

# Chapter 2

## Social Indicators Research and Health-Related Quality of Life Research

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### Introduction

Research related to quality-of-life ought to benefit from efforts of researchers trained in diverse disciplines, addressing more or less similar problems, with more or less similar aims. One of the early, great philosophers of science of the twentieth century, Rudolf Carnap, said that what surprised and distressed him most about his work in philosophy of physics was that while he thought his research bridging two disciplines would be welcomed by both sides, in fact it was unwelcomed (Schilpp 1963). Both sides thought his work was neither fish nor fowl, and it was only when the field of philosophy of science reached something like disciplinary status, with its own journals, recognized authorities, classic texts, paradigms, standard courses and so on, that his work received the attention and approbation it deserved.

I do not think social indicators research and health-related quality of life research constitute distinct disciplines, but there are relatively independent research groups devoted to the range of issues in each field. In this paper I try to build something like a modest footbridge between the two fields in order to make it easier for researchers in both fields to draw on the body of knowledge accumulated in each field. I hope I have more success than Carnap, but whether or not I do, I am happy

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This essay was written for presentation at an invited plenary session of the annual meeting of the International Society for Quality of Life Research held in Amsterdam, 7–10 November 2001. The original plan was to give special attention to research on happiness, but the focus became broader as the story unfolded.

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to report that my own understanding of the research undertaken on each side of the bridge has been immensely enriched by this investigation. So, I am grateful to the organizers of this conference for the invitation to write this paper.

The structure of the essay is as follows. In the next section “[Social Indicators of the Quality of Life: Basic Definitions](#)” I briefly review some basic definitions concerning social indicators of the quality of life. After that, there is a section “[Historical Origins and Motives](#)” reviewing some of the historical origins and motives behind social indicators research. I assume, with some evidence, that measures of happiness provide at least one important way to operationalize the variety of ideas referred to by the phrase ‘quality of life’. In section “[Explaining Happiness with Life as a Whole from Selected Domain Satisfaction Items](#)” I review results of eleven surveys undertaken to explain happiness on the basis of the personal satisfaction respondents got from a dozen specific domains of their lives, e.g., satisfaction with their jobs, their living partners, their financial security and their health. Following that, in section “[Explaining Happiness with Life as a Whole from Health and Other Variables](#)” I review results of three surveys undertaken to explain happiness on the basis of respondents’ health measured by such things as SF-36, chronic illnesses and Body Mass Index scores. Then there are two sections in which I review studies designed to explain satisfaction with one’s health on the basis of measured health status (section “[Explaining Satisfaction with One’s Own Health](#)”) and on the basis of Multiple Discrepancies Theory (MDT, section “[Multiple Discrepancies Theory \(MDT\)](#)”). While the material in the sixth section is based on a single study, that in the seventh section is based on 58 studies of undergraduate student samples taken from 83 universities in 39 countries, involving over 18000 students. In section “[Health-Related Quality of Life](#)” I review nearly two dozen studies in the tradition of health-related quality of life in order to illustrate the serious confounding and question-begging that one encounters with explained and explanatory variables in this tradition. Finally, there is a short overview and concluding section “[Conclusion](#)”.

## **Social Indicators of the Quality of Life: Basic Definitions**

Since the middle of the 1960s there have been people working all over the world in what many of us used to call the “social indicators research movement”. The term “social indicator” is used to denote a social statistic that is supposed to have some significance for the quality of life, and the term “social report” designates an organized collection of social indicators. From a linguistic point of view, social indicators usually consist of a term denoting a subject class and a term denoting what I call an “indicator property”. For example, the second term of the phrase “infant mortality” denotes the indicator property mortality and the first term denotes a particular class of things, namely, infants that may possess that property. By replacing the subject term “infant” by “one year old”, “two year old”, etc., we can routinely generate (social) mortality indicators for as many age groups as we like.

Similarly, by replacing the subject term by “male”, “Indian”, etc., we can routinely generate mortality indicators for as many kinds of groups as we like.

Social indicator *phrases* are like variable *names* in logic and mathematics, and social indicators are like the variables themselves. Furthermore, just as we speak of the values of variables in logic and math, we may speak of the indicator-values of social indicators. For example, human body weight is a (social) health indicator which may have an indicator-value of 120 lb. Finally, and most importantly, strictly speaking it is the indicator-value of a social indicator which indicates whatever it is that a particular indicator is supposed to indicate. For example, if the indicator-value of one's body weight is 600 lb then this indicates that one is probably obese (or very, very tall), eats more carbohydrates, starches and fats than most people, shops at special clothing stores, suffers fatigue and shortness of breath from little exertion, cannot sit comfortably in a theatre seat, and may have difficulty finding a suitable mate. Usually, the relationship between an indicator-value and what it indicates is a one-many relationship, as my example indicates.

Social indicators that refer to personal feelings, attitudes, preferences, opinions, judgments or beliefs of some sort are called *subjective indicators*, e.g., satisfaction with one's health, attitudes toward exercise, beliefs about the benefits of some therapy. Social indicators that refer to things that are relatively easily observable and measurable are called *objective indicators*, e.g., the height and weight of people, numbers of people admitted to hospital, numbers of people dying per year.

*Positive indicators* are such that most people will assume that if their indicator-values increase, some facet of the quality of life is improving, e.g., elderly citizens incomes and minority-group educational attainment. *Negative indicators* are such that most people will assume that if their indicator-values increase, some facet of the quality of life is deteriorating, e.g., infant mortality rates and murder rates. (Notice that an indicator is here regarded as positive or negative not in virtue of whether or not its values in fact increase or decrease, but only in virtue of whether or not most people would like its values to increase or decrease, i.e., not in virtue of the *fact* but in virtue of the *desirability* of an increase or decrease in its values.) *Unclear indicators* are such that either (a) most people will not be willing or able to say whether bigger indicator-values indicate a better or worse state of affairs, e.g., welfare payments, or (b) there is serious disagreement about whether bigger indicator-values indicate a better or worse state of affairs, e.g., divorce rates. In the case of welfare payments, we do not know what to say because as the values increase there may be an increase of people in need of such assistance, which is bad; while, at the same time, there is an increase in the amount of assistance given, which is good. In the case of divorce rates, on the other hand, many people know exactly what they want to say, and they happen to disagree with what some other people want to say.

*Input indicators* indicate some sort of inputs into a process or product, e.g., daily exercise time. *Output indicators* indicate some sort of output of a process or product, e.g., Body Mass Index. Unlike the previous classifications of indicators, what counts as an input or output indicator depends on the purposes of the classification. For example, from the point of view of a therapist or coach, a person's daily exercise time could be regarded as the output resulting from advice, admonitions

**Table 2.1** Types of social indicators for health domain

Positive (P)			Negative (N)	
<i>Input (I)</i>				
Objective (O)	IOP	(e.g., daily exercise time)	ION	(e.g., cigarettes smoked per day)
Subjective (S)	ISP	(e.g., positive attitude toward exercise)	ISN	(e.g., positive attitude toward smoking)
<i>Output (U)</i>				
Objective (O)	UOP	(e.g., normal BMI score)	UON	(e.g., stained fingers and teeth)
Subjective (S)	USP	(e.g., satisfaction with weight)	USN	(e.g., dissatisfaction with stains)

and threats given to a patient or student. Similarly, a person’s BMI could be regarded as an input indicator for a therapist or coach trying to decide what sort of exercise to prescribe.

All of these kinds of indicators are summarized in Table 2.1, with examples of each. (Michalos 1988 shows how these distinctions could be used to systematically expand UNESCO’s annual international reports.)

When people use the phrase ‘quality of life’, they sometimes intend to contrast it with *quantities* or *numbers* of something. There are, then, two quite different sorts of things that one might want to refer to when using the phrase ‘quality of life’. In the first place, one might want to refer to sorts, types or kinds of things rather than to mere numbers of things. For example, one might want to know not merely how many people were admitted to a hospital last year and for how long, but also what sorts of people they were, male or female, young or old, rich or poor, and so on. When the term quality in the phrase ‘quality of life’ is used in this sense, one may say that it and the phrase in which it occurs is intended to be primarily *descriptive*.

In the second place, however, one might want to refer to the *value* or *worth* of things by using the term ‘quality’ in the phrase ‘quality of life’. For example, one frequently hears of people making a trade-off between, say, a high salary on the one hand and better working conditions on the other. Presumably the exchange here involves monetary and some other value. That is, one exchanges the value of a certain amount of money for the value of a certain set of working conditions. When the term ‘quality’ in the phrase quality of life is used in this sense, one may say that it and the phrase in which it occurs is intended to be primarily *evaluative*. (Different theories about values are reviewed in Michalos (1980, 1981), and aggregation problems are reviewed in Michalos (1970a, b, c, d, 1997, 2001).)

