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AN APPLICATION OF MULTIPLE DISCREPANCIES
THEORY (MDT) TO SENIORS

(Received 22 January, 1986)

ABSTRACT. MDT posits that satisfaction and happiness are functions of 7 perceived discrepancies, *viz.*, between what one has and wants, relevant others have, needs, deserves, has had in the past, expected to have and expects to have. The theory and its historic antecedents are explained. The theory was applied to a sample of 450 seniors from 4 areas of Ontario. Briefly, MDT accounted for about a third of the variance in reported life satisfaction for the whole group and both sexes separately, and about a quarter of the variance in happiness.

INTRODUCTION

The first two sections of this paper contain the basic hypotheses of Multiple Discrepancies Theory (MDT) and a review of their historical antecedents and supporting evidence. The next section summarizes the sample and methods used to test some aspects of the theory. Following that there is an analysis of global satisfaction and happiness in terms of satisfaction in a variety of domains, e.g., health, housing, family relations, etc. The last section contains the results of applying MDT to a data set consisting of about 450 people aged 60 to 89.

MULTIPLE DISCREPANCIES THEORY (MDT)

The discussion from here to the sample and methods section is abbreviated from Michalos (1985). Readers who are familiar with that paper may proceed immediately ahead. The basic hypotheses of MDT are as follows:

- (H1) Reported net satisfaction is a 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 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.
- (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 functions of human action and conditioners.

SUPPORTING EVIDENCE

A variety of insights from several well-known theories are incorporated into MDT. As I have mentioned in all my earlier publications, I originally followed Campbell, Converse and Rodgers (1976) and Andrews and Withey (1976) fairly directly. Crosby (1982) used several gap hypotheses in conjunction, and cited seven other people who had also used multiple discrepancies, namely, Davis (1959), Runciman (1966), Gurr (1970), Williams (1975), Berkowitz (1968), Adams (1965) and Patchen (1961). Goodman (1974), Carp, Carp, and Millsap (1982), and Oldham, *et al.* (1982) should also be listed as labourers in the same vineyard.

(H1) refers to seven different perceived discrepancies. The idea that net satisfaction is a function of the perceived discrepancy or gap between what one has and wants is at least as old as the stoic philosophy of Zeno of Citium around 300 B.C. In the form of aspiration theory, Lewin *et al.* (1944) gave the idea a new start. More recent confirmations of the basic hypothesis have been reported by Bledsoe, Mullen and Hobbes (1980); Canter and Rees (1982); Cherrington and England (1980); Campbell, Converse and Rodgers (1976); Andrews and Withey (1976); Michalos (1980, 1982, 1983, 1985); and Crosby (1976, 1982).

The idea that net satisfaction is a function of the perceived discrepancy between what one has and relevant others have can also be found before the birth of Jesus Christ, namely, in Aristotle's *Politics* in the fourth century B.C.

In the form of reference group theory, Merton and Kitt (1950) gave the hypothesis a provocative new start. Recent confirmations have come from Oldham and Miller (1979); Applegryn and Plug (1981); Hatfield and Huseman (1982); Duncan (1975); Campbell, Converse and Rodgers (1976); Andrews and Withey (1976); Crosby (1976, 1982); Oldham *et al.* (1982); Goodman (1974); and Michalos (1980, 1982, 1983, 1985). Wills (1981, 1983) considers this sort of theory (by its other popular name, "social comparison theory") from the point of view of its usefulness in explaining people's behaviour and attitudes regarding help-seeking decisions, self-evaluation and self-enhancement.

Confirmation of the hypothesis that net satisfaction is a function of the perceived gap between what one has now and the best one has ever had in the past have been reported by Campbell, Converse and Rodgers (1976) and Michalos (1980, 1982, 1983, 1985). Suls and Sanders (1982) present evidence supporting a developmental model in which evaluations based on this sort of perceived discrepancy occur in children around the ages of 4 to 5, while "social comparisons with similar others" occur a bit later around the age of 9.

Equity theorists have found considerable support for the hypothesis that net satisfaction is a function of the perceived gap between what one has and what one deserves. For examples, see Hatfield, Greenberger, Traupman and Lambert (1982); Walster, Bersheid and Walster (1976); Adams and Freedman (1976); Carp, Carl and Millsap (1982); Michalos (1985) and Goodman and Friedman (1971).

The hypothesis that net satisfaction is a function of the perceived discrepancy between what one has and expected to have was given fairly systematic treatment by Festinger (1957). As indicated by several authors in Abelson *et al.* (1968), Festinger's theory of cognitive dissonance mixed several kinds of discrepancies together although there was a tendency to emphasize the gap between expected and actual states of affairs. Support for this hypothesis has been reported by Campbell, Converse and Rodgers (1976); Weintraub (1980); Oliver (1980); Ross, Mirowski and Duff (1982); Michalos (1985); and many others cited in Abelson *et al.* (1968).

Person-environment fit theorists have hypothesized that, among other things, net satisfaction is a function of the perceived fit between what a person has (resources, abilities) and what a person needs. Considerable support for this hypothesis has been reported in excellent review articles by Harrison (1978, 1983) and Caplan (1979, 1983). Kurella (1979), Booth,

McNally and Berry (1979), and Michalos (1985) have also reported support for a similar sort of hypothesis.

The seventh gap hypothesis incorporated into (H1) involves the perceived discrepancy between what one has now and expects to have in the future (after five years). One would expect that optimism about the future would bring satisfaction, and there is some evidence supporting this idea, e.g., Goodman (1966), Michalos (1985).

