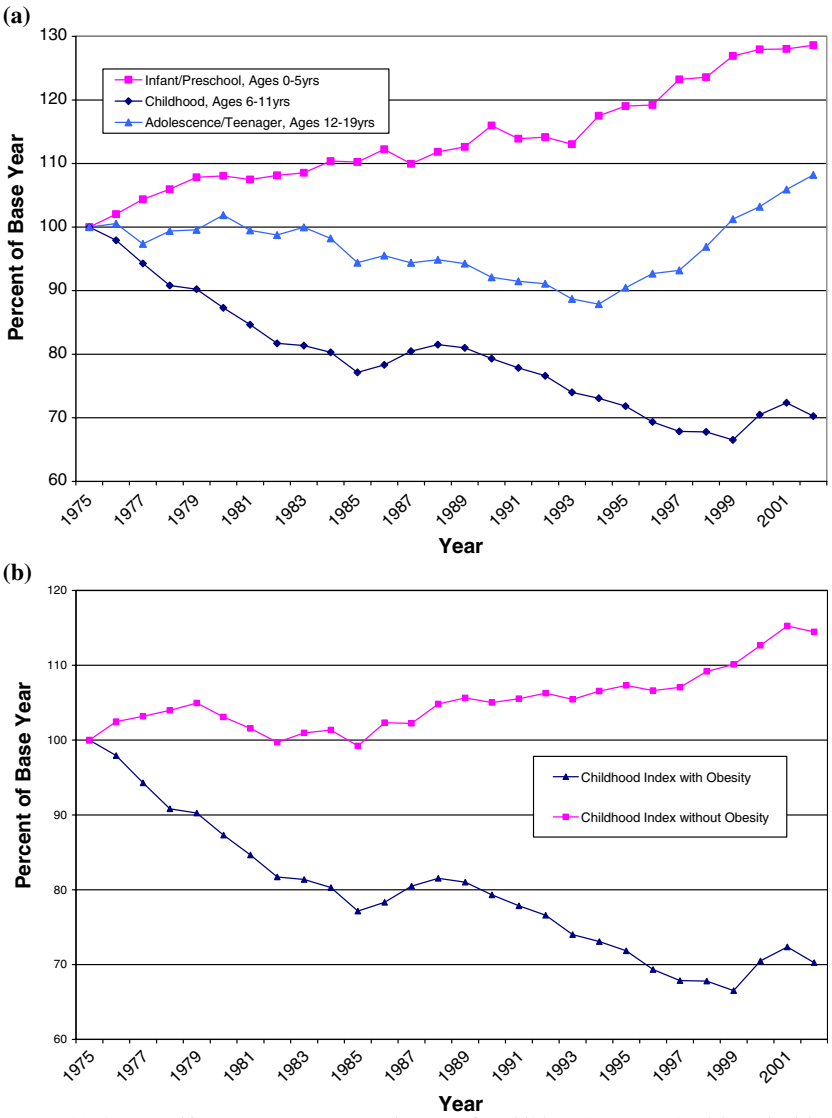

Fig. 3. (a) Age-specific CWIs, 1975–2002. (b) CWI for children (ages 6–11) with and without obesity, 1975–2002.

behavioral and emotional/spiritual domain components of the index during the period from the mid-1980s to the mid-1990s. And still more differently, the well-being index specialized to the childhood ages shows a fairly sustained decline from the mid-1970s to about 1999. Again, in order to better understand the elements of the sustained decline in the childhood index,

Figure 3a reports the impact of including or excluding the obesity indicator in the childhood (ages 6–11) index. It can be seen that excluding the obesity indicator leads to a very different conclusion about trends overtime in the health domain for the childhood index. In brief, except for the impact of the increasing prevalence of overweight children, the overall health of children has improved in the 25-plus years since 1975.

Figure 4 displays the graphs of trends in the CWI for children and youth grouped into three major race/ethnic categories: whites, blacks, and Hispanics. Because the Key Indicator data series used in the construction of the CWI are available specific to these race/ethnic categories only back to the mid-1980s, the indices graphed in Figure 4 use 1985 as their base year. Also, note that the race/ethnic-specific indices plotted in Figure 4 are measured within-groups, that is, relative to the values of the Key Indicators within each race/ethnic group as of the base year 1985 (note that, measured in this way, the composite indices shown in Figure 4 do not address levels of, or changes in, race/ethnic group disparities in child and youth well-being; studies of trends in such disparities in the Key Indicators, domain indices, and the CWI are reported in Land et al., 2001 and in Lamb et al., 2005). Therefore, the indices measure improvements or deterioration across the years in the overall child well-being of each race/ethnic group relative to its own value of 100 for the base year.