Both senses of the phrase ‘quality of life’ are important. It is important to be able to describe human existence in a fairly reliable and valid fashion, and it is important to be able to evaluate human existence in the same way. In philosophic jargon, one would say that a complete account of the quality of life requires a thorough examination of its nature or being as well as an examination of its value or good, i.e., an ontological account answering the question ‘What is its nature?’ and an axiological account answering the question ‘What is its value?’. I suppose it is

trivially true (tautological) that the improvement of one's relatively objective and subjective conditions implies an improvement in the quality of one's life in an evaluative sense. From a consequentialist moral point of view, our aim should be to improve or increase the value or worth of the lives of all people (Michalos 1995). Thus, the general line of my approach is in the naturalistic subjectivist tradition of the American pragmatists, especially James (1909), Perry (1926, 1954), Dewey (1939) and Lewis (1946). Since the tradition has been around for a long time, there is no need to review its strengths and weaknesses. From this point of view, the quality of a person's or community's life, in an evaluative sense, is directly proportionate to the net levels of satisfaction generated by that life for everyone affected by it. As James put it in an essay first published in 1891,

That act must be the best act ... which makes for the *best whole*, in the sense of awakening the least sum of dissatisfactions. In the casuistic scale, therefore, those ideals must be written highest which prevail at the least cost, or by whose realization the least possible number of other ideals are destroyed.... The course of history is nothing but the story of men's struggles from generation to generation to find the more and more inclusive order (James 1977, p. 623).

When researchers measure a person's overall quality of life in terms of his or her reported happiness or satisfaction, they are most likely assuming that people are the best judges of the value or worth of their own lives and that as their reported levels of happiness or satisfaction increase or decrease, the quality of their lives (its value or worth) is increasing or decreasing. If all other things are equal, it is reasonable and morally right to give personal reports some privileged status in assessing the quality of a person's life (e.g., Nord et al. 2001). Nevertheless, one hardly needs scientific research to realize that all other things are often not equal, although there is plenty of research to prove it (Michalos 1990, 1991a). Thus, giving people the first word to assess the overall quality of their own lives does not imply that each person's word is always the only, best or final word, or that such first words are in principle incorrigible (Lewis 1946; Braybrooke 1967). It is quite possible that some external observers might assess the value or worth of some person's life with different results based on different and even more reasonable and morally acceptable methods, all things considered. Essentially, that is why loyal agency to a patient or any sort of client cannot bear the weight of serving as a supreme moral principle (Michalos 1979; Brunk 1987; Poff 1987). In his broad approach to quality of life measurement, Hornquist (1989) explicitly, systematically and I think quite properly allows for such circumstances. Apriori one cannot say for all people and for all time what is the single best method for assessing the overall quality of everyone's life, all things considered. As I explained in Michalos (1978, 1992, 1995), one can not even give a rigorous account of what it would mean to consider all things. Thus, the best one can do is try to assemble a reasonable profile of the objective and subjective features of people's lives, and to evaluate the profile in a reasonable and morally acceptable way. In short, in the end, we muddle our way through to something we think is worthy of being called a good or bad quality of life (Michalos 2001).

## Historical Origins and Motives

Since good histories of the recent origins of the social indicators movement have been published by Michalos (1980, 1999), Land (1983), MacRae (1985), Ferris (1990), Noll and Zapf (1994), Vogel (1994) and Sirgy (in press), there is no need for an extensive review here. By the middle 1950s and 1960s there was a flurry of activity in all industrialized countries and in international organizations. It was a period in which governments were committed to activism. Government sponsored social programs blossomed across the globe, bringing with them the need to monitor results in order to evaluate the programs. It was reminiscent of the 1930s when everyone struggled to pull the world out of recession and planning associations sprung up at all levels of government (Karl 1974; President's Research Committee on Social Trends 1933; League for Social Reconstruction Research Committee 1935).

The longer historical tradition of social indicators researchers may be traced back fairly directly to Jeremy Bentham's ideas about a 'felicific calculus' that would allow decision makers to calculate the net pleasure or pain connected to every action for everyone affected by that action, with public policy choices made to get the greatest net pleasure or least net pain for the greatest number of people (Bentham 1789). For economists, utility theory is the apparent heir of Bentham's calculus (Mitchell 1918). Utility theory is formally elegant and has been an enormously fruitful source of research programs in individual and group decision making related to commercial markets, social and political relations, bargaining, conflict resolution, gaming and scarce resource allocation in practically all areas, including health (Nussbaum and Sen 1993; Torrance 1986). It is the heart of micro economics. Unfortunately, utility theory (as many other theories) is much better on paper and in classroom exercises than it is in practice, especially in public policy making. What is worse, utility theory begins with revealed preferences which are the mere tips of socially, psychologically and pragmatically constructed icebergs of more or less coherent systems of knowledge, opinions, attitudes, desires and needs (Michalos 1967, 1978, 1985; Schwarz and Strack 1999). While economists and other utility theorists see the iceberg tips and ask 'How can we use them?', psychologists and sociologists see them and ask 'What is their source?' and 'Is it reasonable to use them?'. More often than not, social indicators researchers have been on the side of psychologists and sociologists.

At least since the mid 1930s, statistics from National Income and Product Accounts have been routinely used for public policy making in total disregard of any microeconomic utility analysis. Thus, many of us (social indicators researchers) thought that what was required for public policy making was a set of social and later environmental indicators that could be combined with the National Accounts to create a System of Social, Economic and Environmental Accounts. In most industrialized countries today, government funded research on this project is continuing. I believe one of the motivating forces that most social indicators researchers have in common is this vision of a grand accounting system with a

place for everything important and everything important in its place (Juster and Land 1981; Fox 1985). A Task Force of the International Society for Quality of Life Studies recently published a long paper in which some adequacy criteria for such a grand system were presented, along with some analyses of some contemporary constructions (Hagerty et al. 2001). Needless to say, we are far from any generally accepted system. Some researchers in the health-related quality of life tradition seem to envision comprehensive systems that are similar to those envisioned by social indicators researchers, e.g., Hörnquist (1989), Renwick and Brown (1996).

Given most social indicators researchers' shared vision of a grand accounting scheme, it will come as no surprise that most of us also share a love for crunching numbers. While most of us grant the importance of qualitative speculative and empirical work, we are primarily interested in attaching numbers to things and to the value of things, and using quantitative information to solve public policy problems. It will also come as no surprise that most social indicators researchers are males and that, silly as it is, many of us seem to have the attitude that our numbers can beat their numbers. 'Our' numbers are the numbers produced by sociologists, psychologists and environmentalists, while 'their' numbers are the ones produced by economists. Admitting some oversimplification, most social indicators researchers think that it is a mistake for people interested in the quality of life to limit their focus of attention to commercial market activities and to evaluate everything countable by the single measure of money. We would judge it equally mistaken to limit one's attention to human health. Put positively, we think the quality of people's lives can be measured and compared directly using indicators of such things as life expectancy free of disability, educational attainment, crime rates, literacy rates, resource depletion rates, air pollution rates, stress at work, satisfaction with family relations, self-esteem and so on. Most likely, we suppose that if a grand accounting scheme is ever designed, it will involve some sort of an input-output matrix of a profile of social, economic and environmental indicators that collectively capture the quality of human existence in descriptive and evaluative senses. Although in much of this paper it is assumed that, from the point of view of a person's personal experience or feelings, the quality of a person's life may be measured by reported happiness, there is in fact much more to life and its varied qualities than happiness. While happiness may be one of the best global indicators of the quality of life, it is certainly not the only one (Veenhoven and Ouweneel 1995; Diener and Lucas 1999, 2000).

Several researchers working in the area of health-related quality of life regard health as an aspect or domain of the broader field of overall quality of life. For example, members of the Quality of Life Research Unit at the Centre for Health Promotion (CHP) of the University of Toronto regard the quality of peoples' lives as multidimensional, touching on their "being, belonging and becoming" (Renwick and Brown 1996) in ways that are reminiscent of Allardt's (1975) "having, loving and being". Fletcher et al. (1987, p. 557) were clear that "The concept of quality of life encompasses many components: cultural and political values as well as more tangible measures such as living and educational standards and freedom from disease." But they limit their explorations to "those dimensions of quality of life

which are affected by a disease and its treatment, and which have the potential to be changed by the therapeutic situation”. Najman and Levine (1981) took a similar line in their review of the impact of medical technologies on the quality of patients’ lives.

## Explaining Happiness with Life as a Whole from Selected Domain Satisfaction Items

I suppose the ideas designated by the term ‘happiness’ or their various synonyms in different languages are the oldest candidates as global indicators of an overall good quality of life. It is necessary to use the plural ‘ideas’ because different people have had very different ideas about the nature of happiness or of an overall good quality of life (Tatarkiewicz 1976). Virtually all research has shown that happiness and life satisfaction share some common meaning, e.g., see Tatarkiewicz (1976), Veenhoven (1984), Argyle (1987), Michalos (1991a), Michalos and Zumbo (1999, 2001). When people talk about satisfaction or happiness with their whole lives, they are typically referring to a relatively lasting, justified, good feeling and attitude about their lives. So, a theory of life satisfaction could be interpreted as a theory of happiness, and in general such theories would be theories of subjective well-being. However, because measures of happiness and life satisfaction do not have identical connotations or denotations, it is worthwhile to analyze their components and correlates separately.