(H1) refers to reported satisfaction because the survey research procedures used to test MDT rely on personal reports. Although I usually omit the word "reported", strictly speaking it is essential. Usually, I think, things are regarded and reported as satisfying if and only if on balance they are satisfying. So, typically "satisfaction" has the force of "net satisfaction", and "dissatisfaction" has the force of "net dissatisfaction". Scales running from "very satisfied" to "very dissatisfied" presuppose that respondents are reporting net assessments.

(H2) affirms ontological realist or objectivist assumptions, namely, that there is a world relatively independent of this or that person, containing things with more or less objectively measurable properties, which are more or less objectively comparable. (Festinger (1957) and Crosby (1982) emphasize a similar point). For example, according to (H2), the perceived discrepancy between what one earns and some relevant other person earns is to some extent a function of a real or objectively measurable discrepancy; the perceived discrepancies between needs for nourishment or warmth and their attainment are to some extent functions of real or objectively measurable discrepancies; and so on. While I strongly suspect and there is some evidence that the mixture of objectively measurable and perceived discrepancies is a bit like a horse and rabbit stew, with perceived discrepancies represented by the horse, I will have little more to say on the matter here. The only exception to this realist assumption is in the case of perceived gaps between what one has and wants. (H2) also affirms that objectively measurable discrepancies have a direct impact on net satisfaction and human action, as will become clearer shortly.

(H3) is relatively straightforward, saying that the perceived gap between what one has and wants serves as a mediator between all other perceived gaps and net satisfaction. This hypothesis was confirmed by Campbell, Converse and Rodgers (1976) and Michalos (1980, 1982, 1983, 1985). (H1) and (H3)

taken together imply that perceived discrepancies have both direct and indirect (mediated) effects on reported net satisfaction.

(H4) connects net satisfaction to human action in a fairly traditional utilitarian way. For examples, see Kauder (1965), Luce and Raiffa (1957), Festinger (1957), Edwards and Tversky (1967), Kuhn (1974), and Harsanyi (1982). The main difference between what is going on here and what has traditionally gone on in utilitarian discussions is that here we do not begin with utility, happiness, satisfaction or even preferences. From the crude utilitarianism of Shaftesbury (1711) to the most recent sophisticated utilitarianism of Harsanyi (1982), this view always begins with some sort of a given affect-laden attitude or interest, e.g., preferences. It is precisely this foundation, this given element in all utilitarian theories, that MDT is designed to break through and explain. By the time (H4) arrives on the scene, the most important innovative and explanatory work of MDT is virtually complete. At this point, one might go the way of a variety of utilitarians or naturalistic value theorists.

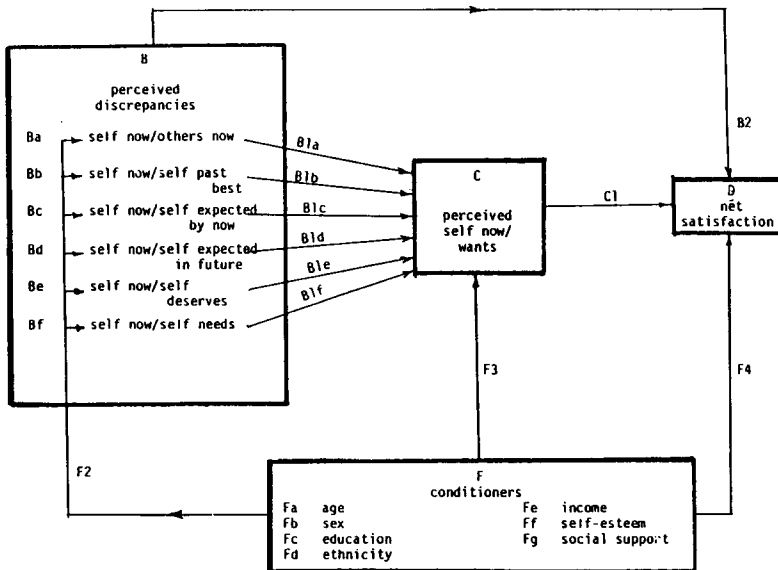
According to (H5), discrepancies are directly and indirectly affected by certain demographic elements and/or conditioners. Although such elements have not been found to be relatively powerful predictors of satisfaction, they do have some impact. On average, perhaps as much as 10% of the variance in reported net satisfaction can be explained by demographic variables. Generally speaking, the best and most recent literature reviews regarding the impact of demographic elements on satisfaction and happiness are in Diener (1984), McNeil, Stones and Kozma (1986), Michalos (1986), and Veenhoven (1984). Examples of studies showing that age, sex, education, ethnicity and income have an impact on satisfaction and/or happiness include Campbell, Converse and Rodgers (1976), and Andrews and Withey (1976). A variety of researchers have found one or more of these variables related to satisfaction with life as a whole or to satisfaction with some domain of life. For example, Weaver (1980) found job satisfaction and age positively associated; Rhyne (1981) and Glenn (1981) found that sex had a differential effect on marital satisfaction. Barnett and Nietzel (1979) reported that personal self-esteem had an impact on marital satisfaction, and Diener (1984, p. 558), cited eleven studies indicating that "High self-esteem is one of the strongest predictors of (subjective well-being)". The importance of a variety of species of social support, measured in a variety of ways, is thoroughly documented in excellent

articles by Caplan (1979); Turner, Frankel and Levin (1983); Abbey and Andrews (1985); and Gottlieb (1984). La Rocco, House and French (1980) review several studies and provide a careful analysis of data on the moderating effects of social support on job strain (dissatisfaction). Their conclusion is that social support has greater direct than indirect effects.

