Psychology and Aging
2004, Vol. 19, No. 3, 409–415

0882-7974/04/$12.00 DOI: 10.1037/0882-7974.19.3.409

Age and Subjective Well-Being Revisited: A Discrepancy Perspective

Sheung-Tak Cheng
City University of Hong Kong

The hypothesis that the age effect on subjective well-being was entirely mediated by goal discrepancies (GDs) was tested with structural equation modeling. Six GDs grouped into 3 broad categories (relationships, health, and others) were differentially related to age. Whereas GD relationships and GD others (e.g., materials) decreased with age, GD health increased with age. GD health had smaller effects on subjective well-being than GDs in relationships and other life domains. Hence, the net effect of all the GDs on well-being was positive. GD variations because of age could completely explain the age trends in life satisfaction and positive affect, and partially the age trend in negative affect.

It is generally recognized that subjective well-being consists of three components: cognitive appraisal of well-being (e.g., life satisfaction [LS]), positive affect (PA), and (lack of) negative affect (NA; Andrews & Withey, 1976; Diener & Suh, 1997). That subjective well-being can sustain physical and cognitive declines as well as social losses in old age is widely regarded as a paradox (Carstensen, Gross, & Fung, 1997; Kunzmann, Little, & Smith, 2000).

Age and Satisfactions

The literature to date portrays a highly resilient picture for the old-age period. That life satisfaction increases or remains constant across the life span is a robust finding across the world (Diener & Suh, 1997). Satisfaction with life domains also tends to increase with age. Herzog and Rodgers's (1981) analysis of several large data sets, including those of Andrews and Withey (1976) and Campbell, Converse, and Rodgers (1976), showed positive age differences in virtually all areas of life, except health (see also Butt & Beiser, 1987). The older that a person became, the less satisfied that person was with personal health. When controlling for functional health, income, and education, however, the negative relationship between age and health satisfaction disappeared, and the positive relationships in other domains of life became even stronger.

Age and Affect

It is known that physiological arousal decreases with age (Lawton, 2001). Therefore, studies that use the Bradburn Affect Balance Scale, which assesses only high-activation PA, tend to report a decline in PA as well as affect balance with increasing age (e.g., Diener & Suh, 1997). With a mixture of high- and low-activation affect, Mroczek and Kolarz (1998) showed that independent of personality, stress, physical health, and sociodemographic factors, PA increased in a curvilinear fashion, and NA decreased in a linear fashion, from ages 25 to 74.

However, cross-sectional differences may not be confirmed when the same group of individuals are followed over time (e.g., Costa et al., 1987). The longitudinal studies reported by Stacey and Gatz (1991) and Charles, Reynolds, and Gatz (2001), which used a multigenerational sample, showed consistent results over a time span of 14 to 23 years. On the basis of responses to the Bradburn Affect Balance Scale, PA was stable over time but declined slightly in old age (note the potential bias of this measure as discussed previously), whereas NA showed a consistent decline from the late teens to the age of 60, after which it leveled off. Another study of older adults aged 70 to 103 (Kunzmann et al., 2000) showed that although age predicted PA decline over a period of 4 years, the effect disappeared after controlling for change in performance-based measures of functional health, suggesting that it was functional deterioration, rather than age, that explained PA decline during old age. This study also found that although age was uncorrelated with NA among these older adults, their true relationship was in fact suppressed by functional health constraints. Controlling for functional health, Kunzmann et al. found that age was inversely related to NA cross-sectionally, although the study failed to show longitudinal changes in NA being accounted for by changes in functional health over the relatively short time span of 4 years.

The studies reviewed previously (in the Age and Affect section) were all based on retrospective reports of affect. The "here-and-now" measures of momentary affect are necessary to rule out a competing hypothesis of age-related bias in the recall of emotions (Charles, Mather, & Carstensen, 2003; Knight, Maines, & Robinson, 2002). Using the experiences sampling method, Carstensen, Pasupathi, Mayr, and Nesselroade (2000) found, over the duration of 1 week, that controlling for personality, physical and mental health, cognitive functioning, and sociodemographic factors, PA frequency remained constant across ages, but NA frequency declined steadily from the late teens to approximately age 65, after which it remained relatively steady.

On the whole, studies appeared to converge on the stability of PA and the gradual decline of NA over time, although the rate of decline in old age is less conclusive. It is possible that the unavail-

The preparation of this article was supported in part by the Competitive Earmarked Research Grant CityU1217/02H of the Research Grants Council of Hong Kong. I express my gratitude to Jacky Cheung for his statistical assistance.

Correspondence concerning this article should be addressed to Sheung-Tak Cheng, Department of Applied Social Studies, City University of Hong Kong, 83 Tat Chee Avenue, Kowloon, Hong Kong. E-mail: tak.cheng@cityu.edu.hk

ability of less healthy and happy individuals across age and over time might contribute to the variations in findings, so that some studies may show a greater NA decline in old age, depending on the time span and the health conditions of the sample that was used. Having said this, health deterioration is clearly a risk factor for subjective well-being (Herzog & Rodgers, 1981; Kunzmann et al., 2000), but its effect appears to be compensated by other factors so that on the surface, PA and NA as well as satisfactions remain relatively stable during old age. This study introduces a goal discrepancy (GD) perspective through which the potential effects of various factors can be examined simultaneously.