Table 2.2 provides some comparative figures from eleven surveys taken over 20 years resulting from regressing mean happiness scores on mean scores for satisfaction with various domains of life. The simple linear model used to obtain these figures was one of the first models applied by social indicators researchers and it is still one of the most frequently used models (Michalos 1991a). It is based on the idea that people’s overall or global levels of happiness are the result of some sort of combination of the satisfaction that they get from different aspects of their lives. The model allows one to precisely measure the impact of satisfaction with, for examples, people’s family relations, health, housing and jobs on their perceived overall happiness with life. Although there are plenty of indexes of happiness and subjective well-being generally, in most of my work I use variants of the single item, 7-point measures that were thoroughly investigated by Andrews and Withey (1976), and especially by Andrews (1984). In the latter paper, Andrews showed that “a typical survey item [e.g., 7-point measures], when administered by a respected survey organization to a general population sample, can be expected to yield 50–83% valid variance, 0–7% method effects variance, and 14–48% residual variance ... over two-thirds of the variation in measurement quality could be explained by 13 survey design characteristics” (p. 409). Although McDowell and Praught (1982, pp. 949, 958) recommended the Bradburn Affect Balance Scale (Bradburn and Caplovitz 1965) as a general measure of “well-being or happiness” in population



Table 2.2 Comparison of happiness regressions from 11 surveys

	1979	1981	1982	1984	1985/86	1997	1997	1999n	1999s	2000	2000
	A <sup>a</sup>	B	C	D	E	F	G	H	I	J	K
Percent of variance explained in happiness	45	32	36	39	28	38	27	45	47	35	46
Predictors											
Satisfaction with:	Standardized regression coefficients										
Health	0.12	0.12	0.18	0.17	0.09	b	b	0.10	b	b	b
Financial security	0.09	0.06	0.21	b	0.13	0.14	0.19	0.09	b	0.19	0.06
Family relations	0.38	-0.03	0.09	0.14	0.06	0.14	b	b	b	0.14	b
Job	0.03	c	0.09	0.18	b	b	b	0.14	0.20	b	0.16
Friendships	0.23	0.23	0.01	0.21	0.10	0.09	b	b	0.21	b	b
Housing	0.01	-0.01	0.10	b	0.07	b	b	b	b	b	b
Area lived in	b	0.01	0.05	b	c	b	b	c	c	b	b
Recreation activity	0.03	0.04	0.05	b	0.07	b	b	b	b	0.14	b
Religion	c	0.01	0.03	b	b	b	b	b	b	0.15	b
Self-esteem	0.07	0.09	0.14	0.26	0.13	0.27	0.25	0.38	0.29	0.23	0.32
Transportation 0.05	0.05	b	b	b	b	c	c	c	c	c	
Gov. services	c	0.08	0.03	c	c	0.09	b	c	c	b	c
Living partner <sup>c</sup>	0.30	c	c	0.18	0.22	0.22	0.13	0.17	b	0.24	
Education	-0.3	c	c	b	0.10	c	c	c	c	b	b
Fed. Gov. Off.	c	c	c	c	c	c	c	0.10	b	b	b
Personal safety	c	c	c	c	c	c	c	0.08	0.16	b	b

P < 0.01

<sup>a</sup>A Clerical staff (N = 312), B Rural seniors (N = 273), C Cochrane residents (N = 328), D Guelph students (N = 296), E World students (N = 5036), F Prince George residents (N = 466). G Jasper residents (N = 210), H B.C. northerners (N = 713), I B.C. southerners (N = 348). J Quesnel (N = 370), K Prince George residents Nov. 2000

<sup>b</sup>Significance level too low to enter equation

<sup>c</sup>Not in questionnaire. Sources of the surveys are identified in the References using the letters heading each column; e.g., A = Michalos (1980)

surveys, their examination of that scale and a single item happiness measure revealed that “The latter performed remarkably well on many of [their] ... analyses and probably provides the best single approach to measuring well-being”. Unfortunately, other researchers have gone along with the recommendation instead of with the most likely “best single approach”, e.g., Diabetes Control and Complications Trial (1988). Serious problems with the Bradburn scale were reported in Sandvik et al. (1993). Good cases for self-reported, single-item, global indicators of health status were made by Idler and Benyamini (1997), and Verbrugge et al. (1999).

On average, for the eleven samples represented in Table 2.5, we were able to explain 38% of the variance in reported happiness from some subset of the 16 predictor variables listed in the exhibit. Our best success came from the sample of southern British Columbians in 1999 (column I), at 47%. A dozen of the 16 domain variables were drawn from Andrews’s (1974) extensive research. When all variables are standardized to have means of zero and standard deviations of one, the standardized regression coefficients (Betas) measure the percent of movement in the dependent variable when a predictor variable moves one full unit and every other predictor in the set is held constant. For example, under column A one finds that the Beta value for satisfaction with one’s family relations is  $\beta = 0.38$ , which means that for every full standard deviation increase in satisfaction with one’s family relations, one’s happiness increases about 38% of a standard deviation. Figuratively speaking, this means that for every full step increase in how good one feels about one’s family relations, one’s overall happiness goes up about 38% of a step. Inspection of the other figures in that column reveals that satisfaction in no other domain had as great an impact on overall happiness for the 312 members of the sampled clerical staff.

For our purposes, it is most important to notice that satisfaction with one’s own health was *never* the strongest predictor of happiness in any sample. In five of the eleven samples, satisfaction with one’s own health failed to enter the final explanatory regression equation for lack of statistical significance. In another three samples, it failed to appear as one of the top three predictors, it ran third in two of the three samples in which it did appear in the top three and in the remaining sample it ran only second. Clearly, the old adage about having everything when you have your health is false for the people in these eleven samples.

Reading across the row to the right from 0.38 in column A, one sees that satisfaction with one’s family relations was not the strongest predictor of happiness for any other sample. Satisfaction with one’s own self-esteem was the strongest predictor in seven samples, and by that fact alone a good candidate for the most important domain in the set of 16. More often than not, the better one feels about one’s own self, the happier one will be.

The figures just reviewed clearly illustrate the fact that different groups of people with different life circumstances, resources and constraints use different mixtures of ingredients to determine their happiness. The explanatory model used here allowed the groups represented in Table 2.2 to draw satisfaction from roughly the same set of domains. Analytically speaking, some groups used more and some used fewer of these domains to build their happiness. The Jasper group used only 3 of the 12

possibilities open to them while the rural seniors used all 12 of 12 open to them. There is no evidence that people consciously selected more or fewer domains to craft their happiness, but different people did in fact use different building blocks. Supplementing these findings, in several provocative studies Schwarz and colleagues have demonstrated that the order in which domain and global items are presented in questionnaires, as well as the number of competing domains presented can have profound effects on the measured relationships among all the variables; e.g., Schwarz and Strack (1991, 1999), Schwarz and Bless (1992). Concluding a fine review article, Schwarz and Strack (1999, p. 79) wrote,

... reports of well-being are subject to a number of transient influences. Like other social judgments, they are best considered constructions in response to particular questions posed at a particular time. Although the information that respondents draw on reflects the reality in which they live, which aspects of this reality they consider and how they use these aspects in forming a judgment is profoundly influenced by features of the research instruments.

## Explaining Happiness with Life as a Whole from Health and Other Variables

An astute observer would say that while *satisfaction with one's health* may be a weak predictor of overall happiness, *health itself* should be a strong predictor. Tables 2.3, 2.4 and 2.5 show the results of our examination of this suggestion using three different samples and different sets of potential predictors. In each case, self-reported health was measured by the near-gold standard eight dimensions of the Medical Outcomes Study Short Form (SF-36) (Ware et al. 1993), although in the third case additional health measures were also used. I will discuss each case in turn.

Table 2.3 summarizes results of a survey of 875 adults aged 55 to 95 living in the Northern Interior Health Region of British Columbia in September 1999 (Michalos et al. 2001). Our interests lie in the first and last numerical columns. The first numerical column shows that 2 of the 8 SF-36 health dimensions explained 34% of the variation in happiness scores. The dimension of Mental Health ( $\beta = 0.49$ ) was over three times as influential as that of Social Functioning ( $\beta = 0.14$ ), and the other 6 dimensions of SF-36 were not statistically significantly associated with happiness. As one moves across the columns from left to right, results of regressing happiness scores on other things are listed. Other things include, for examples, a 4-item index of social support, worries about crime, satisfaction with what one is accomplishing in life now, satisfaction with family relations, and so on. The last column gives the results of regressing happiness scores on all the significant predictors from the previous columns. It shows, first, that in the context of that set of potential predictors, only the Mental Health dimension of SF-36 remained significant and its influence was reduced