The point of (H6) is primarily to indicate that human action, including especially one's own, has a direct effect on the objectively measurable discrepancies of one's life, as do the previously mentioned demographic and/or conditioning elements. It is assumed, of course, that there is some time lag and directionality involved, and that events and actions are not their own causes or motives.

Exhibit I illustrates the relationships postulated in the perceptual core of MDT, i.e., only the relationships involving perceptions, not the extra-perceptual or relatively objective features of the world. In this Exhibit, capital letters stand for items in boxes (e.g., C stands for the perceived discrepancy between what one has now and wants to have) and numbers following letters

Exhibit 1
Perceptual Core of MDT



stand for paths connecting items in boxes (e.g., C1 stands for the path connecting the perceived gap between what one has and wants to reported net satisfaction (D)). Each perceived discrepancy in Box B has an abbreviation, namely, Ba for "the perceived discrepancy between what one has now and relevant others have", Bb for "the perceived discrepancy between what one has now and the best one has had in the past", and so on to Bf. Similarly, each conditioner in Box F has an abbreviation, namely, Fa for "age", Fb for "sex", and so on to Fg. To keep the Exhibit relatively simple, the 7 items in box F are not unpacked. Strictly speaking, every path labelled with an F should be unpacked into 7 constituents labelled, for example, F2a, F2b, and so on.

Thus, Exhibit I illustrates, for example, that the perceived discrepancy between what one has and wants (C) is a function of 6 other perceived discrepancies (Ba–Bf) and 7 conditioners (Fa–Fg). Reported net satisfaction (D) is a function directly of 7 perceived discrepancies (C, Ba–Bf), indirectly of 6 of these (Ba–Bf) mediated by the discrepancy between what one has and wants (C), and directly and indirectly of age, sex, education, ethnicity, income, self-esteem and social support (Fa–Fg).

In the remaining sections of this paper, I will be reporting the results of tests on some of the perceptual core of MDT. The specific aspects tested, the measures used and the sample composition involved will be described next.

SAMPLE AND METHODS

As part of the relatively continuous gerontological research program at the University of Guelph, it was decided to test MDT's strength at predicting and explaining happiness and satisfaction with life as a whole in a sample of senior citizens. In the period from July to November 1984, 900 names were drawn (using random numbers) from the lists of residents entitled to direct school taxes in Hamilton (1981 population, 306,434), Guelph (71,207), Mount Forest (3,474) and Hillsburgh (1,065). Of the 900 names drawn, there were approximately 868 people contacted. These 868 contacts generated 457 completed questionnaires, for a completion rate of 52.6%. We sampled from settlement areas of very different sizes on the assumption that the latter might have some impact on satisfaction or happiness. Several attempts to find any significant impacts were unsuccessful.

Exhibit II summarizes the sample composition for the 457 usable questionnaires. Briefly, there were 236 females (52%), 341 (75%) aged 60–74, 305 (67%) married with a living spouse, 262 (57%) retired, 232 (51%) completed grade 11 or better, 363 (79%) Canadian born, 196 (43%) identi-

EXHIBIT II
Sample composition

	<i>N</i>	%		<i>N</i>	%
<i>Sex</i>			<i>Formal education</i>		
Males	221	48.4	Last grade 6	19	4.3
Females	236	51.6	Last grade 7–8	134	30.4
	457	100.0	Last grade 9–10	72	16.3
			Last grade 11–13	81	18.4
<i>Age</i>	<i>N</i>	%	Some post second.	65	14.7
60–64	114	25.0	Post secondary	47	10.7
65–69	120	26.3	Bachelors	14	3.2
70–74	107	23.5	Post grad. degree	9	2.0
75–79	60	13.2		441	100.0
80–84	40	8.8			
85–89	15	3.3	<i>Country of birth</i>	<i>N</i>	%
	456	100.0	Canada	363	79.4
			U.S.A.	6	1.3
<i>Marital status</i>	<i>N</i>	%	U.K.	54	11.8
Married & living	305	66.7	Netherlands	7	1.5
Widowed	115	25.2	Others	27	6.0
Separated	7	1.5		457	100.0
Divorced	11	2.4			
Never married	19	4.2	<i>Ethnic background</i>	<i>N</i>	%
	457	100.0	Canadian	196	43.1
			American	3	0.7
<i>Work situation</i>	<i>N</i>	%	English	44	9.7
Retired	262	57.3	Scottish	42	9.2
Semi-retired	41	9.0	Irish	21	4.6
Housewife	73	16.0	Scottish-English	25	5.5
Employed	63	13.8	English-Canadian	14	3.1
Unemployed	3	0.7	Other	112	24.1
Disabled	10	2.2		457	100.0
Other	5	1.1			
	457	100.0	<i>Income before taxes</i>	<i>N</i>	%
			Up to \$2999	24	5.3
			\$3000–5999	69	15.1
			\$6000–\$9999	125	27.4
			\$10 000–\$19 999	117	25.6
			\$20 000–\$34 999	48	10.5
			\$35 000 and above	18	3.8
			Unknown/refused	56	12.3
				457	100.0

fied their ethnic origins as Canadians and 335 (73%) had before-tax incomes of up to \$20 000. The mean age of the group was 70.