The Role of Goal Discrepancy

Campbell et al.'s (1976) work showed that the discrepancy between persons' current state and their aspiration in a specific domain decreased with age, which then explained the relationship between age and satisfactions. To the extent that satisfaction with self is an important contribution to LS (Diener, 1984), Ryff (1991) has also shown that older people have the smallest ideal- versus actual-self discrepancies across six dimensions of psychological well-being, and their ideal-self ratings were consistently lower than middle-aged and young people. These findings are consistent with the observation that the balance in goal pursuit shifts toward an accommodative rather than an assimilative mode (Brandtstädter & Greve, 1994), or from primary to secondary control (Heckhausen & Schulz, 1995) in old age. When resources are increasingly depleted, it makes sense to lower expectations (e.g., on material enjoyment), to disengage from challenging goals (e.g., vigorous physical activity) and to concentrate resources on areas more manageable.

According to Higgins (1987, 1999), the size of a discrepancy between some reference value and the current situation on something important to the person would arouse affect. Therefore it can be argued that subjective well-being is maintained in old age through regulating the extent of discrepancies, especially in areas important to self. The question then is whether there are major areas in life that are generally considered to be more important to older than to younger people that might explain the age patterns in well-being.

Within the metatheoretical framework of selective optimization and compensation (Baltes & Baltes, 1990), scholars have converged on the view that aging is associated with proactive structuring of people's lives to maximize fulfillment of a fewer number of goals most important to themselves (e.g., Brandtstädter & Lerner, 1999; Filipp, 1996). In this connection, researchers of socioemotional selectivity theory (Carstensen et al., 1997; Carstensen, Isaacowitz, & Charles, 1999) argue that when people's time in life is perceived to be limited, instrumental or knowledge-related (futuristic) goals become relatively less relevant and emotional (present oriented) goals assume primacy. Therefore, close and emotionally meaningful relationships take on increasing priority with age. By reducing contact with less acquainted others and by surrounding themselves with a smaller circle of close friends and family members (Carstensen, 1992; Lang & Carstensen, 1994), aged individuals can enjoy a better match between their emotional needs and what the network members provide.

Using a card-sorting method, Lang and Carstensen (2002) found that as people got older (age range = 20–90 years), they tended to prioritize goals related to emotional regulation and generativity, and they placed less importance on autonomy and social acceptance. Emotional goals were associated with a smaller personal network of more satisfactory partners, particularly among those with a limited time perspective (which correlated with age at $r = -.70$).

Although Lang and Carstensen's (2002) study revealed that prioritizing emotional goals are associated with higher social satisfaction, it did not say whether there would be higher global well-being. Another recent study on the personal projects (Little, Lecci, & Watkinson, 1992) of older adults showed that only projects that were other directed (e.g., family affairs or helping people) were related to both positive and negative indices of psychological well-being; across all such indices, other-directed projects had the highest correlations among all project types (Lawton, Moss, Winter, & Hoffman, 2002). Thus, there is reason to believe that age is associated with the prioritization of socioemotional goals, which serve as the primary platform for the regulation of subjective well-being.

It should be mentioned, however, that cognitive and social adaptations cannot account for everything for such a broad construct as subjective well-being. It has been shown that the disengagement from paid employment and child-rearing responsibilities make older people's lives less demanding in some respects (Bernard & Phillipson, 1995; Riddick, 1993), so much so that they tend to enjoy a higher sense of environmental mastery than younger age groups (Ryff, 1991; Ryff & Keyes, 1995). Older people can afford to have more leisure time, which often stimulates renewed interests in personal hobbies that have been put away, at least partially for some time, than middle-aged people (Bernard & Phillipson, 1995; Riddick, 1993).

Taken together, theories and research converge to suggest that old age is associated with smaller GDs in various life domains. At the same time, there is evidence suggesting that, across individuals, social relationships are the primary means to deal with challenges to subjective well-being as people age. This study investigates the effects of GDs in six major domains of life: family, friends, work, materials, health, and recreation. These domains were selected because they have been named by people of all ages to be most important in their lives (Bowling, 1995), and because researchers have argued that only discrepancies accessible by and important to the person would arouse affect (e.g., Higgins, 1999). In line with socioemotional selectivity theory, domains dealing with close relationships, namely family and friends, are hypothesized to be the ones that show the strongest age–GD relationship.