**Table 2.3** Regressions of happiness on health, worries, social support and domain satisfaction

	Health dimensions <sup>a</sup>	Crime worries, soc. supp. <sup>b</sup>	Other worries, age identity <sup>c</sup>	Domain satisfaction <sup>d</sup>	All pred. <sup>e</sup>
% of variance explained	34 N = 623	21 N = 807	21 N = 411	40 N = 584	44 N = 431
Predictors	Betas	Betas	Betas	Betas	Betas
Mental health	0.49	f	f	f	0.24
Social functioning	0.14	f	f	f	g
Social support index	f	0.34	f	f	0.1
Fair treatment index	f	0.16	f	f	g
Physical age identity	f	f	-0.17	f	g
Difficulties with housing costs	f	f	-0.22	f	g
Personal worries (Factor 1)	f	f	-0.18	f	g
Living area (Factor 5)	f	f	-0.15	f	-0.09
Retail store access (Factor 3)	f	f	-0.12	f	g
Ideal age preference	f	f	0.13	f	g
Friendships	f	f	f	0.11	0.13
Present age	f	f	f	0.17	0.15
Self-esteem	f	f	f	0.19	0.12
Accomplishing in life now	f	f	f	0.17	0.14
Local government officials	f	f	f	0.09	g
Family relations	f	f	f	0.09	g
Opportunities to socialize	f	f	f	0.09	g

<sup>a</sup>8 dimensions from SF-36<sup>b</sup>Index of crime-related worries, personal fair treatment index, social support index<sup>c</sup>Five factors from preferences and problems items, 5 age-identity items, difficulties and % of income spent on housing<sup>d</sup>24 domain satisfaction scores<sup>e</sup>a + b + c + d<sup>f</sup>Variable not in equation<sup>g</sup>Significance level too low for variable to enter equation

**Table 2.4** Regressions of happiness on health, leisure benefits and activities, domain satisfaction and social support

	Health dimensions <sup>a</sup>	Leisure benefits <sup>b</sup>	Domain satisfaction <sup>c</sup>	Dom. sat. + Health <sup>d</sup>	All pred. <sup>e</sup>
% of variance explained	22 N = 390	16 N = 418	42 N = 323	42 N = 306	42 N = 296
Predictors	Beta	Beta	Beta	Beta	Beta
Mental health	0.47	f	f	0.12	g
Psych. benefits	f	0.4	f	g	g
Social support	f	f	f	f	0.15
Self-esteem	f	f	0.3	0.28	0.32
Job	f	f	0.19	0.18	0.19
Family relations	f	f	0.12	0.12	g
Living partner	f	f	0.17	0.19	0.22
Present age	f	f	0.11	g	g

<sup>a</sup>8 dimensions from SF-36<sup>b</sup>6 indexes of perceived leisure benefits + 7 indexes of *Catalogue* benefits + 4 indexes of active and sedentary recreation<sup>c</sup>15 domain satisfaction scores<sup>d</sup>a + c<sup>e</sup>a + b + c + social support index<sup>f</sup>Not in equation<sup>g</sup>Significance level too low to enter equation**Table 2.5** Regression of happiness scores on health and domain satisfaction scores

Explanatory variables	Beta values	Beta values	Beta values
General health	0.1	a	a
Mental health	0.24	a	0.14
CES-D	-0.32	a	-0.26
Stress index	-0.16	a	-0.1
Role physical	a	a	0.06
Vitality	a	a	-0.04
Role emotional	a	a	0.07
Chronic cond.	a	a	0.04
Family rel. sat.	a	0.17	0.1
Living partner sat.	a	0.16	a
Financial sec. sat.	a	0.15	a
Self-esteem sat.	a	0.33	0.17
Prov. Gov. sat.	a	0.13	a
Fed. Gov. sat	a	a	0.07
Present age sat.	a	a	0.14
Variance explained (%)	45	40	53

<sup>a</sup>Variable not in equation

considerably ( $\beta = 0.24$ ). Second, although Mental Health was the most influential of the seven significant predictors, it had much less influence than the other six predictors combined. Third, the addition of Mental Health to the seven significant domain satisfaction predictors from the fourth column increased our total explanatory power by only four percentage points, i.e., from 40 to 44% explained variance in happiness scores. From this point of view, self-rated health had very little indeed to offer toward respondents' happiness. Fourth, it shows clearly that the measured importance of health to happiness varies with the total number and kinds of potential predictors employed. If one were to judge that importance merely on the basis of the information in the first column, one's judgment would be severely distorted. This is an excellent example of the sort of balanced view that social indicators research can provide of the importance of health to one's overall quality of life (here operationalized merely as happiness).

Table 2.4 summarizes the results of a survey of a random sample of 440 adults aged 18 years and older living in Prince George in November 1999 (Michalos and Zumbo 2003). The primary focus of the survey was to examine relationships between self-rated health measured by the 8 dimensions of SF-36 and leisure activities measured in a variety of ways. As in the previous paragraph, our interests lie mainly in the first and last numerical columns of the exhibit. The first numerical column of Table 2.4 shows that only one of the 8 SF-36 health dimensions explained 22% of the variation in happiness scores. Mental Health did all the work, with  $\beta = 0.47$ . The last numerical column shows that of the 8 potential predictors in the regression equation, only four had any statistically significant influence and together these four explained 42% of the variance in happiness scores. What is more important for our purposes, however, is the fact that while the set of predictors varied in the last three columns, the percent of variance explained was always only 42%. A set of five domain satisfaction variables alone, or four domain satisfaction variables plus Mental Health, or three domain satisfaction variables plus a 4-item index of social support provided equally efficient explanations of respondents' reported happiness.

Table 2.5 summarizes the results of a survey of a random sample of 723 adults aged 18 years and older living in Prince George in November 1998 (Michalos et al. 2000). The main aim of the survey was to gather some baseline data related to health and health care, and to assess its impact on the quality of people's lives measured in different ways. Besides SF-36, our questionnaire included the 20-item Center for Epidemiologic Studies Depression (CES-D) scale (Radloff 1977), 12 items measuring general life stress, 11 items measuring stress at work, 5 items on smoking and drinking behaviour, Body Mass Index scores, a list of chronic health conditions and 10 items on health care services in our area. The first column in the exhibit shows the results of regressing happiness scores on all of our health-related potential predictors. 45% of the variation in these happiness scores was explained. From SF-36, only two dimensions had statistically significant influence, namely, General Health ( $\beta = 0.10$ ) and Mental Health ( $\beta = 0.24$ ). As one would have expected, CES-D weighed in negatively ( $\beta = -0.32$ ), as did the general stress index ( $\beta = -0.16$ ). The second column shows that a set of five domain

satisfaction scores accounted for 40% of the variation in happiness scores, and the third column shows that the two sets together accounted for 53% of the variation in happiness scores, with CES-D scores having the greatest influence ( $\beta = -0.26$ ). Altogether, the seven health-related predictors accounted for 60% of the total variance explained and the four domain satisfaction predictors accounted for the remaining 40%. This again shows us that depending on the number and kinds of potential predictors employed, self-rated health appears to be more or less important to happiness.

In all these explanations, good mental health makes a substantial contribution to happiness. While that is not surprising or troubling in itself, it has an implication that is both. I will not dwell on the problem, but the following remarks from an intriguing review essay by Taylor and Brown (1988, pp. 204–205) are worth repeating here.

The mentally healthy person appears to have the enviable capacity to distort reality in a direction that enhances self-esteem, maintains beliefs in personal efficacy, and promotes an optimistic view of the future. These three illusions, as we have called them, appear to foster traditional criteria of mental health, including the ability to care about the self and others, the ability to be happy or contented, and the ability to engage in productive and creative work. ... The individual who responds to negative, ambiguous, or unsupportive feedback with a positive sense of self, a belief in personal efficacy, and an optimistic sense of the future will, we maintain, be happier, more caring, and more productive than the individual who perceives the same information accurately and integrates it into his or her view of the self, the world, and the future. In this sense, the capacity to develop and maintain positive illusions may be thought of as a valuable human resource to be nurtured and promoted, rather than an error-prone processing system to be corrected. In any case, these illusions help make each individual's world a warmer and more active and beneficent place in which to live.

Explaining Satisfaction with One's Own Health

Having discovered that one's self-rated health and one's reported satisfaction with it each have some independent influence on one's happiness, a researcher naturally wonders how much influence *selfrated health* has on one's reported *satisfaction with one's health*. Table 2.6, from Michalos et al. (2000), answers this question. Using the same set of health-related potential predictors described two paragraphs

Table 2.6 Regression of health satisfaction scores on health scores

Explanatory variables	Beta values
General health	0.51
Vitality	0.17
Body mass index	−0.06
Health worries	−0.14
Stress index	−0.09
Explained variance	56%

above, we were able to explain 56% of the variance in respondents' satisfaction with their own health. The General Health dimension from SF-36 clearly dominated the set of significant predictors, with a Beta value of  $\beta = 0.51$ . The Vitality dimension had a relatively small impact,  $\beta = 0.17$ , and scores for Body Mass, Health Worries and Stress were appropriately negative at  $\beta = -0.06$ ,  $\beta = -0.14$  and  $\beta = -0.09$ , respectively. Using the Pratt measure (Thomas et al. 1998), we found that the General Health dimension accounted for 65% of all the variance explained by our variables.