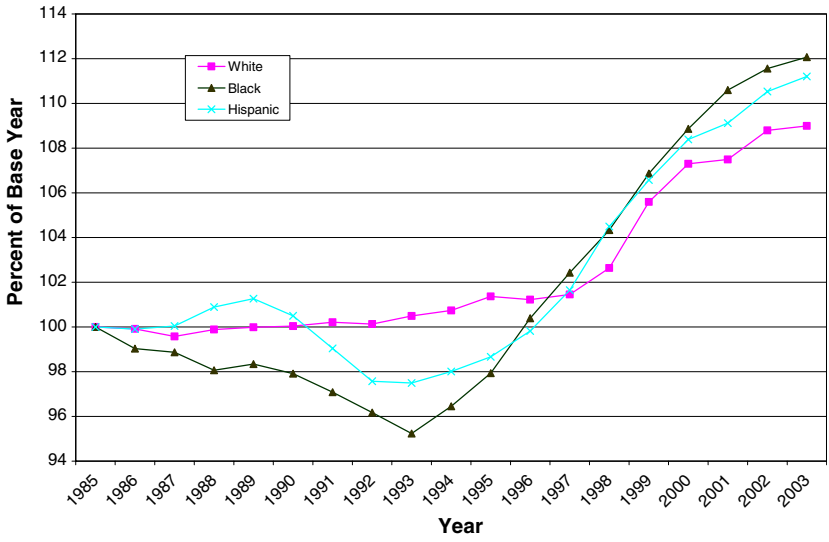

Fig. 4. Race/ethnic group-specific CWIs, 1985–2003.

Two main conclusions can be drawn from Figure 4. First, all three race/ethnic groups show improvements in child and youth well-being from 1993 to 2003 and all three groups have index values greater than those of the base year since about 1996. This implies that overall child and youth well-being for all three groups is better in 2003 – by on the order of 9 to 12% – than in 1985. Second, the downturn in child and youth well-being from the mid-1980s to the early-1990s was more severe for black and Hispanic children and youth than for white youth. In fact, for white youth, this period evidences a slowdown in improvements in well-being but not an actual decline.

Similar comparisons of trends in the CWI by sex are shown in Figure 5. Again, the Key Indicator data series used in the construction of the CWI are available specific to male and female children and youth only back to the mid-1980s. Therefore, the indices graphed in Figure 5 use 1985 as their base year. The trends in this overall summary index of child and youth well-being from 1985 to 2003 are roughly parallel. In fact, trends in the Key Indicator time series over this period of time show that females improved relative to their base year values at greater rates than males on some indicators of well-being and males improved better than females on others (Meadows et al. 2005). But the summary indices plotted in Figure 5 show that neither sex improved at a greatly higher rate than the other over this 18-year period.

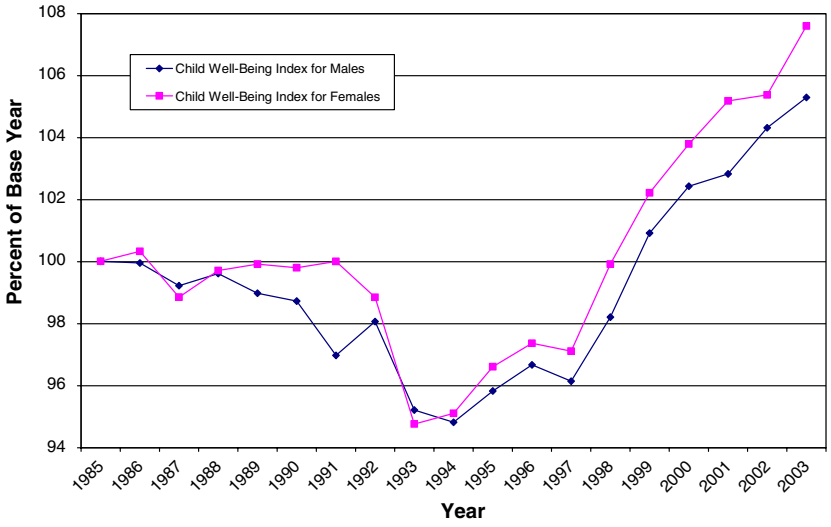

Fig. 5. Male and female CWIs, 1985–2003.