The Nature of the GD-Subjective Well-Being Relationship

Before proceeding to the study, a discussion of the effects of GD across the three components of subjective well-being is necessary, as the perspective adopted will affect the actual model to be estimated. Consistent with recent views about the affective basis of satisfaction ratings (Cheng, in press; Schwarz & Strack, 2000), and with Higgins's (1987) analysis of the discrepancy-affect link, this study proposes that the effect of GD on LS is mediated by affect; that is, GD results in affect, which then leads to LS. To test this hypothesis, I tested three competing models with varying pathways from GD to LS with structural equation modeling techniques. In

Model A (baseline), age (and other sociodemographic factors) is associated with GD, which in turn leads to PA, NA, and LS, with LS also being dependent on the two classes of affect. This model specifies that GD has both a direct effect on LS as well as an indirect effect through lowering NA and raising PA. Model B, the hypothesized model, is the baseline less the direct path from GD to LS (i.e., GD's effect on LS is fully mediated by affect). Model C is the baseline less the direct effects of affect on LS (i.e., GD leads to LS, PA, and NA simultaneously; see Figure 1). For Model B to be correct, it should have a chi-square value that does not differ significantly from that of Model A but is significantly less than that of Model C.

Method

Sample and Procedure

Working students of an evening program in psychology in a Hong Kong university were recruited to distribute a questionnaire, individually, according to a predetermined random order (see *Measures* section) to persons they know. They were told to obtain a roughly sex-balanced sample within each of the following age groups: 20–29, 30–39, 40–49, and 50–59. In addition, participants aged 60 or over were recruited from social centers for the older population. Participation in the study was voluntary, and recruitment was aimed at obtaining approximately 150 people for each of the following age groups: young (aged below 30), middle (aged 30–59), and old (aged 60+). The young and middle-aged adults filled out the questionnaire individually and returned the questionnaire in a sealed envelope through the research assistant. The older adults were interviewed individually, using the unfolding approach (i.e., they were first asked the direction of their response before choosing the actual degree of response on a frequency or Likert scale). Cue cards with enlarged fonts displaying the response options of each question were provided.

Altogether, 12 individuals refused participation when invited. An additional 4 individuals who did not provide information on age were discarded from analysis. Five individuals aged 18 or 19 were also included. The final usable sample consisted of 460 individuals aged 18–89. Young people made up 28.3% of the sample, middle-aged 36.5%, and old age 35.2%. The mean age of the sample was 47.78 (SD = 22.14). Within the old-age category, 69.1% were women, and 30.9% were 80 years or older. Among those younger than age 60, 57.7% were women. Forty-five percent of the sample were married, and 46.3% were employed. One third of the whole sample had primary or no formal education, whereas a quarter had attained university level. Consistent with population characteristics (Census and Statistics Department, 2002), lower educational attainment was more prevalent in the old-age group, whereas 82.7% had primary or no formal schooling. Self-rated health of the sample was fair (M = 3.37, SD = 0.90, on a 5-point scale) and there was no age trend in self-rated health (r = −.05, *ns*).

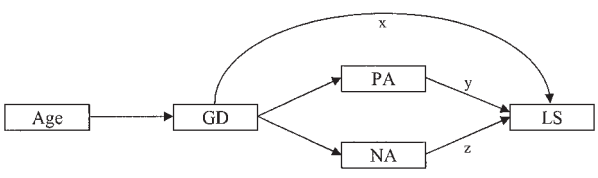

Figure 1. Theoretical model (baseline) of the relationship between age and subjective well-being. Model B does not have Path x, whereas Model C does not have Paths y and z. GD = goal discrepancy, PA = positive affect, NA = negative affect, LS = life satisfaction.

Measures

The questionnaire consisted of three sets of psychological instruments in counterbalanced order. At the end of the psychological instruments, respondents provided sociodemographic data and rated their current physical health on a 5-point scale, ranging from 1 (*very poor*) to 5 (*excellent*). Missing data were rare and were substituted by a real value of another case with a similar response pattern on the other items of the questionnaire, using PRELIS's imputation procedure (Jöreskog & Sörbom, 1996).

Set A was the Satisfaction With Life Scale (Diener, Emmons, Larsen, & Griffin, 1985), which has five questions measured on a 7-point scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

Set B was a short form of the Chinese Affect Scale (Hamid & Cheng, 1996), which contains six PA and six NA items. Two items in each set were characterized by high activation (PA = excited, joyful; NA = irritable, frightened), two were characterized by moderate activation (PA = happy, content; NA = bitter, sad), and two were characterized by low activation (PA = relaxed, comfortable; NA = disappointed, depressed). Thus, findings related to affect could not be attributed to age differences in activation and arousal. The Chinese Affect Scale items were originally generated on the basis of the frequency with which they were being named as typical emotional experiences by people who are Hong Kong Chinese. Participants indicated the frequency with which they experienced each emotion over the past month on a scale ranging from 1 (*rarely*) to 5 (*very often*). Cronbach's alpha coefficients equaled .83 for both PA and NA in this sample.