## Multiple Discrepancies Theory (MDT)

In Michalos (1985), I proposed and tested a theory of subjective well-being called Multiple Discrepancies Theory (MDT). Operationally, 'subjective well-being' was measured by single-item, seven-point scales of reported happiness and satisfaction. MDT was supposed to explain why people are happy or satisfied with their whole lives as well as with their jobs, living partners, finances, housing, friendships and so on. It was also supposed to explain people's revealed preferences or actual choices in terms of their levels of reported satisfaction, which would make it a deeper theory (Bunge 1961) as well as an empirical alternative to utility theory. Most importantly for present purposes, it was supposed to explain satisfaction with one's own health. In fact it performed this function very well, as I will now show.

The basic postulates of MDT are as follows.

- H1: Reported net satisfaction (happiness or subjective well-being) is a positive linear function of perceived discrepancies between what one has and wants, relevant others have, the best one has had in the past, expected to have 3 years ago, expects to have after 5 years, deserves and needs.
- H2: All perceived discrepancies, except that between what one has and wants, are positive linear functions of objectively measurable discrepancies, which also have direct effects on satisfaction and actions.
- H3: The perceived discrepancy between what one has and wants is a mediating variable between all other perceived discrepancies and reported net satisfaction, i.e., besides the direct effects posited in H1, six discrepancies have indirect effects.
- H4: The pursuit and maintenance of net satisfaction motivates human action in direct proportion to the perceived expected levels of net satisfaction.
- H5: All discrepancies, satisfaction and actions are directly and indirectly affected by age, sex, education, ethnicity, income, self-esteem and social support.
- H6: Objectively measurable discrepancies are linear functions of human action and conditioners.

Figures 2.1 and 2.2 illustrate the relations specified in the six postulates. More detailed explanations of the postulates and their sources may be found in Michalos (1985, 1991a). It is perhaps worth mentioning here that although MDT is deeper



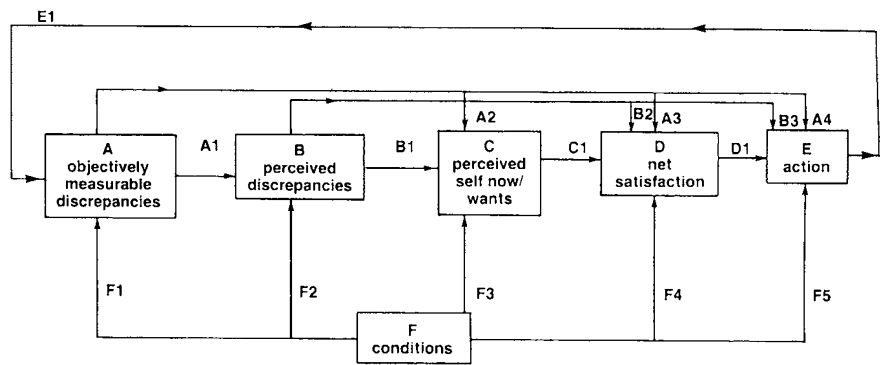


Fig. 2.1 Multiple discrepancies theory

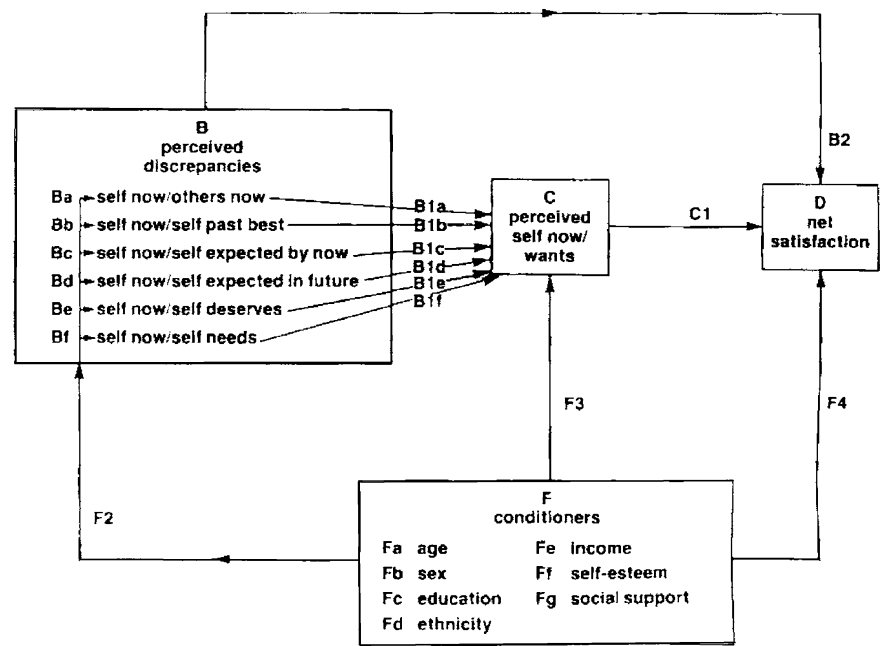


Fig. 2.2 Perceptual core of MDT

than utility theory, it suffers from some circularity roughly similar to that suffered by utility theory. After all, judgments about the best one has had in the past, what one deserves and needs (H1) are essentially evaluations. So, although my view of the nature of value is in the naturalistic subjectivist tradition, insofar as MDT is supposed to provide an explanation of satisfaction, my view is both less naturalistic and more circular than the classic naturalists or I would have liked.

Applying MDT to convenience samples of undergraduates from the University of Guelph, I was able to explain 46% of the variation in men's ( $N = 296$ ) and 53% of the variation in women's ( $N = 341$ ) satisfaction with their own health (Michalos 1985). For men and women, the most influential predictors of all those postulated were the gaps between the levels of health wanted and the levels actually obtained. Encouraged by this success, I went after bigger fish.

With the help of 68 colleagues around the world, in the 1984–86 period, data were collected from over 18000 undergraduates in 39 countries, using 19 different languages. The complete results of the investigation were given in Michalos (1991a, b, 1993a, b). Table 2.7 gives the results of using MDT to explain satisfaction with one's own health. In the column under S (for "satisfaction with one's own health") we find a total sample of  $N = 8076$  students, including 4,116 males and 3960 females. MDT explained 51% of the variance in reported health satisfaction scores for the whole group, 52% for males and 51% for females.

Regarding discrepancies for the whole group, the self/wants gap ( $SW = 0.46$ ) had the greatest impact on health satisfaction, followed by self/others ( $SO = 0.37$ ). Note that the impact of the self/wants variable on satisfaction is measured by its beta value, which equals its *direct effect*, while the impact of every other gap variable is measured by the product of the various betas involved in its *direct and indirect effects* on satisfaction.

From the column under SW one finds that the MDT set of predictors explains 42% of the variance in scores indicating the perceived gap between the sort of health students have and the sort they want. In the TESW column, one finds that it is social comparison scores ( $SO = 0.34$ ) that dominate the lot of predictors. The next most influential predictor is self/needs ( $SN = 0.19$ ).

Considering perceived discrepancies relative to health satisfaction, the rank ordering of the three most influential predictors for females is exactly the same as the ordering for the group as a whole. For females, we have self/wants ( $SW = 0.45$ ), self/others ( $SO = 0.35$ ) and self/needs ( $SN = 0.15$ ). For males, we have self/wants ( $SW = 0.46$ ) and self/others ( $SO = 0.39$ ), followed by self/deserved ( $SD = 0.13$ ).

Regarding the relative impacts of self/needs versus self/deserved for males and females in the domain of health, considerations of equity are more influential than considerations of need for males, while considerations of need are more influential than considerations of equity for females.

Considering the relative impacts of my predictors on the gaps between what one has and wants regarding one's own health, the rank orderings of the two most influential variables for males and females are the same. The self/others gap has the greatest impact for males ( $SO = 0.35$ ) and females ( $SO = 0.33$ ), followed by self/needs for males ( $SN = 0.17$ ) and females ( $SN = 0.21$ ).