3.2.3. *Summary of findings on trends in child and youth well-being*. In summary, the foregoing and related analyses of trends in the CWI (Land et al. 2001; Lamb et al. 2005; Meadows et al. 2005) show:

- The overall well-being of children and youth in the U.S. showed substantial improvements in the 8 years from 1994 to 2002.
- Improvements continued at a slower pace in 2003 and 2004.
- Child and youth well-being in the U.S. deteriorated fairly steadily for a number of years in the 1980s and reached low points in 1992–1994. The CWI then began the upturn of the past several years, steadily increasing since 1997.
- Recent increases in the CWI have pierced the 1975 base year level only in the past few years.
- The downturn in well-being that occurred in the 1985–1994 period was particularly severe for black and Hispanic children and youths.
- There have been overall improvements in well-being for both males and females since 1985, but there are some domains and indicators in which males have done better and some in which females have done better.
- Historical best-practice analyses reported in Land et al. (2001) using the best values on each of the component indicators of the CWI ever recorded for the U.S. show that the CWI could be 20–25% higher than its values in recent years.
- International best-practice analyses (Land et al., 2001) using the best values of the of the component indicators recorded in recent years by other nations show that the CWI could be 35–40% higher than its value in recent years.
- Sensitivity analyses of the CWI show that the Health domain is greatly impacted by the inclusion of the indicator for trends in obesity and this indicator also has a big impact on the overall childhood (ages 6–11) index.
- The CWI also helps identify domains of well-being for which the data base needs to be improved. Component indicators for the social relationships and emotional well-being domains are particularly weak.

3.3. *A comparison with trends in subjective well-being*

We have described above the evidenced-based foundations for the CWI. Not only does the CWI use empirical observations on the values of the component indicators for each year in its computation, but the theoretical/conceptual rationale for the Index is based on the subjective well-being research literature. As we have noted, it is in this sense that the CWI can be

viewed as evidence-based well-being measure of trends in averages of the social conditions encountered by children and youth in the United States across recent decades.

To fully support the claim that the CWI is an evidence-based measure of changes in subjective well-being, it would, of course, be desirable to have at hand a more complete database. Specifically, it would be preferable to have annual, nationally representative sample survey-based responses by children and youth to questions concerning life satisfaction and happiness with life overall as well as in the several domains of well-being that have been identified in numerous studies over the years. Changes in the CWI over time then could be compared to those in the subjective well-being data in order to provide validating support for the former as a measure of the latter.

While such a database is not available, the Monitoring the Future (MTF) Survey Project (Johnston et al., 2003), which began in 1975 as the High School Senior Survey, provides a continuous time series of observations on the subjective well-being of 12th Graders that can be used as a criterion against which to validate the CWI. The MTF question (variable number V1652 in the MTF codebook) is of the conventional global satisfaction with life form:

"How satisfied are you with your life as a whole these days?"

The answer range is a 7-point Likert rating scale: Completely Dissatisfied, Quite Dissatisfied, Somewhat Dissatisfied, Neither Satisfied or Dissatisfied, Somewhat Satisfied, Quite Satisfied, and Completely Satisfied. For comparisons with the CWI, we first combined the last two response categories to compute the percent of the 12th Graders who respond that they either are Quite or Completely Satisfied in each year from 1975 to 2003. In order to produce a graph of changes in the responses that reduces year-to-year variability in the percents and shows the main directions of changes over time, we used a moving-average statistical procedure. Specifically, we applied a 3-point moving average two times to the MTF life satisfaction data series. The resulting smoothed series is plotted in Figure 6 alongside the composite CWI with the scale for the CWI series on the left margin and that for the smoothed MTF life satisfaction responses on the right.

Overall, it can be seen that the two time series covary considerably across the three decades shown in Figure 6 (the simple correlation between the two series is 0.65). The smoothed MTF life satisfaction series show a more sustained rise from 1976 to 1981 than does the CWI. But both series

begin a decline in the early-1980s, with the CWI turning down in 1981 and the MTF series in 1982. Both series decline to relatively low levels in the late-1980s and early-1990s and then begin a trend upward through the mid-to-late-1990s. Note that life satisfaction data have homeostatic properties (Cummins et al., 2002), which effectively places a floor and ceiling on the normal ranges of variation of population averages over time. Therefore, it cannot be expected that the smoothed MTF series will rise much higher than the 47.5 to 48% range exhibited for the last 6 years shown in Figure 6. By comparison, the CWI does not have a corresponding ceiling effect, as it contains some indicators such as the median family income of families with children ages 0 to 17 that potentially can continue to rise indefinitely.