Set C assesses GD in six life domains: family, friends, work, materials, health, and recreation. For older people, work includes community work, voluntary services, and other unpaid work as well as paid work. Each GD was tapped by a question adapted from Michalos (1985): "Comparing your present [domain's] condition to what you want, would you say you are . . .?" The question was rated on a 7-point scale, ranging from 1 (*not at all what I want*) through 4 (*about half of what I want*) to 7 (*matches or exceeds what I want*). The data were reverse coded so that higher scores indicate higher discrepancy. For the purpose of parsimony and avoiding multicollinearity, we grouped GDs in family and friends together to form a measure of GD relationships (α = .66), and we grouped GDs in work, materials, and recreation as GD others (to include all nonrelational domains except for health; α = .59). GD health was treated as a single-item variable, as previous research suggested that health-related well-being might show a distinct pattern with age. GD health and self-rated health correlated at .54 ($p < .001$), but only GD health was age-related (see Table 1).

Schwarz and Strack (2000) have convincingly argued that the order of questions can have significant impact on the results obtained. Mainly, preceding questions enhance the availability of question-specific information, which in turn biases the answers given to subsequent questions. To control for serial-order effect, I displayed the three sets of instrument in a counterbalanced order, thus six different variations of the same questionnaire (note that sociodemographic and subjective health items were always placed last in the questionnaire). The six questionnaire versions were arranged in a random order, and the assistants were told to distribute the questionnaire according to the order given.

Results

Descriptive Statistics and Intercorrelations

Table 1 displays the descriptive statistics of and intercorrelations among the study variables. Across age, the perceived discrepancy in relationships was markedly lower than that in the others domain (d = −0.49), $t(459)$ = −10.45, $p < .001$, and in health (d = −0.36), $t(459)$ = −7.77, $p < .001$, but others and health did not differ (d = 0.07), $t(459)$ = −1.42, *ns*. Age showed a mild positive relationship to PA and LS, but a stronger, negative

Table 1
Descriptive Statistics and Intercorrelations

Variable	1	2	3	4	5	6	7	8	9	10
1. Age	—									
2. Gender[a]	.11*	—								
3. Education[b]	−.83***	−.11*	—							
4. Marriage[c]	.22***	−.01	−.11*	—						
5. GD rel	−.22***	−.10*	.14**	.06	—					
6. GD health	.13**	−.05	−.09	.07	.29***	—				
7. GD others	−.06	−.06	.02	.07	.57***	.39***	—			
8. PA	.10*	.08	−.07	−.02	−.55***	−.39***	−.58***	—		
9. NA	−.40***	.01	.32***	−.15**	.35***	.15***	.30***	−.49***	—	
10. LS	.15***	.11*	−.05	−.04	−.55***	−.29***	−.54***	.63***	−.44***	—
M	47.78		3.85		2.86	3.47	3.37	3.45	2.24	5.02
SD	22.14		1.84		1.23	1.56	0.98	0.75	0.83	1.14
Reference category (%)			38.3		55.4					

Note. GD = goal discrepancy, rel = relationships, PA = positive affect, NA = negative affect, LS = life satisfaction.
[a] 0 = *male*, 1 = *female*; [b] measured on a 6-point scale; [c] 0 = *single*, 1 = *married.*
* $p < .05$. ** $p < .01$. *** $p < .001$.

relationship to NA, thus replicating Western findings on increasing well-being with age. Age was also negatively correlated with GD relationships but positively correlated with GD health; its correlation with GD others was small and nonsignificant. However, because age was inversely related to education in Hong Kong, and because education was related to the variables of interest, it was necessary to examine the age patterns with education controlled. Controlling for educational level, age correlated at .08 with PA ($p < .05$), −.25 with NA ($p < .001$), .18 with LS ($p < .001$), −.20 with GD relationships ($p < .001$), −.08 with GD others ($p < .05$), and .10 with GD health ($p < .05$).

Testing Structural Equation Models

The three competing models (see Figure 1) were analyzed with LISREL (Version 8.52). As mentioned, Models B and C were nested within Model A, but B and C were not nested within each other. Except for the different missing pathways in B and C, all three models were identical. Age (continuous variable), gender (dummy; 0 = *male*, 1 = *female*), marital status (dummy; 0 = *not married*, 1 = *married*) and educational level (6-point scale treated as continuous) were included as exogenous latent factors with zero residuals (i.e., identical to the observed variables). Similarly, GD health was also specified on the endogenous side to be equal to its single-item measure. The other latent factors were estimated by using the corresponding items as indicators. The direct paths from age (and other sociodemographic factors) to the well-being variables were constrained to be zero. Besides chi-square, the degree of model fit was assessed by the root-mean-square error of approximation (RMSEA) and the comparative fit index (CFI). A moderately fitting model should evidence a RMSEA value ≤.08 and a CFI ≥.90, whereas a well-fitting model should have corresponding values of ≤.06 and ≥.95 (Browne & Cudeck, 1993; Hu & Bentler, 1995, 1999).

Model A (baseline) provided moderately good fit to the data, $\chi^2(296, N = 460) = 998.86$, $p < .001$ (RMSEA = .07; CFI = .96). It should be noted that the 90% confidence interval for RMSEA ranged from .07–.08, well within the acceptable range. The two alternative models produced significant increases in chi-square from the baseline ($\Delta\chi^2$ for Model B = 15.99, $\Delta df = 3$; $\Delta\chi^2$ for Model C = 21.51, $\Delta df = 2$; both *p*s < .001). Thus, Model A should be the model of choice, meaning that age acts on affect and LS through varying GDs, while LS is itself partly dependent on affect.