Since different samples were used to measure the relationships among scores for health status, health satisfaction and MDT predictors, we have no way of knowing the relative strength of the relationships in general. Lest anyone concludes too rapidly from the numbers we have just seen that self-rated health status predictors are always superior to MDT predictors of reported health satisfaction, the following

**Table 2.7** Satisfaction with one's health regressed on MDT predictors (decimal points omitted)

	S*	SW	SO	SD	SN	SP	SF	SB	TES	TESW
N	8076	8107	0	8562	8762	8705	8624	0	—	—
R <sup>2</sup>	51	42	0	1	1	1	1	0	—	—
Predictor	a	a	a	a	a	a	a	a	—	—
Sex	−3	5	0	3	0	4	−3	0	0	6
Age	−3	0	0	−4	−6	−3	0	0	−4	−2
WS	5	0	0	4	5	4	−3	0	6	2
LED	2	0	0	0	0	0	3	0	2	0
ETH	−2	3	0	5	4	7	−7	0	1	5
SO	21	34							37	34
SD	6	12							12	12
SN	4	19							13	19
SP	6	12							12	12
SB	6	9							10	9
SW	46								46	
<i>Males</i>										
N	4116	4132	0	4375	4494	4456	4415	4482	—	—
R <sup>2</sup>	52	42	0	1	1	1	1	1	—	—
Age	−2	0	0	−3	−6	−3	0	−4	−4	−2
WS	5	0	0	5	5	4	−5	−4	6	2
LED	0	0	0	0	0	0	5	0	0	0
ETH	0	5	0	7	7	9	−9	5	5	9
SO	23	35							39	35
SD	7	13							13	13
SN	0	17							8	17
SP	4	13							10	13
SB	9	7							12	7
SW	46								46	
<i>Females</i>										
N	3960	3975	0	0	0	0	0	0	—	—
R <sup>2</sup>	51	42	0	0	0	0	0	0	—	—
WS	6	0	0	0	0	0	0	0	6	0
ETH	−3	0	0	0	0	0	0	0	−3	0
SO	20	33							35	33
SD	6	10							11	10
SN	5	21							15	21
SP	8	11							13	11
SB	3	11							8	11
SW	45								45	

\*Abbreviations are as follows. *S* Satisfaction with one's health, *WS* Work status, *LED* Level of education, *ETH* Country of birth, *SO* Self/other gap, *SD* Self/deserved gap, *SN* Self/needs gap, *SP* Self/progress gap, *SB* Self/best gap, *SW* Self/wants gap, *SF* Self/future gap, *TES* Total effects (=sum of direct and indirect effects) on satisfaction, *TESW* Total effects on self/wants variable

remarks are worth considering. For the 38 countries in my global survey, on average MDT explained 48% of the variance in health satisfaction scores for the whole group and males, and 49% for females. For the whole group, percents of variance explained in scores indicating satisfaction with one's health ranged from a high of 73% in Finland to a low of 24% in Jordan. There was one other country with a figure in the 70s, Korea = 71%, and there were 4 countries with figures in the 60s, Belgium = 69%, Austria = 64%, and Germany and Switzerland = 60%. Altogether, there were 10 (26%) countries in which at least 55% of the variance in health satisfaction scores for the whole group was explained. For males, percents of variance explained in health satisfaction scores ranged from a high of 72% for Korea to a low of 21% for Greece. There were 4 countries with figures in the 60 s, namely, Finland = 69%, Austria and Portugal = 64%, and Switzerland = 61%. Altogether, there were 8 (24%) countries with at least 55% of the variance explained in health satisfaction scores. For females, percents of variance explained in health satisfaction scores ranged from a high of 76% for Finland to a low of 25% for Chile. There were 5 countries with figures in the 60 s, namely, Austria = 65%, Sweden = 64%, Germany and the Netherlands = 62%, and Switzerland = 60%. Altogether, there were 11 (38%) countries with at least 55% of the variance explained in health satisfaction scores (Michalos 1993b, pp. 77–80).

Clearly, in certain circumstances, the potential predictors assembled in MDT can provide considerable power to explain people's reported satisfaction with their own health, occasionally perhaps *even more power* than a reasonably broad set of measures of self-reported health. Of course the only way to measure the relative explanatory power of actual health status predictors versus MDT predictors is by undertaking surveys in which all relevant predictors are included. I have never done that, but someone probably will do it some day. It would also be worthwhile for someone to employ MDT in an examination of the impact of response-shift bias related to pre-, post- and then-test scores (Sprangers and Schwartz 1999; Sprangers 1996). Given the rich array of judgment standards in MDT, a wide variety of response-shifts might occur across the period of time from a patient's initial diagnosis, through and beyond therapy.

Regarding overall happiness with life, MDT explained 42% of the variance in happiness scores for the whole student group, 41% for males and 44% for females. The most influential predictors for all three groups were the gaps for self/best, self/others and self/wants, in that order (Michalos 1991, pp. 115–125).

## Health-Related Quality of Life

Broadly speaking, there are two types of measures of health-related quality of life, namely, those that are specific to diseases, conditions, functions and/or populations and those that are not (Guyatt et al. 1989; Patrick and Deyo 1989). Disease-specific quality of life measures are designed to measure the quality of diseased life (QDL) and as such they are not likely to be confused with general measures of the

quality of life of ordinary, normal or non-diseased people. For example, the Functional Living Index-Cancer (FLIC) measures cancer patients' functioning and feelings about the impact of their disease on their lives (Schipper et al. 1984). No-one could reasonably mistake a FLIC score as a general measure of the overall quality of a normal, non-diseased person's life. The Oswestry Low Back Pain Disability Questionnaire measures the degree to which the quality of a person's life is constrained or impaired by a specific condition, low back or leg pain (Fairbank et al. 1980). The FACT-general (FACT-G) cancer quality-of-life scale is a straightforward measure of the quality of a cancer-diseased life. It is noteworthy that "Most of the concepts measured by the FACT-G are not specific to oncology and therefore lend themselves to evaluation in other diseases" (Cella et al. 1993, p. 577). The Illness Behavior Questionnaire measures the degree to which the quality of a sick person's life is compromised by that person's perception and management of his or her illness (Pilowsky et al. 1983). Again, the scale would be an unlikely candidate as a measure of the general quality of life of normal people.

Andresen et al. (1999) briefly reviewed some of the differences, strengths and weaknesses of using condition-specific versus generic measures of health-related quality of life. For present purposes, perhaps their most important remark was that "condition-specific measures prohibit comparisons of persons with SCI [spinal cord injuries] to the general population or to other groups with impairments" (p. 977). This is important because it highlights two of the most important differences between the aims of social indicators researchers and health-related quality of life researchers. From the beginning, social indicators researchers have been focused on measuring the quality of life of average people living in diverse circumstances, and they have been interested in measuring people's health primarily as a determinant of the quality of their lives. Certainly more than social indicators researchers, health-related quality of life researchers have been primarily interested in measuring the health of people as something good in itself and, secondarily as a cause, effect, component, or all three, of the quality of their lives. Also more than social indicators researchers, health-related quality of life researchers have been interested in developing measuring instruments that are useful for a great variety of health care workers and purposes, from clinicians with relatively few subjects with extraordinary problems to population health managers with relatively many subjects with ordinary problems.

Unlike disease-specific quality of life measures, so-called generic or general health-related quality of life measures are very problematic, primarily because they are so confounded. Recognizing the importance of distinguishing validation of measures or instruments from validation of interpretations of such measures or instruments (McDowell and Newell 1996), it is probably more accurate to say that measures and interpretations are each confounded. I grant immediately that if one accepts the World Health Organization's broad definition of health as "complete physical, mental and social well-being", there may not be confounding. Depending on what one loads into the notions of physical, mental and social well-being, if one has complete physical, mental and social well-being, then the quality of one's life may well be excellent. Again, depending on what one loads into those notions, a

reasonable measure of excellent health might be an equally reasonable measure of an excellent quality of life.

The trouble is, there is no rule book to tell us exactly what should be loaded into the notions of physical, mental and social well-being. For example, if one interpreted 'physical' well-being broadly enough to include people's physical environment (e.g., their housing, neighbourhood, area air, water and land quality) and then insisted on including measures of these sorts of things in a profile of human health, then that profile would probably capture more of the broad sense of quality of life understood as happiness. The same game could be played with the notions of mental and social wellbeing, with similar results. I would not recommend it because I think it would expand our ordinary ideas of human health far beyond reasonable recognition. In fact, the game being played would be nothing less than that of expanding ordinary ideas of health to make them equivalent to the broader ideas of quality of life or happiness. Insofar as the game was successfully played, 'health' would become synonymous with 'quality of life' (or perhaps 'happiness') and the phrase 'health-related quality of life' would be equivalent to the hopelessly redundant 'health-related health' or 'quality of life- related quality of life'. So, broad as the WHO definition of 'health' is, it is still not as broad as the idea of quality of life understood as happiness and it would be a mistake to try to make the ideas equivalent. As long as some distinction is consistently maintained between the two notions, remarks such as the following are both meaningful and important.

The objective [of quality of life research in the area of nursing science] must be to acquire knowledge of the influence of various degrees of health failure upon quality of life throughout the life cycle and to establish what constitutes a good life in the context of treatment and care (Hanestad 1990, p. 30).

Epistemologically, I go a long way with constructionists (Michalos 1991a) and I think the ideas of health and quality of life are socially constructed, but I believe that they are ordinarily constructed as different notions with some overlapping sense (strictly, overlapping connotation and denotation as logicians would say) and I believe that this is appropriate. I am not convinced, as Nord et al. (2001) apparently are that "To most people, 'quality of life' refers to ... [only a] ... subjective, overall feeling" and I would not support their recommendation to use the term 'quality of life data' "only in connection with data about people's subjective feelings about life". As a matter of fact, a similar proposal was made by Solomon (1980) at UNESCO and it seemed to attract some adherents in Europe, but it never quite caught on in North America. Birnbacher (1999, p. 30) took that line almost exactly when he wrote,

Quality of life judgements... are judgements from the subject's own perspective. To bring this *internal* perspective to bear on medical decision-making was the central point of introducing the concept, in opposition to a medical paternalism that takes its cue exclusively from such external criteria as normal functioning, role fulfilment and social worth. This point is lost unless the concept is understood in a strictly descriptive and psychological way.