The basic finding from Figure 6 is the considerable covariation of the two series over time. This provides independent, externally validating evidence for an interpretation of the CWI as an index of changes in the quality-of-life of children and youth in America across the past 30 years for the following reasons. First, responses to a global life satisfaction question are a standard outcome variable in subjective well-being studies of the quality of life. Second, while the responses to the global life satisfaction question used in the comparison shown in Figure 6 are available only from 12th Graders, responses to other questions in the MTF study (e.g., regarding smoking cigarettes, drinking alcohol, and using illicit drugs) that have been asked of

Fig. 6. CWI and smoothed MTF life satisfaction, 1975–2003.

8th and 10th Graders since 1991 show substantial covariation over time with those of the 12th Graders. Thus, ups and downs in the global life satisfaction responses from 12th Graders likely correlate positively with ups and downs in those responses from youths who are younger as well. Third, while the CWI was constructed on the basis of empirical findings of quality-of-life studies with respect to the number and content of domains of well-being, no use was made of the MTF global life satisfaction question prior to the present comparison. Therefore, the fact that the two series plotted in Figure 6 exhibit positive covariation of changes over time can be taken as corroborating evidence of the interpretation of the CWI as an index of changes in the quality-of-life. Of course, positive covariation over time does not prove anything. But, in absence of such covariation, a quality-of-life interpretation would be more "assumed" than "apparent" (Veenhoven, 2005).

3.4. *An expanded CWI*

The 28 Key Indicators shown in Table I that make up the basic CWI originally were chosen to be as representative as possible of the seven domains of well-being represented in the CWI and for their availability across as many years as possible of the period from 1975 to the present. As noted in Table I, 25 of the 28 Key Indicators date back at least to 1975. The other three indicators in the basic CWI – health insurance coverage, subjective health assessments, and activity limitations – date back to the mid-1980s. There are, however, a few other indicator data series that measure various aspects of child and youth well-being that are available from the mid-1970s to the present and several that commenced in the 1990s as additional measures of child well-being were added to national sample surveys. Table II identifies 16 of these indicators, again grouped according to the domain of well-being to which they principally belong. If all of these 16 indicators were added to the CWI, how would the qualitative pattern of changes in the Index across the past three decades be altered? We now address this question.

Of the 16 indicators identified in Table II, two from the Monitoring the Future Project, pertaining to volunteering and skipping of school, are available for high school seniors since 1975 and provide additional indicators of attachments to social institutions in the community connectedness domain. Given the expansion of the High School Senior Survey to 8th and 10th Graders in the MTF Project, we also have indicators of smoking, drinking, and illicit drug use for these 13 and 15-year-olds beginning in

1991, which adds data to the behavioral concerns domain. The only other series identified in Table II that date back to the mid-1970s are the NAEP science test scores for students ages 9, 13, and 17. These series add data to the educational attainment domain. Five other indicators measure food security, lack of a usual source of health care, child immunization, whether children are read to daily by a family member, and enrollment in a center-based childcare program. These indicators add empirical strength to our measures of family economic well-being, health, and community connectedness.

Figure 7 displays the trends over time in the values of the CWI (based on 28 Key Indicators) and the expanded CWI (based on 44 Key Indicators). It can be seen that the two series covary quite extensively. In particular, the qualitative pattern of changes across the three decades from the mid-1970s to the early-2000s – oscillation around 100 in the early 1980s followed by a sustained decline from the mid-1980s into the early-1990s and then an increasing trend from the mid-1990s into recent years – is similar in both. Since only 5 of the additional 16 series identified in Table II date back to the mid-1970s, the similarity of trends in the CWI and the expanded CWI to the early-1990s is to be expected. But the expanded CWI shows a greater decline in the early-to-mid-1990s – with a low point of 91.46 in 1994 as compared to 92.15 for the CWI – and a slower rate of increase into the early-2000s – with a value of about 102.45 in 2002 as compared to about 104.26 for the CWI. In brief, the addition of the 16 indicator series to the CWI makes the recession in child and youth well-being in the early-1990s slightly more severe and slightly attenuates the rate of recovery from 1995 into the early-2000s.