To fully evaluate the hypothesis that the age effect on well-being is completely mediated by GDs, I subsequently added three direct paths leading from age to PA, NA, and LS to Model A. That is, the direct effects of age on the well-being variables were freely estimated, together with the effects of the GDs. This expanded model resulted in a significant reduction in $\chi^2(3, N = 460) = 69.21$, $p < .001$ (RMSEA = .07, CFI = .96). Hence, GD only partially mediated the relationship between age and subjective well-being. Further examination of the path coefficients showed that age only had a direct effect on NA after controlling for GDs (effects on PA and LS were near zero and nonsignificant). Thus, whereas GD partially mediates the age effect on NA, it fully mediates the age effect on PA and LS.

The path coefficients for the final structural model are displayed in Figure 2. To enhance readability, I did not show paths that did not reach the significance level of .05. Caution should be used when comparing the path coefficients to the correlations reported previously, because the path coefficients were based on latent variables rather than on composite scores of observed variables. As a result, gender was omitted from Figure 2 because it did not act on GDs after controlling for the other sociodemographic variables. Educated people tended to get what they wanted from relationships. It is interesting to note that marriage was associated with greater discrepancies in relationships and things such as materials and recreation.

Among the sociodemographic variables, age had the largest effect on GDs, and across the three kinds of GD, GD relationships was most dependent on age. GD health was related to age only, such that the gap between desired and actual health widened with increasing age. Hence, age was associated with reduced GDs across the board, except for health.