During the cold war years, some Eastern European researchers preferred to talk about ‘way of life’ rather than ‘quality of life’, with the former term applying only to observable behaviour, especially the use of one’s time for daily activities (Andorka and Harcsa 1990). As will become clear shortly, I do think the idea of health-related quality of life is very troublesome and we would probably be better off without it. But maybe if researchers would be more careful in their usage, a lot of the problems would disappear. If we all agreed that, say, ‘health-related quality of life’ means ‘the overall nature and value of life in relation to health’, and if all of us were much more careful than we usually are, maybe most of the problems would disappear. Maybe not. In any case, if Birnbacher (1999, pp. 28–29) is right (as I believe he is) in his judgment that some researchers just want to abandon the concept of *quality of life* altogether because it is “too multi-faceted and too controversial”, some think “the multiplicity of concepts of quality of life is more or less inevitable”, some “welcome the pluralism of interpretations as potentially productive” and some think there are “good reasons to postulate a unitary concept at least for the medical context”, it is unlikely that we are going to get general agreement on the best strategy for managing our problems with the idea of *health-related quality of life*.

We have already seen in section “[Explaining Happiness with Life as a Whole from Health and Other Variables](#)” that if ‘quality of life’ is interpreted as ‘happiness’ then good measures of health explain anywhere from almost a half to only a fifth of the quality of people’s lives, when the explanatory models include no other domains of life. When salient other domains are included in one’s model, then good health measures have relatively little influence on the quality of life understood as happiness. This strongly suggests that even if one’s measures are designed to capture the broad, WHO sense of ‘health’, they fail to capture the sense of ‘quality of life’ understood as ‘happiness’.

Another way to see the limitations of thinking about quality of life and health as co-extensive notions is to try to explain General Health from the set of domain satisfaction items employed in the simple linear model explaining happiness. Using the data-set from Michalos et al. (2000), I correlated eleven domain satisfaction items with the SF-36 General Health Index and then regressed the latter on the former, with and without the domain of health satisfaction. Table 2.8 shows that each domain satisfaction item was positively and significantly (0.01 or better, two tailed test) correlated with the General Health Index. Table 2.9 shows that without health satisfaction in the model, only 15% of the variance in General Health Index scores could be explained by three domain satisfaction scores, with the other seven potential predictors failing to reach significance. The three predictors were satisfaction with one’s self-esteem ( $\beta = 0.22$ ), recreation activities ( $\beta = 0.18$ ) and family relations ( $\beta = 0.09$ ). When health satisfaction was entered into the equation, 44% of the variance in General Health Index scores could be explained and a single predictor, health satisfaction, did all the work ( $\beta = 0.66$ ).

Suppose, then, that we accept the concepts of health and quality of life as different but overlapping notions. What are we to make of ideas of health-related quality of life? If one thinks of the quality of a person’s life as divisible into several

**Table 2.8** Correlations of general health index scores and domain satisfaction scores

Satisfaction with:	Correlation with general health (N)	Satisfaction with:	Correlation with general health (N)
Your house	0.18 (N = 707)	Your neighbourhood	0.13 (N = 703)
Your family relations	0.20 (N = 698)	Your living partner	0.14 (N = 595)
Your job	0.19 (N = 602)	Your friendships	0.27 (N = 699)
Your health	0.69 (N = 700)	Your spiritual fulfilment	0.20 (N = 656)
Your financial security	0.28 (N = 695)	Your recreation activity	0.36 (N = 693)
Your self-esteem	0.36 (N = 696)		

**Table 2.9** Regressions of general health index on domain on domain satisfaction items

Explanatory variables = Satisfaction with:	Without health satisfaction, betas	With health satisfaction, betas
Your self-esteem	0.22	<sup>a</sup>
Your recreation activity	0.18	<sup>a</sup>
Your family relationships	0.09	<sup>a</sup>
Your health	–	0.66
Variance explained (%)	15	44
N	498	496

<sup>a</sup>Significance level too low to enter equation

different domains along the lines of the simple linear model (e.g., family life, job, health, recreation activities), then health-related quality of life may be regarded as a particular species of the genus *domain-related quality of life*. Other species would include, for example, job-related quality of life and marriage-related quality of life. Just as researchers construct descriptive and evaluative measures of people's health and then try to explain people's overall quality of life on the basis of health, researchers construct descriptive and evaluative measures of people's jobs and marriages and try to explain their overall quality of life on the basis of their jobs and marriages. However, so far as I know, only health researchers have dared to confound ideas of the quality of life by joining them in a hyphenated way to specific domains. A perfect example of the confusion that can arise may be found in an otherwise very good review article by Guyatt et al. (1989, p. 1443). Here is what they say in a section on utility measures. "Quality of life is measured as a single number along a continuum, death being 0.0 and full health 1.0." The logical implication is that full health equals excellent quality of life. This is exactly like saying 'Quality of life is measured as a single number along a continuum, terrible job (or terrible marriage) being 0.0 and excellent job (or excellent marriage) 1.0.'



The implication would then be that an excellent job or an excellent marriage equals excellent quality of life. That is clearly false, just as it is false to suppose that good health equals good quality of life. Torrance (1986) and Churchill et al. (1984) make precisely this supposition when they assume that quality of life is measured by a utility score ranging from healthy to dead, as Guyatt et al. assert.

McDowell and Newell (1996, p. 13) recognized that such mis-identification occurs in the literature, but did not identify it as a problem. They wrote,

Health measurements may also be classified descriptively according to their scope or the range of topics they cover. The spectrum of measures ranges from those that focus on a particular organ system (vision, hearing), to methods concerned with a diagnosis (anxiety or depression scales), to those that measure broader syndromes (emotional well-being), to measurements of overall health, and, broadest of all, to measures of overall quality of life.

This sort of mistake is often made in the health-related quality of life research literature. For example, Eiser and Tooke (1993, p. 86) claimed that

Two broad approaches can be identified in measurement of quality of life. In the first, it is assumed that quality of life is synonymous with health status. ... In the second approach, individual differences in how people perceive and appraise situations are stressed; the individual's perceptions of, and satisfaction with, his or her level of functioning is considered central to any assessment of quality of life.

In my terms, these authors are saying that 'quality of life' is synonymous with 'health measured by objective indicators' or with 'health measured by subjective indicators-satisfaction with health'. So, the question of the impact of one's health on one's overall quality of life is reduced to the question of the impact of objectively measured on subjectively measured health or vice versa, or the question of the impact of objectively measured quality of life on subjectively measured quality of life or vice versa. The reduced questions are all important, but so is the question that is begged, namely, the question of the impact of health (objectively or subjectively measured) *among all other aspects of people's lives* on their overall quality of life (objectively or subjectively measured). More precisely, if the question at issue is 'What is the relative impact of health compared to all other aspects or domains of people's lives on their overall quality of life?', then the logical fallacy of begging the question occurs when a researcher employs definitions of key words or methodological procedures that presuppose the question at issue has already been answered (Michalos 1969).

Bardsley et al. (1993, p. 619) wrote,

Both the late complications of diabetes and the means used to prevent them have a significant impact on the lives of people with the condition. Measuring quality of life is therefore important in assessing clinical need and evaluating the success of management. Three approaches to measuring health status were therefore compared. ... The measures used were the Nottingham Health Profile (NHP), four categories of an anglicized version of the Sickness Impact Profile (the Functional Limitations Profile (FLP)), and a scale of Positive Well-Being (PWB).

For these authors, then, because the quality of people's lives is important, they measured people's *health status*, assuming that validated measures of the latter are

equivalent to measures of the former, effectively begging the question of the measurable impact of health on the overall quality of people's lives.

Finding that total stable glycosylated hemoglobin (HbA<sub>1c</sub>) levels were uncorrelated with young diabetics' scores on the Diabetes Quality of Life Instrument (DQOL) but correlated with their self-perceived health status, Ingersoll and Marrero (1991, p. 118) concluded,

Practitioners have a tendency to equate good metabolic control with quality of life. While the value of good metabolic control should not be understated, these data suggest that phenomenologic or self-perceived quality of life holds a very different meaning to adolescents with IDDM [insulin-dependent diabetes mellitus].... Psychosocial quality of life may constitute a qualitatively different, but also important, outcome in conjunction with physiological quality of life, reflected in good metabolic control. ... While diabetes practitioners should not lose sight of the centrality of metabolic control, neither should they dismiss or deemphasize quality of life issues.

Thus, for these authors, 'physiological quality of life' is synonymous with 'self-perceived health status' while 'psychosocial quality of life' is synonymous with 'quality of life', although they recognize that 'practitioners have a tendency to equate good metabolic control (=physiological quality of life) with quality of life (=psychosocial quality of life).

People often use SF-36 as a measure of health-related quality of life, when in fact it was designed and validated as a generic measure of health. Thus, Jacobson et al. (1994, p. 267) wrote,

Consecutive outpatients (n = 240) from a large multispecialty diabetes clinic were studied on a single occasion using two measures of quality of life - Diabetes Quality of Life Measure (DQOL) and the Medical Outcome Study Health Survey 36-Item Short Form (SF-36). ... The two measures examine quality of life from different but complimentary perspectives. The DQOL seems more sensitive to lifestyle issues and contains special questions and worry scales oriented toward younger patients, whereas the SF-36 provides more information about functional health status.