4. SUMMARY AND CONCLUSIONS

In the preceding sections, we have sketched the heritage of the social indicators and quality-of-life research traditions. In particular, we have:

- described the founding definitions and goals of the social indicators and quality-of-life movements of the 1960s and 1970s;
- reviewed the current state of the art with respect to the objective social indicators and subjective well-being approaches to the measurement of well being;
- cited the results of recent literature reviews of the findings of numerous studies in the subjective well-being research tradition with respect to domains of subjective well-being that consistently and repeatedly have been found to be related to happiness and life satisfaction;

TABLE II

Sixteen additional key national indicators of child well-being in the united states used in the expanded CWI

Family economic well-being domain:	1. Food security, ages 0–17, 1995–2002. Percentage of children in food-insecure households.
Family economic well-being and health domains:*	2. Lack of a usual source of health care, ages 0–4, 1993–2002. This indicator excludes visits to the Emergency Room.
Health domain:	1. Child immunization rate, ages 19–35 months, 1994–2003. This applies to children who have received immunization treatment.
Safety/behavioral concerns domain:	1–2. Rate of cigarette smoking, Grades 8 and 10, 1991–2004. 3–4. Rate of alcohol drinking, Grades 8 and 10, 1991–2004. 5–6. Rate of illicit drug use, Grades 8 and 10, 1991–2004.
Educational attainment domain:	1–3. Science test scores, ages 9, 13, 17, 1975–2002.
Community connectedness domain:	1. Rate of children read to daily by a family member, ages 3–5, 1993–2002. 2. Rate of children enrolled in a center-based childcare program, Ages 3–5, 1991–2002. 3. Volunteering, Grade 12, 1976–2003. This is specified as the rate of youths who volunteer more than once a week within a community 4. Rate of skipping more than 6 classes in the past month, Grade 12, 1976–2003.

Note 1: As in Table I, some indicators can be assigned to two domains. For these, the * denotes the domain-specific index to which the indicators are assigned for computation purposes. Note 2: The years for which the indicators are available are given in the right-hand column after the label for the indicator.

- suggested that these two research traditions can be fruitfully intersected in the sense that the results of these literature reviews can be used to inform the selection of domains of well-being and indicators to be used in the construction of child and youth well-being/quality-of-life indices;
- illustrated this process by describing how the CWI of Land et al. (2001) is constructed;
- demonstrated how the CWI can be used to chart trends and produce a number of findings concerning child and youth well-being in the United States over the last quarter of the 20th century and into the early years of the 21st century; and
- showed that the CWI exhibits substantial covariation over time with an index of overall satisfaction with life of high school seniors as well as with an expanded version of the CWI that includes additional indicators.

We conclude by describing two needed developments and possibilities for the future. First, the CWI needs to be brought down to levels of aggregation below the national level. In particular, analogous child well-being indices need to be constructed (insofar as databases permit) at the state and local levels. Progress has been made in this respect. In particular, ongoing work in collaboration with the KIDS COUNT Project (O'Hare and Bramstedt, 2004; O'Hare and Lamb, 2004) has led to the development of composite indices analogous to the CWI for each of the 50 states.

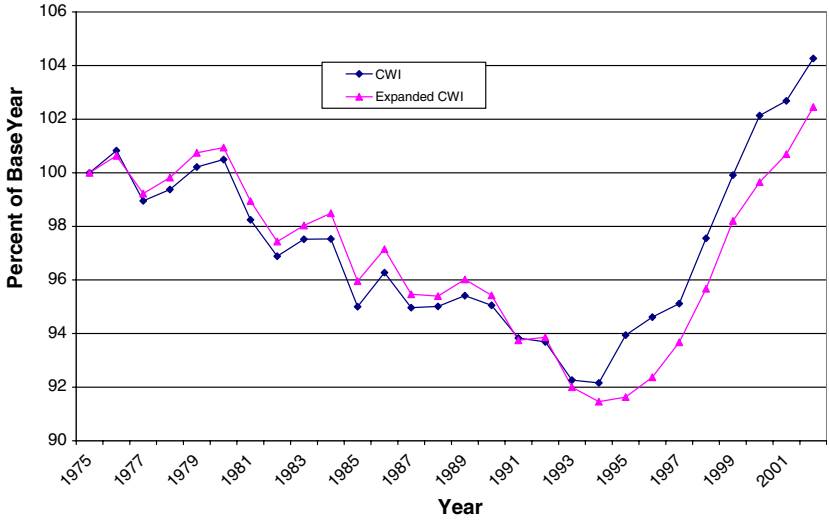

Fig. 7. CWI and expanded CWI, 1975–2002.