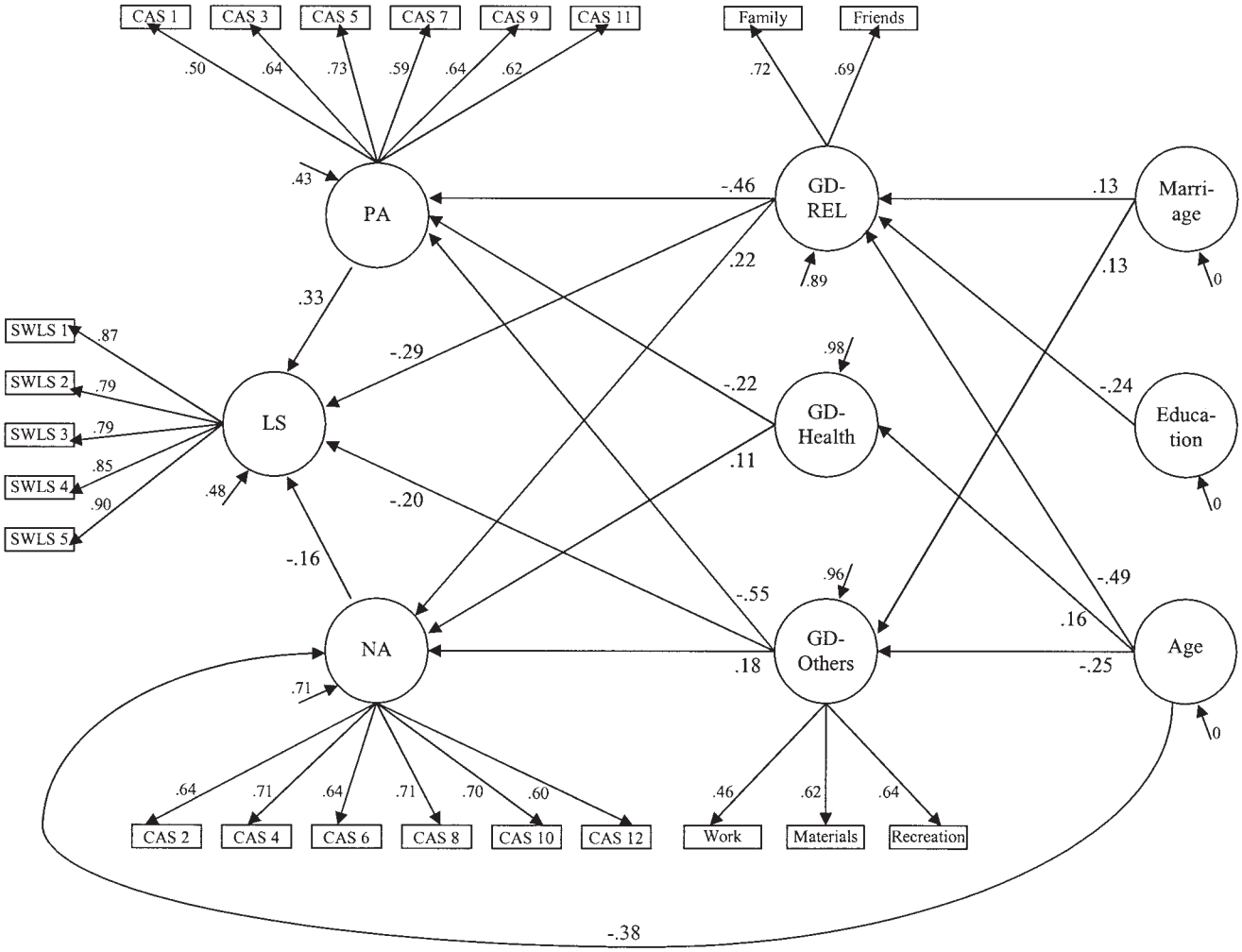

Figure 2. Relationships between age and subjective well-being, mediated by goal discrepancies. Paths with $p > .05$ are omitted from the diagram. CAS = Chinese Affect Scale items, PA = positive affect, GD = goal discrepancy, REL = relationships, SWLS = Satisfaction With Life Scale items, LS = life satisfaction, NA = negative affect.

All GDs predicted PA and NA in the expected directions (with stronger predictions for PA than for NA), and they influenced LS partially through affect. That LS was more a product of PA than of NA is consistent with contemporary wisdom (Diener, Sandvik, & Pavot, 1991). Across the three components of subjective well-being, GD relationships and GD others had noticeably larger impacts than GD health. In fact, GD health had no direct effect on LS. Altogether, an increase of 22 years of age (1.00 *SD*) was associated with a 0.33 *SD* increase in PA, 0.13 *SD* decrease in NA, and 0.37 *SD* increase in LS, through adjusting GDs. These were rather sizeable effects in light of the challenges of aging. In addition, a 1.00 *SD* increase in age was associated with a 0.38 *SD* decrease in NA that was not explained by age-related variations in GDs.

Discussion and Limitation

The use of a convenience sample in the present study precludes drawing firm conclusions. Moreover, the older participants in this study, recruited from social centers, were biased toward the healthier sector of the population. Another issue that could not be addressed in this study is whether the age patterns observed were a result of cohort characteristics, or were they a genuine representation of the effect of aging? A longitudinal study that uses a representative sample of the population would provide a more definitive conclusion with regard to the well-being enhancing effects of age-related minimization of GD in significant areas of life.

Notwithstanding these limitations, it is encouraging to see that the positivity of well-being experiences in old age is not a phenomenon specific to Western populations, but is also true for the people who are Hong Kong Chinese. To the best of my knowledge, this is the first study that had used affect measures that are balanced in terms of activation levels, so that results cannot be attributed to decline in physiological arousal with age. This study showed that GDs had strong effects on subjective well-being, and therefore it was possible to regulate well-being by adjusting GDs.

The study also found that most GDs became smaller with increasing age, suggesting that they are in fact a major pathway by which older people regulate their sense of well-being. Concerning how GDs regulate well-being, it was found that they affected LS indirectly through affect, while directly having large impacts on PA and smaller impacts on NA and LS.

This research focused on six life domains grouped under three broad categories in the study of GD, because previous research has shown that the proliferation of domains would not result in an increase of the variance explained in subjective well-being (Andrews & Withey, 1976; Campbell et al., 1976; Michalos, 1991). Consistent with socioemotional selectivity theory (Carstensen et al., 1999), the data showed that close relationship was the area where age difference in GD was most pronounced. Moreover, GD health was positively related to age. Thus, aging is only selectively associated with discrepancy reduction in certain goal areas.

Without exception, all GDs accounted more for PA (residual = .43) than for NA (residual = .71). The path coefficients indicated that age was associated with NA, independent of the effects of GDs. Given that age had a larger effect on NA than on PA (see also Charles et al., 2001), this pattern of findings was not entirely surprising. Although the proportion of variance in NA that could be regulated through reduction in GDs was relatively small, this variance accounted for was primarily because of the perceived discrepancies in relationships. Age had an indirect effect size of 0.11 through GD relationships, but only 0.04 through GD others, on NA. Hence, reducing the gap between desired and actual relationship states, such as by being surrounded with a small network of close friends and relatives (Carstensen, 1992; Lang & Carstensen, 1994), is a major pathway by which NA is regulated when people age.

Although subjective health is less and less related to objective health conditions as people age (Borchelt, Gilberg, Horgas, & Geiselmann, 1999), which might be the reason why self-rated health was unrelated to age, older persons do perceive a wider gap between actual and desired health. To the extent that (a) health deterioration is inevitable, thus provoking the adoption of accommodative strategies, and (b) health is a prime issue in old age (Bowling, 1995), thus calling for a differential allocation of resources to deal with its actual and potential threats, the present finding that concerns the positive relationship between age and GD health is revealing. It appears that the undesirable effects of health deterioration cannot be fully regulated at the psychological level, even for a sample of relatively healthy individuals. It would be interesting to see what will happen when frail older persons are included in the sample. Another study, which had used a less healthy sample, had also shown a stronger effect of health, on the basis of performance assessments of functional ability, on PA than on NA (Kunzmann et al., 2000). Taken together, it appears that increasing health problems associated with aging limit peoples' ability to participate in socializing and pleasurable activities, but this undesirable effect on well-being is overcompensated by improved qualities in relational and nonrelational domains.