The questionnaire items related to MDT followed the formats described in Michalos 1980, 1982, 1983 and 1985. All items had a 7-point Likert-type scale with an off-scale category available labelled "No Opinion" in case people wanted to opt out. Basic satisfaction ratings were taken on my revised delightful-terrible scale. For example, the global items asked "How do you feel about your life as a whole right now?" and the response categories ran from "terrible" (= 1 point), through "mixed dissatisfying and satisfying" (= 4) to "delightful" (= 7). Besides the global item, ratings were obtained on 8 domains, namely, satisfaction with health, financial security, family relations, friendships, housing, spouse, self-esteem and transportation. MDT was not, however, applied to any domain satisfaction scores.

A measure of the discrepancy between what one has and wants was obtained from the item "How does your life measure up to your general aspirations or what you want? All things considered, does your life provide what you want fairly poorly, fairly well, etc.?" Response categories ran from "not at all" (= 1), through "half as well as what you want" (= 4) to "matches or is better than what you want" (= 7).

A measure of the discrepancy between what one has and relevant others have was obtained from the item "How would you say your life measures up to those of other people your age in this area? All things considered, is what your life offers you below average, about average, etc.?" Response categories ran from "far below average" (= 1), through "average" (= 4) to "far above average" (= 7).

A measure of the discrepancy between what one has and the best one has ever had in the past was obtained from the item "How does your life measure up to the best in your previous experience? All things considered, is it presently below your previous best, above the previous best, etc.?" Response categories ran from "far below the previous best" (= 1), through "matches the previous best" (= 4) to "far above the previous best" (= 7).

A measure of the discrepancy between what one has and deserved was obtained from the item "How does your life measure up to the life you think you deserve? All things considered, is it below what you deserve, above, etc.?" Response categories ran from "far below what is deserved" (= 1), through "Matches exactly what is deserved" (= 4), to "far above what is deserved" (= 7).

A measure of the discrepancy between what one has and needs was obtained from the item "How does your life measure up to what you think you need? All things considered, is what your life offers now below what you need, above what you need, etc.?" Response categories ran from "far below what is needed" (= 1), through "matches exactly what is needed" (= 4), to "far above what is needed" (= 7).

A measure of the discrepancy between what one has and expects to have five years later was obtained from the item "In this question we would like you to think about your life now in comparison to what you expect five years from now. All things considered, does your life offer much less than you expect later, more, much more, etc.?" Response categories ran from "extremely less" (= 1), through "about the same" (= 4) to "extremely more" (= 7). Since all of the other scales ran from relatively unattractive states (= 1) to relatively attractive states (= 7) and "extremely less" on the present scale represented a relatively attractive state (high hopefulness), in the analysis the scores for this item were inverted.

A measure of the discrepancy between what one has and expected to have 3 years ago at this point in life was obtained from the item "How does your life measure up to what you expected 3 years ago? All things considered, compared to what you expected to have, does your life offer less, more, about what you expected, etc.?" Response categories ran from "extremely less" (= 1), through "about as expected" (= 4) to "extremely more" (= 7).

A measure of happiness with life as a whole was obtained from the item "Considering your life as a whole, would you describe it as very unhappy (= 1), unhappy (= 2 or 3), mixed (= 4), happy (= 5 or 6), or very happy (= 7)?"

The conditioners measured directly included sex, age, education, ethnicity and income. We had no direct measure of self-esteem and, after some experimentation with an indirect surrogate measure (satisfaction with self-esteem), it seemed less confusing to simply omit any self-esteem measure this time. We constructed a direct and obviously limited measure of social support out of the number of friends and family regarded as important to the respondent. Several attempts to find significant relations between this variable and others were completely unsuccessful. So it was dropped. No indirect measures were constructed, but relations between satisfaction with friends, family and spouses on the one hand and satisfaction and happiness with life as a whole on the other are shown in Exhibits IV and V. In all analyses, responses to demographic items were sorted according to the categories ap-

pearing in Exhibit II, except for ethnic background. Responses to this item were dichotomized into Canadian and non-Canadian.

RESULTS

Exhibit III lists the means, standard deviations and skews of the scores for domain and global satisfaction, happiness and 7 perceived discrepancies. It is clear that these seniors got the highest levels of satisfaction from interpersonal relations. In particular, relations with spouses had the highest mean (5.97), followed by family relations (5.70). Satisfaction with housing ran a close third (5.62), followed by satisfaction with friendships (5.42). The lowest levels of reported satisfaction came from health (5.05), financial security (5.11) and transportation (5.16). Satisfaction and happiness with life as a whole mean scores were virtually identical, 5.40 and 5.42, respectively. However, the Pearson correlation between these scores was $r = 0.56$, indicating that 31% of the variance in either variable might be explained by the other.