Second, an articulation and application of the teleological (planned social change) process described in Land and Ferriss (2002) needs to be made to the CWI and its component indicators, as illustrated in Figure 8. That is, we need to develop the relationship of the CWI to a number of other products of social science research and policy formulation and analysis for the definition and attainment of goals, as shown in Figure 8. For instance, we need to identify how the CWI and its component indicators relate to national and

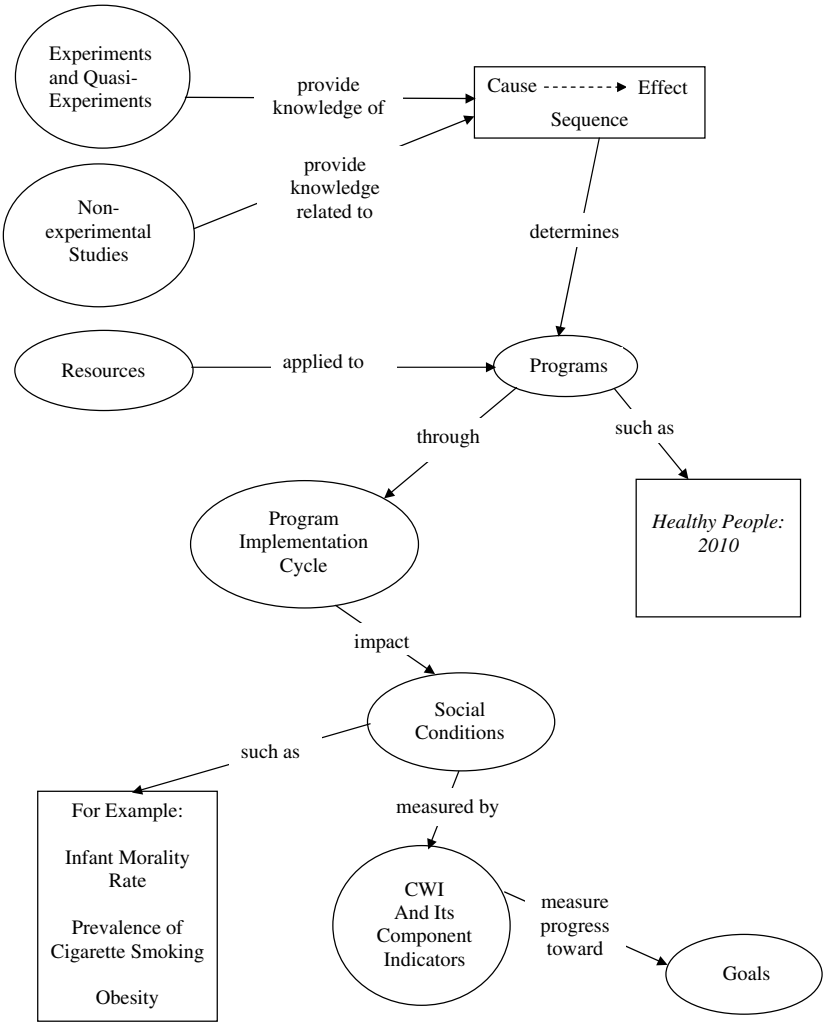

Fig. 8. The teleological process (Land and Ferriss, 2002) applied to the CWI.

community goals, such as those identified in the *Healthy People 2010* report (USDHHS, 2000). Then we need to build the knowledge base of studies in the social sciences and epidemiology (experimental and nonexperimental) that help us to understand the causes and consequences of the trends we observe in the CWI and its component indicators. Such studies can be used in conjunction with the CWI and its indicators to develop policies and intervention programs designed to move the Index towards the goals that have been identified.

This is but a brief illustration of some of the possibilities for further work on the development of the CWI. If progress can be made along these lines, however, the Index can begin to fulfill the ambitious goals of the early social indicators movement – a statement of which began this essay. That is, we can begin to achieve the promise and ambitions of the social indicators/quality-of-life movement of the 1960s and 1970s. Of course, this will not signal the end of our tasks. For these initial efforts no doubt will leave much to be desired, and there will be a need for improved conceptualizations, measurements and indicators for decades to come.

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