The lack of objective health indicators was another shortcoming of the study. The design, along with the short questionnaire used, was intended to enhance participation by middle-aged people who were under severe work and time pressure as the study was conducted at the depth of an economic recession. It is important for future research to address the factors that predict when a limit in GD regulation would be reached. The inclusion of objective health indicators, for example, would allow an examination of how the regulation of GD health is both triggered and limited by objective physical conditions as well as by psychological resources.

Perhaps the most unexpected finding was that after controlling for other sociodemographic factors, married people had higher GDs in relational and nonrelational domains, although these effects were small. As no similar study has been conducted before, no data are available to suggest whether this is a finding peculiar to people of Hong Kong, or it is in fact a cross-cultural phenomenon. Regardless of this point, the finding requires explanation that might be revealed in future research. As married people are most likely to be at midlife, the finding suggests some risk to the well-being of middle-aged people that has not been addressed in the literature.

In summary, the age effect on PA and LS can be fully—and its effect on NA partially—explained by age-related variations in GDs. Not all GDs decrease with age: GD health (and perhaps other areas not included in this study) increases with age. The resultant age pattern in subjective well-being is therefore very much a net effect of all GDs. Some GDs (e.g., relationships) have larger effects than others, hence making positive aging possible by concentrating on these potent areas. Goal discrepancy provides an additional anchor point for looking at the processes of positive aging.

References

Andrews, F. M., & Withey, S. B. (1976). *Social indicators of well-being: Americans' perception of life quality.* New York: Plenum.

Baltes, P. B., & Baltes, M. M. (1990). Psychological perspectives on successful aging: The model of selective optimization with compensation. In P. B. Baltes & M. M. Baltes (Eds.), *Successful aging: Perspectives from the behavioral sciences* (pp. 1–34). Cambridge, England: Cambridge University Press.

Bernard, M., & Phillipson, C. (1995). Retirement and leisure. In J. F. Nussbaum & J. Coupland (Eds.), *Handbook of communication and aging research* (pp. 285–316). Hillsdale, NJ: Erlbaum.

Borchelt, M., Gilberg, R., Horgas, A. L., & Geiselmann, B. (1999). On the significance of morbidity and disability in old age. In P. B. Baltes & K. U. Mayer (Eds.), *The Berlin Aging Study: Aging from 70 to 100* (pp. 403–429). Cambridge, England: Cambridge University Press.

Bowling, A. (1995). What things are important in people's lives? A survey of the public's judgements to inform scales of health related quality of life. *Social Science and Medicine, 41,* 1447–1462.

Brandtstädter, J., & Greve, W. (1994). The aging self: Stabilizing and protective processes. *Developmental Review, 14,* 52–80.

Brandtstädter, J., & Lerner, R. M. (Eds.). (1999). *Action and self-development: Theory and research throughout the life span.* Thousand Oaks, CA: Sage.

Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 445–455). Newbury Park, CA: Sage.

Butt, D. S., & Beiser, M. (1987). Successful aging: A theme for international psychology. *Psychology and Aging, 2,* 87–94.

Campbell, A., Converse, P. E., & Rodgers, W. L. (1976). *The quality of American life: Perceptions, evaluations, and satisfactions.* New York: Russell Sage Foundation.

Carstensen, L. L. (1992). Social and emotional patterns in adulthood: Support for socioemotional selectivity theory. *Psychology and Aging, 7,* 331–338.

Carstensen, L. L., Gross, J., & Fung, H. (1997). The social context of

emotion. In K. W. Schaie & M. P. Lawton (Eds.), *Annual review of gerontology and geriatrics.* (Vol. 17, pp. 325–352). New York: Springer.

Carstensen, L. L., Isaacowitz, D. M., & Charles, S. T. (1999). Taking time seriously: A theory of socioemotional selectivity. *American Psychologist, 54,* 165–181.

Carstensen, L. L., Pasupathi, M., Mayr, U., & Nesselroade, J. R. (2000). Emotional experience in everyday life across the adult life span. *Journal of Personality and Social Psychology, 79,* 644–655.

Census and Statistics Department. (2002). *Hong Kong 2001 population census main report* (Vols. 1–2). Hong Kong: Author.

Charles, S. T., Mather, M., & Carstensen, L. L. (2003). Aging and emotional memory: The forgettable nature of negative images for older adults. *Journal of Experimental Psychology, 132,* 310–324.

Charles, S. T., Reynolds, C. A., & Gatz, M. (2001). Age-related differences and change in positive and negative affect over 23 years. *Journal of Personality and Social Psychology, 80,* 136–151.

Cheng, S. -T. (in press). Endowment and contrast: The role of positive and negative emotions on well-being appraisal. *Personality and Individual Differences.*

Costa, P. T., Jr., Zonderman, A. B., McCrae, R. R., Cornoni-Huntley, J., Locke, B. Z., & Barbano, H. E. (1987). Longitudinal analyses of psychological well-being in a national sample: Stability of mean levels. *Journal of Gerontology, 42,* 50–55.