The perceived gap between what one has and wants (self-wants) was the

EXHIBIT III
Means, standard deviations and skews

<i>Domain satisfaction</i>	<i>Mean</i>	<i>Stan. dev.</i>	<i>Skew</i>
Health	5.05	1.02	-0.45
Financial security	5.11	0.83	-0.64
Friendship	5.42	0.88	-0.57
Housing	5.62	0.85	-0.36
Self-esteem	5.27	0.80	-0.36
Spouse	5.97	0.96	-1.07
Transportation	5.16	1.06	-1.57
Family relations	5.70	0.92	-1.13
<i>Global</i>			
Satisfaction	5.40	0.88	-0.54
Happiness	5.42	1.26	-0.12
<i>Discrepancies</i>			
Self-wants	5.81	0.89	-0.75
Self-others	4.93	1.15	0.18
Self-best	4.17	1.35	0.08
Self-deserved	4.44	1.10	0.28
Self-needs	4.20	1.05	0.38
Self-future	3.83	0.72	-0.67
Self-progress	4.12	0.81	-0.16

smallest of the lot by far. Its mean score of 5.81 was nearly a full unit (0.88) above the second smallest gap score of 4.93, for the perceived discrepancy between what one has and thinks others of the same age in the area have (self-others). As one would expect from a group of senior citizens, the perceived gap between what one has and expects to have in 5 years was the greatest of the lot.

Exhibits IV and V summarize results of regressing global satisfaction and happiness scores on domain satisfaction scores and 6 or 7 demographic variables. The aim of these regressions is to determine the relative impact of satisfaction in various domains and of demographics on global satisfaction and happiness. Collectively the two Exhibits show that relative to domain satisfaction scores, demographic variables had practically no impact on global satisfaction and happiness scores. As indicated earlier, this is consistent with most other research.

Exhibit IV shows that for the group as a whole, 45% of the variance in the

EXHIBIT IV

Multiple regression of satisfaction with life as a whole on satisfaction with 8 domains and demographic variables

Percent of variance explained ^a	Whole group 45 (N = 253)	Males 38 (N = 148)	Females 56 (N = 104)
<i>Predictors</i>	<i>Betas</i>		
<i>Satisfaction with:</i>			
Health	0.29 ^a	0.24 ^a	0.42 ^a
Financial security	0.15 ^b	0.26 ^a	e
Family relations	e	e	e
Friendships	0.13 ^c	e	0.17 ^c
Housing	0.15 ^b	e	0.26 ^a
Spouse	0.22 ^a	0.23 ^a	0.27 ^a
Self-esteem	0.15 ^c	0.25 ^a	e
Transportation	e	e	e
<i>Demographic variables</i>			
Sex	e	e	e
Age	e	e	e
Marital status	e	e	0.20 ^b
Work status	e	e	e
Education level	e	e	e
Income	e	e	e
Ethnicity	e	e	e

^a $p < 0.001$ ^b $p < 0.005$ ^c $p < 0.01$ ^d $p < 0.05$.

^e Significance level too low to enter equation.

scores for satisfaction with life as a whole has been explained. Satisfaction with one's own health had the greatest relative impact on global satisfaction with a standardized regression coefficient or beta value of 0.29. Thus, when all scores are standardized to have means of zero and standard deviations of one, for every standard deviation of change in satisfaction with health, there is a change of 29% of a standard deviation in global satisfaction. In other words, for every full step in health satisfaction, there is nearly a third of a step in global satisfaction. Satisfaction with one's spouse had the second greatest impact on global satisfaction, with a beta value of 0.22.

For females, the same two domains dominated the set of predictors. Fifty six percent of the variance in female life satisfaction scores was explained, with health satisfaction (0.42), spouse (0.27) and housing (0.26) satisfaction having the greatest relative impact. For males, 38% of the variance in global satisfaction was explained, with financial security (0.26), self-esteem (0.25), health (0.24) and spouse (0.23) satisfaction dominating the scene.

EXHIBIT V

Multiple regression of happiness with life as a whole on satisfaction with 8 domains and 6 demographic variables

Percent of variance explained ^a	Whole group 33 (N = 253)	Males 32 (N = 148)	Females 33 (N = 104)
<i>Predictors</i>	<i>Betas</i>		
<i>Satisfaction with:</i>			
Health	0.22 ^a	0.20 ^a	0.29 ^a
Financial security	e	e	e
Family relations	e	e	e
Friendships	0.15 ^c	0.19 ^c	e
Housing	0.17 ^b	0.17 ^c	0.20 ^c
Spouse	0.33 ^a	0.30 ^a	0.37 ^a
Self-esteem	e	e	e
Transportation	e	e	e
<i>Demographic variables</i>			
Sex	e	e	e
Age	e	e	e
Marital status	e	e	e
Work status	e	e	e
Education level	e	e	e
Income	e	e	e
Ethnicity	e	e	e

^a $p < 0.001$ ^b $p < 0.005$ ^c $p < 0.01$ ^d $p < 0.05$.

^e Significance level too low to enter equation.

For the group as a whole and both sexes, satisfaction with family relations (apart from spouse) and transportation had no significant impact on global satisfaction, relative to the other domains.

Exhibit V shows that domain satisfaction scores and demographics are weaker predictors of global happiness than of global satisfaction. For the whole group and both sexes, about a third of the variance in happiness with life as a whole was explained. The most interesting comparison, however, concerns the relative impact of satisfaction with one's spouse. Satisfaction in this domain dominated the set of predictors for the whole group (0.33), males (0.30) and females (0.37). One can see quite clearly that for most of these seniors (most of whom were married), a full unit of change in satisfaction with their spouse would result in about a third of a unit of change in their overall happiness.