When researchers use the SF-36 as a measure of health-related quality of life, they are begging the question about the relationship of *good health* to *good quality of life* because they are assuming SF-36 measures both equivalently. What's worse, by confounding these notions, they are preventing themselves from actually measuring the impact of the former on the latter and they are making it more difficult for others to even recognize this important issue.

Nerenz et al. (1992, pp. MS121–MS122) apparently made that mistake when they wrote,

The measurement of quality of life for diabetic patients is practical in an ambulatory clinic setting using either mail or in-person methods. ... the quantitative approach to assessing health status may allow more explicit agreement between patient and physician on acceptable trade-offs between current quality of life and risk of future diabetes complications. When used routinely, the SF-36 measure could provide a common vocabulary for patient and physician to use in discussing those trade-offs, if both physicians and patients can become comfortable with discussing health status in terms of scores on the SF-36 dimensions.

As illustrated above with the quotation from Bardsley et al. (1993), people often use the Sickness Impact Profile as if it were a measure of the overall quality of life, although it was designed as “a behaviourally based measure of health-related dysfunction” intended “to provide a measure of health status that would be useful in the assessment of individuals or populations with chronic as well as acute illness” (Bergner 1993, p. 95). It was originally validated on hyperthyroid patients, rheumatoid arthritic patients and patients who had total hip replacement, and the published report of those validation investigations does not contain a single occurrence of the phrase ‘quality of life’ (Bergner et al. 1981). In Bruin et al. (1992) review of the SIP’s reliability and validity, it’s largest correlation ( $r = 0.87$ ) was with the Arthritis Impact Measurement Scale. For our purposes, it must be noted that “Respondents check only the items that describe them on a given day *and are related to their health*, although the actual medical condition is not an issue” (McDowell and Newell 1996, pp. 431–432, emphasis added). Since only health-related items are in the SIP and respondents are instructed to check only items related to their health, if SIP scores are regarded as measures of the overall quality of people’s lives then the question of how health is related to the overall quality of people’s lives is clearly begged in favour of a strong positive relation. The following quotation from Prigatano et al. (1984, p. 1619) illustrates precisely such circular reasoning.

It is of some interest that in this investigation, recent life changes in patients with COPD [chronic obstructive pulmonary disease] were not greater than those found in control subjects except on the health dimension. This suggests that changes in work, home life, marriage, personal and social life, and finances cannot account for the enhanced quality of life differences in patients with COPD and mild hypoxemia. Rather, it appears that it is the changes in health that seem to be most important for quality of life.

On the contrary, given their dependent variable, it only appears that *changes in health* are most important for the behaviourally-measured *health status* of sick people, as one would have expected.

The Diabetes Control and Complications Trial (DCCT) (1988, pp. 275–276) wrote that “Many measures have been developed to assess quality of life ... measures such as the Sickness Impact Profile ... have been developed to study the general population”. Similarly, Guyatt et al. (1987, p. 52) wrote that “McSweeney et al. (1982) applying the Sickness Impact Profile, a quality of life instrument designed for the general population ...”. It appears as if the authors of both papers identified ‘behaviorally-measured health status’ with ‘quality of life’, effectively begging the question of the how health might be related to the overall quality of anyone’s life. A similar argument could be made about the use of the Quality of Well-Being Scale by Andresen et al. (1998).

The recently released report from the U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (November 2000) has some stunning examples of confounding. Here are some. “The concept of health-related quality of life (HRQOL) and its determinants have evolved since the 1980s to encompass those aspects of overall quality of life that can be clearly shown to affect

health—either physical or mental” (p. 6). So “health-related quality of life” is a dependent variable with “its determinants”, but “overall quality of life” is also a predictor because it has “aspects” that “affect” “health”, which is now a dependent variable apparently driven by something that encompasses it, namely, “quality of life”. Again, “Further, the CDC Chronic Disease, Disability, and Women’s Health Programs have evolved to target quality of life as an important health outcome” (p. 7). So, now “health” is the predictor and “quality of life” is the dependent variable. Nevertheless, “Specifying HRQOL represents a unique effort on the part of national policy makers to formally recognize quality of life as an important component of health” (p. 15). That is to say, “quality of life” is an aspect of “health”, rather than being determined by or determining “health”. In sum, in these three sentences we are told that “health” is a component of a broader notion of “quality of life”, that “quality of life” is a component of a broader notion of “health”, and that each is driven by and drives the other, as well as some other things. It would be difficult to find more confusion in any three sentences and I suspect its source is the confounded “concept of health-related quality of life”.

## Conclusion

The aim of this essay was to build a bridge between two intersecting areas of research, social indicators research on the one hand and health-related quality of life research on the other. If researchers on either side of the bridge are enabled to find something of value on both sides, I will have succeeded in my task. The first substantive section of the paper introduced key concepts and definitions in the social indicators research tradition, e.g., social indicators, positive, negative, input and output indicators, social reports and quality of life. After that, there was a section reviewing some historical origins and motives of social indicators researchers, beginning roughly with Jeremy Bentham’s ‘felicific calculus’ and ending with the search for a comprehensive accounting scheme capable of measuring the quality of human existence with social, economic and environmental indicators.

Ideas about human happiness are historically and logically closer to Bentham’s views than they are to contemporary views about comprehensive accounting schemes for the quality of people’s lives, but research around ideas of happiness continues to provide important insights for social indicators researchers and for health-related quality of life researchers. In the interest of illustrating the usefulness of happiness research to health-related quality of life research, I reviewed results of eleven surveys undertaken to explain happiness on the basis of levels of satisfaction that respondents got from a dozen specific domains of their lives, e.g., satisfaction with their jobs, family relations and health. On average, for the eleven samples, we were able to explain 38% of the variance in reported happiness from some subset of the predictor variables. Our best success came from a sample of southern British Columbians at 47%. Satisfaction with one’s own health was *never* the strongest

predictor of happiness in any sample. In five of the eleven samples, satisfaction with one's own health failed to enter the final explanatory regression equation for lack of statistical significance. In another three samples, it failed to appear as one of the top three predictors, it ran third in two of the three samples in which it did appear in the top three and in the remaining sample it ran only second. Satisfaction with one's own self-esteem was the strongest predictor in seven samples, i.e., usually, the better one feels about one's own self, the happier one will be. The results in this section of the essay show that different groups of people with different life circumstances, resources and constraints use different mixtures of ingredients to determine their happiness.

After examining some research revealing the relative importance of people's *satisfaction with their health* to their overall happiness, I considered some studies revealing the importance of people's *selfreported health* to their overall happiness. Self-reported health was measured primarily by the eight dimensions of SF-36. In a survey of 875 older Canadians, two dimensions of SF-36 had statistically significant effects on reported happiness when the only potential predictors entered into the regression equation were scores on the eight dimensions. The dimensions of Mental Health and Social Functioning explained 34% of the variation in happiness scores. Most importantly for our purposes, when a variety of other potential predictors were entered into the equation, the total explained variance in happiness scores rose to 44% but only one of the eight dimensions of SF-36 remained, namely, Mental Health. The latter accounted for a mere four percentage point increase in the explanatory power of all the significant predictors. Thus, self-reported health had relatively little to contribute toward respondents' reported happiness, and its measured contribution was significantly affected by the number and kinds of potential predictors employed. This result was replicated with two different samples and sets of potential predictors.

After reviewing studies explaining the variation in reported happiness scores on the basis of health-related potential predictors, I reviewed a couple approaches to explaining people's *satisfaction with their own health*. First, using the same set of health-related potential predictors of overall happiness, we were able to explain 56% of the variance in respondents' satisfaction with their own health. Then, using Multiple Discrepancies Theory, we were able to explain about 51% of the variation in satisfaction with one's own health scores for 8,076 undergraduates, with highs of 76% for a sample of Finnish females and 72% for Korean males. Accordingly, it was reasonable to conclude that if one's aim is to explain people's satisfaction with their own health, the potential predictors assembled in MDT can provide quite a bit and sometimes even more explanatory power than a reasonably broad set of measures of selfreported health. From the point of view of making public policy related to health, this is an extraordinary conclusion. It implies, for example, that insofar as policy makers are primarily interested in voters' satisfaction with their own health rather than with voters' health itself (because net satisfaction may drive voting behaviour more than health drives voting behaviour), they might reap greater benefits by manipulating voters' perceived discrepancies rather than improving their health. The ghost of Machiavelli rises and smiles.

In the penultimate section of the essay a couple dozen publications on health-related quality of life were examined in order to show that some serious confounding and question-begging has accompanied use of the phrase. In particular, it was argued that there are good reasons for carefully distinguishing ideas of health and quality of life, and for not interpreting SF-36 and SIP scores as measures of the quality of life. It was suggested that we might all be better off if the term 'health-related quality of life' was simply abandoned. However, since this is unlikely to happen, it was and is strongly recommended that researchers be much more careful with their usage of the phrase and their interpretation of purported measures of whatever the phrase is supposed to designate.

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