Diener, E. (1984). Subjective well-being. *Psychological Bulletin, 95,* 542–575.

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction With Life Scale. *Journal of Personality Assessment, 49,* 71–75.

Diener, E., Sandvik, E., & Pavot, W. (1991). Happiness is the frequency, not the intensity, of positive versus negative affect. In F. Strack, M. Argyle, & N. Schwarz (Eds.), *Subjective well-being: An interdisciplinary perspective* (pp. 119–139). Oxford, England: Pergamon Press.

Diener, E., & Suh, M. E. (1997). Subjective well-being and age: An international analysis. In K. W. Schaie & M. P. Lawton (Eds.), *Annual review of gerontology and geriatrics* (Vol. 17, pp. 304–324). New York: Springer.

Filipp, S. H. (1996). Motivation and emotion. In J. E. Birren & K. W. Schaie (Eds.), *Handbook of the psychology of aging* (pp. 218–235). New York: Academic Press.

Hamid, P. N., & Cheng, S.-T. (1996). The development and validation of an index of emotional disposition and mood state: The Chinese Affect Scale. *Educational and Psychological Measurement, 56,* 995–1014.

Heckhausen, J., & Schulz, R. (1995). A life-span theory of control. *Psychological Review, 102,* 284–304.

Herzog, A. R., & Rodgers, W. L. (1981). Age and satisfaction: Data from several large surveys. *Research on Aging, 3,* 142–165.

Higgins, E. T. (1987). Self-discrepancy: A theory relating self and affect. *Psychological Review, 94,* 319–340.

Higgins, E. T. (1999). Why do self-discrepancies have specific relations to emotions? The second-generation question of Tangney, Niedenthal, Covert, and Barlow (1998). *Journal of Personality and Social Psychology, 77,* 1313–1317.

Hu, L., & Bentler, P. M. (1995). Evaluating model fit. In R. H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications* (pp. 76–99). Thousand Oaks, CA: Sage.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis' conventional criteria versus new alternatives. *Structural Equation Modeling, 6,* 1–55.

Jöreskog, K. G., & Sörbom, D. (1996). *PRELIS 2 user's reference guide* (3rd ed.). Lincolnwood, IL: Scientific Software International.

Knight, B. G., Maines, M. L., & Robinson, G. S. (2002). The effects of sad mood on memory in older adults: A test of the mood congruence effect. *Psychology and Aging, 17,* 653–661.

Kunzmann, U., Little, T. D., & Smith, J. (2000). Is age-related stability of subjective well-being a paradox? Cross-sectional and longitudinal evidence from the Berlin Aging Study. *Psychology and Aging, 15,* 511–526.

Lang, F. R., & Carstensen, L. L. (1994). Close emotional relationships in late life: Further support for proactive aging in the social domain. *Psychology and Aging, 9,* 315–324.

Lang, F. R., & Carstensen, L. L. (2002). Time counts: Future time perspective, goals, and social relationships. *Psychology and Aging, 17,* 125–139.

Lawton, M. P. (2001). Emotion in later life. *Current Directions in Psychological Science, 10,* 120–123.

Lawton, M. P., Moss, M. S., Winter, L., & Hoffman, C. (2002). Motivation in later life: Personal projects and well-being. *Psychology and Aging, 17,* 539–547.

Little, B. R., Lecci, L., & Watkinson, B. (1992). Personality and personal projects: Linking Big Five and PAC units of analysis. *Journal of Personality, 60,* 501–525.

Michalos, A. C. (1985). Multiple discrepancies theory (MDT). *Social Indicators Research, 16,* 347–413.

Michalos, A. C. (1991). *Global report on student well-being: Vol. 1. Life satisfaction and happiness.* New York: Springer-Verlag.

Mroczek, D. K., & Kolarz, C. M. (1998). The effect of age on positive and negative affect: A developmental perspective on happiness. *Journal of Personality and Social Psychology, 75,* 1333–1349.

Riddick, C. C. (1993). Older women's leisure activity and quality of life. In J. R. Kelly (Ed.), *Activity and aging: Staying involved in later life* (pp. 86–98). Thousand Oaks, CA: Sage.

Ryff, C. D. (1991). Possible selves in adulthood and aging: A tale of shifting horizons. *Psychology and Aging, 6,* 286–295.

Ryff, C. D., & Keyes, C. L. M. (1995). The structure of psychological well-being revisited. *Journal of Personality and Social Psychology, 69,* 719–727.

Schwarz, N., & Strack, F. (2000). Reports of subjective well-being: Judgmental processes and their methodological implications. In D. Kahneman, E. Diener, & N. Schwarz (Eds.), *Well-being: The foundations of hedonic psychology* (pp. 61–84). New York: Russell Sage Foundation.

Stacey, C. A., & Gatz, M. (1991). Cross-sectional age differences and longitudinal change on the Bradburn Affect Balance Scale. *Journals of Gerontology, Series B: Psychological Sciences and Social Sciences, 46,* P76-P78.

Received June 19, 2003
Revision received February 24, 2004
Accepted March 4, 2004 ■