The fact that satisfaction with one's spouse had the greatest impact on global happiness while satisfaction with one's health or finances had the greatest impact on global satisfaction is important for at least three reasons. First, it indicates that for these seniors the most influential constituent of *happiness* involves a particular human relationship, but this relationship is not the most influential constituent of *life satisfaction*. Second, this finding replicates results reported in Michalos (1982). In that study a similar battery of questions was put to a similar sample of rural senior citizens from Huron County, Ontario. Third, a conclusion drawn there is also pertinent here, namely, "if the quality of life or well-being of these ... seniors were to be improved, one would have to decide (among other things) whether it is finally their satisfaction or happiness with life as a whole that is the target" (p. 27). Although it is possible and, to some extent, even likely that whatever affects global satisfaction affects happiness, increased sensitivity to their different constituents should lead to more refined policies and programs of intervention, and to more refined output measures. (This is not the place to enter into a discussion of alternative output measures of well-being, but I would strongly recommend the excellent discussions of Andrews (1982), Connidis (1984), Kammann, Farry, and Herbison (1984), Kozma and Stones (1980), Gubrium and Lynott (1983), and Larsen, Diener and Emmons (1985).)

RESULTS FOR MDT

Exhibits VI–IX summarize the results of applying MDT to global satisfaction

EXHIBIT VI
Satisfaction with life as a whole

	<i>Dependent variables</i>							
	Satisfaction	Self-wants	Self-others	Self-deserved	Self-needs	Self-best	Total effects on satisfaction	Total effects on self-wants
<i>N</i>	321	321	321	321	321	321	321	321
<i>R</i> ²	0.35 ^a	0.29 ^a	0.10 ^a	0.02 ^c	0.05 ^a	0.02 ^c	-	-
<i>Predictors</i>	<i>Betas</i>							
Sex	0	0.15 ^b	0	0	0	0	0.04	0.15
Age	0	0	0	0	0	-0.14 ^c	-0.04	-0.03
Income	0	0	0.18 ^b	0	0	0	0.05	0.04
Education	0	0	0.22 ^a	0.15 ^c	0.14 ^d	0	0.07	0.09
Self-others	0.24 ^a	0.23 ^a					0.29	0.23
Self-deserved	0	0.14 ^c					0.03	0.14
Self-needs	0	0.14 ^c					0.03	0.14
Self-progress	0.16 ^a	0					0.16	0
Self-best	0.21 ^a	0.22 ^a					0.26	0.22
Self-wants	0.23 ^a						0.23	

^a $p < 0.001$.

^b $p < 0.005$.

^c $p < 0.01$.

^d $p < 0.05$.

0 = Unsuccessful prediction: Beta value or significance level worse than 5%.

and happiness. While the analyses summarized in Exhibits IV and V allow us to explain global satisfaction and happiness by an analysis of their constituent elements of domain satisfaction (primarily), those summarized in the remaining exhibits allow us to explain these things as the emergent effects of other things. In other words, instead of merely unpacking global satisfaction and happiness into still more satisfaction, MDT allows us to dig deeper into the causes of the latter. The former analysis is comparable to the latter in roughly the same way that an analysis of a bit of water in terms of its drops is comparable to an analysis of the water in terms of the particular combination of hydrogen and oxygen that produces it.

Exhibit VI shows that MDT was able to explain 35% of the variance in global satisfaction for the whole group. The *direct effects* of predictor variables on satisfaction, the self-wants gap, etc. are indicated by the beta values in

EXHIBIT VII

Satisfaction with life as a whole: by sex

	<i>Dependent variables</i>									
	Satisfaction	Self-wants	Self-others	Self-deserved	Self-needs	Self-progress	Self-future	Self-best	Total effects on satisfaction	Total effects on self-wants
<i>Males</i>										
<i>N</i>	160	160	160	160	160	160	160	160	160	160
<i>R</i> ²	0.32 ^a	0.24 ^a	0.11 ^a	0.06 ^a	0.18 ^c	0.07 ^a	-	0.04 ^c	-	-
<i>Predictors</i>										
	<i>Betas</i>									
Income	0	0	0	0.27 ^a	0.43 ^a	0.27 ^a	0	0.21 ^c	0.14	0.22
Education	0	0	0.34 ^a	0	0	0	0	0	0.10	0
Self-others	0.28 ^a	0							0.28	0
Self-needs	0	0.50 ^a							0.11	0.50
Self-progress	0.17 ^c	0							0.17	0
Self-best	0.19 ^c	0							0.19	0
Self-wants	0.21 ^b								0.21	
<i>Females</i>										
<i>N</i>	160	160	160	160	160	160	160	160	160	160
<i>R</i> ²	0.37 ^a	0.30 ^a	0.04 ^b	0.02 ^d	-	-	0.03 ^c	-	-	-
<i>Predictors</i>										
	<i>Betas</i>									
Age	0	0	0	0	0	0	-0.20 ^c	0	0	0
Education	0	0	0.22 ^b	0.18 ^d	0	0	0	0	0.06	0
Self-others	0.20 ^c	0.31 ^a							0.28	0.31
Self-needs	0.17 ^d	0							0.17	0
Self-best	0.23 ^b	0.36 ^a							0.32	0.36
Self-wants	0.25 ^a								0.25	

^a $p < 0.001$.

^b $p < 0.005$.

^c $p < 0.01$.

^d $p < 0.05$.

0 = Unsuccessful prediction; Beta value or significance level worse than 5%.

the columns below each dependent variable. Considering only direct effects, the dominant perceived discrepancies were those involving social comparisons (self-others), aspirations (self-wants) and the best previous experience (self-best), with beta values of 0.24, 0.23 and 0.21, respectively. Twenty-nine percent of the variance in the perceived gap between what one has and wants was explained by the other perceived gaps and sex. Social comparisons (0.23) and previous best experience (0.22) had the greatest relative impact on the

EXHIBIT VIII
Happiness with life as a whole

	<i>Dependent variables</i>							
	Happiness	Self-wants	Self-others	Self-deserved	Self-needs	Self-best	Total effects on happiness	Total effects on self-wants
<i>N</i>	321	321	321	321	321	321	321	321
<i>R</i> ²	0.26 ^a	0.29 ^a	0.10 ^a	0.02 ^c	0.05 ^a	0.02 ^c	—	—
<i>Predictors</i>	<i>Betas</i>							
Sex	0	0.15 ^b	0	0	0	0	0.04	0.15
Age	0	0	0	0	0	-0.14 ^c	-0.03	-0.03
Income	0	0	0.18 ^b	0	0.16 ^b	0	0.04	0.06
Education	0	0	0.22 ^a	0.15 ^c	0.14 ^d	0	0.06	0.09
Self-others	0.15 ^b	0.23 ^a					0.21	0.23
Self-deserved	0	0.14 ^c					0.04	0.14
Self-needs	0	0.14 ^c					0.04	0.14
Self-progress	0.12 ^c	0					0.12	0
Self-best	0.18 ^a	0.22 ^a					0.24	0.22
Self-wants	0.26 ^a						0.26	

^a $p < 0.001$.

^b $p < 0.005$.

^c $p < 0.01$.

^d $p < 0.05$.

0 = Unsuccessful prediction; Beta value or significance level worse than 5%.

self-wants gap. Relatively smaller percentages of the variance in the self-others, self-deserved, self-needs and self-best scores were explainable by demographics alone. Education had the most extensive impact of the 5 demographic variables.

The *indirect effects* of predictor variables are indicated by the joint products of the path coefficients connecting the predictor variables to satisfaction *via* mediating variables, and the *total effects* of the predictors are given by the sum of direct and indirect effects. (There has been some confusion and controversy in the literature concerning the definition and calculation of total effects. Here I have followed the discussion of Pedhazur (1982, pp. 588–604).) In Exhibits VI–IX the total effects of predictors on satisfaction and on the self-wants gap are given in the final two columns of each table. Considering predictors' total effects on satisfaction, although the same three

EXHIBIT IX
Happiness with life as a whole: by sex

	<i>Dependent variables</i>									
	Happiness	Self-wants	Self-others	Self-deserved	Self-needs	Self-progress	Self-future	Self-best	Total effects on happiness	Total effects on self-wants
<i>Males</i>										
<i>N</i>	160	160	160	160	160	160	160	160	160	160
<i>R</i> ²	0.27 ^a	0.24 ^a	0.11 ^a	0.06 ^a	0.18 ^c	0.07 ^a	—	0.04 ^c	—	—
<i>Predictors</i>										
	<i>Betas</i>									
Income	0	0	0	0.27 ^a	0.43 ^a	0.27 ^a	0	0.21 ^c	0.13	0.22
Education	0	0	0.34 ^a	0	0	0	0	0	0.06	0
Self-others	0.18 ^d	0							0.18	0
Self-needs	0	0.50							0.17	0.50
Self-progress	0.23 ^a	0							0.23	0
Self-wants	0.33 ^a								0.33	
<i>Females</i>										
<i>N</i>	160	160	160	160	160	160	160	160	160	160
<i>R</i> ²	0.26 ^a	0.30 ^a	0.04 ^b	0.02 ^d	—	—	0.03 ^c	—	—	—
<i>Predictors</i>										
	<i>Betas</i>									
Age	0	0	0	0	0	0	-0.20 ^c	0	0	0
Education	0	0	0.22 ^b	0.18 ^d	0	0	0	0	0.02	0
Self-others	0	0.31 ^a							0.07	0.31
Self-needs	0.16 ^d	0							0.16	0
Self-best	0.28 ^a	0.36 ^a							0.36	0.36
Self-wants	0.22 ^c								0.22	

^a $p < 0.001$.

^b $p < 0.005$.

^c $p < 0.01$.

^d $p < 0.05$.

0 = Unsuccessful prediction; Beta value or significance level worse than 5%.

discrepancies dominate the scene, the self-others discrepancy is shown to have relatively greater influence. This is a result of its additional indirect effects on satisfaction *via* the self-wants discrepancy. Although sex, age, income and education have no direct effects on satisfaction, they do have some influence through their indirect effects.

Exhibit VII shows that 32% of the variance in the reported life satisfaction of males was explained by MDT. Considering direct effects, the self-

others gap had the greatest impact, with self-wants coming in second. Twenty-four percent of the variance in the latter was explained by the self-needs gap, which virtually wiped out the relative impact of all other discrepancies. Nearly a fifth of the perceived self-needs gap, in turn, was explained by income. Indeed, income alone accounted for all the variance explained in self-deserved, self-needs, self-progress and self-best scores.

Considering the total effects of predictors on the life satisfaction of males, the self-others and self-wants gaps still dominate, but the indirect influence of income, education and the self-needs gap are also revealed.

For females, MDT accounted for 37% of the variance in global satisfaction (bottom half of Exhibit VII). Considering direct effects, self-wants had the greatest relative impact, followed by self-best and self-others. Thirty percent of the variance in self-wants was explained by self-best, followed by self-others scores. When all effects are taken into consideration, self-best dominates, followed by self-others and then self-wants. Unlike the situation for males, in the presence of the other predictors, income has no impact on the life satisfaction of females.

Exhibits VIII and IX show that a bit over a quarter of the variance in reported happiness for the whole group and both sexes is explained by MDT. Considering direct effects, the self-wants discrepancy had the greatest relative impact on happiness for the group as a whole and for males. For females, the self-best gap was dominant. When direct and indirect effects are summed, these dominant influences remain.

DISCUSSION

How successful was MDT at predicting and explaining satisfaction and happiness? Well, it depends on one's standards of comparison. It accounted for roughly a third of the variance in global satisfaction and a quarter in happiness. That is practically as much success as I had with a much simpler model used in Michalos (1982). It is also a poorer showing than that reported in Michalos (1985). The latter involved a sample of students from the University of Guelph, and for these people MDT accounted for about half the variance in reported global satisfaction and happiness. Analyses of other data sets from samples of university undergraduates tend to yield explained variance more in the neighborhood of 50 rather than 40 or 30%. So, compared to my own previous research experience, the explanatory power revealed by MDT

in this exercise has been relatively weak.

The predictive success of MDT might be measured by simply counting the number of hits in the total number of predictions made from the theory. Here a "hit" means that a predicted beta value greater than 0.05 with a probability of occurring merely by chance less than 0.05 actually occurred. Our regressions involved 177 distinct predictions, and there 44 hits. So, our prediction success ratio was 25%. Again, that is about half as much success as reported in Michalos (1985). Considering only predictions made from discrepancy variables, the prediction success ratio was $22/42 = 52\%$, a bit more promising and fairly typical. Indeed, it is precisely this relatively good batting average of discrepancy variables that continues to motivate my research program.

Looking over Exhibits VI–IX, it is easy to identify the noise or dead weight in MDT, so far as this data set is concerned. For this data set the self-future and ethnicity variables had no hits at all. None of the demographic variables had any direct impact on global satisfaction and happiness. The relatively little impact these variables had was all indirect, through their occasional impacts on some discrepancy variable. My other research generally points in the same direction, namely, that the impact of demographic variables is typically mediated by some discrepancy variables.

Inspection of only the first columns in these Exhibits reveals that the self-deserved variable had no hits. In other words, considerations of equity had relatively no direct impact on global satisfaction or happiness for this group. Indeed, this variable had only one distinct hit, accounting for about 2% of the variance in self-wants scores for the whole group (Exhibits VI or VIII). Carp, Carp and Millsap (1982) had a bit more success with equity in their sample of seniors, but in their research it was not competing with the great variety of discrepancies provided in MDT.

The self-needs variable only had a direct impact on happiness and satisfaction for females (Exhibits VII and IX). As indicated earlier, however, this variable completely dominated the scene in accounting for male self-wants scores. Examination of Exhibit IX reveals that the indirect effects of the self-needs variable on male happiness scores are so great that the total effects of this variable on male and female happiness scores are practically the same.

Exhibit X summarizes the relative impacts of all discrepancy variables on satisfaction and happiness. The total weights are calculated by giving a variable 6 points for each time it has the greatest impact on satisfaction or

happiness, 5 points for each second place, and so on, and then summing the products. Thus, considering direct and total effects, the self-wants variable has the greatest influence on satisfaction and happiness. Considering only direct effects, the self-others and self-best variables are equally influential. However, when total effects are taken into account, the self-others variable is more influential. At a minimum, as I have said in other places, these results indicate that the classical aspiration theorists were closer to the truth than the social comparison theorists.

EXHIBIT X

Comparison of relative impacts of discrepancy types on satisfaction and happiness

<i>Direct effects</i>						
	Firsts	Seconds	Thirds	Fourths	Total weight	
Self-wants	3	3	0	0	33	
Self-others	2	0	3	0	24	
Self-deserved	0	0	0	0	0	
Self-needs	0	0	1	1	7	
Self-progress	0	1	0	3	14	
Self-future	0	0	0	0	0	
Self-best	1	2	3	0	24	
<i>Total effects</i>						
	Firsts	Seconds	Thirds	Fourths	Fifths	Total weight
Self-wants	2	2	2	0	0	30
Self-others	2	1	2	1	0	28
Self-deserved	0	0	0	0	2	4
Self-needs	0	0	1	2	3	16
Self-progress	0	1	0	3	0	14
Self-future	0	0	0	0	0	0
Self-best	2	2	1	0	0	26

CONCLUSION

The main results of this paper may be summarised as follows:

- (a) About half of the variance in global satisfaction and a third of the variance in happiness was explained by satisfaction with one's spouse, health, housing, financial security and friendships.

- (b) Satisfaction with one's spouse had the greatest impact on happiness, while satisfaction with one's health had the greatest impact on global satisfaction.
- (c) MDT explained about a third of the variance in global satisfaction and a quarter of the variance in happiness.
- (d) Of the 7 discrepancy variables used as predictors, the self-wants variable had the greatest relative predictive and explanatory strength, followed by self-others and self-best.

ACKNOWLEDGMENT

I would like to thank every member of the working committee of the Gerontology Research Centre at the University of Guelph for their help in this project. An earlier version of this paper was presented at the Canadian Association for Gerontology Annual Meeting in Hamilton, Ontario, October 1985.

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