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Quality of life and its correlates in a community population in a Japanese rural area

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Abstract Correlations of three aspects of quality of life (QOL) (health perception, life satisfaction, and self-confidence) with personality traits and early experiences were examined. Quality of life aspects were examined using 220 inhabitants in a rural community in Japan. Health perception was better among men than among women. Life satisfaction and self-confidence were better in people aged 55 or over than in those under 55. Among the current predictor variables, the Eysenck Personality Questionnaire neuroticism score was correlated with poor life satisfaction in the younger women; the extraversion score with the older women's health perception, the older men's life satisfaction, and the women's self-confidence; and the psychoticism score with the older men's life satisfaction. Among early life predictors, self-confidence was lower among those older men who had reported early parental loss. Childhood paternal overprotection was correlated with poor health perception in younger people and with good health perception in older women. Some negative life events experienced during childhood were correlated with poorer QOL measures in some subgroups, while positive life experiences were correlated with the older women's life satisfaction. These findings suggest that the three aspects of the QOL are discrete in their psychosocial correlates and that interventions on health education and care should take into account individual's psychosocial attributes.

Key words child abuse, early life experiences, loss experience, personality, quality of life, rearing.

INTRODUCTION

The World Health Organization defined health as not the mere absence of disease but the psychosocial well-being of individuals.[1] More emphasis in medicine has been placed not only on patients' functional state, but also on subjective contentment and active social roles. This is often referred to as quality of life (QOL) and is in accordance with increasing awareness of the importance of patients' self determination as to what should be done about their body — the doctrine of informed consent in practice.

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However, many researchers have criticized the concept of QOL as being ill-defined.[2–6] Quality of life may mean subjective health (health perception), well-being, social function, lack of distressing psychological or bodily symptoms,[7] or a combination of any of them.[8] Reviewing the literature of QOL measures, Najman and Levine stated that there were two broad categories (objective and subjective) and that studies addressing subjective QOL experience had produced more consistent findings.[8] More than two decades ago, Campbell[9] noted that 'if we believe that the quality of life lies in the objective circumstances of life, these measures will tell us all we need to know; but if we believe, as I assume most psychologists do, that the quality of life lies in the experience of life, then these are surrogate indicators'. This was recently echoed by Orley *et al.*[10] who stated that 'QOL is an internal experience. It is influenced by what is happening "out

there", but it is colored by the subjects' earlier experiences, their mental state, their personality and their expectations.' What may be included in the subjective indicators are happiness, life satisfaction, and global well-being; the importance of positive aspects of health state has been emphasized in this connection. However, the lack of explicit definition of QOL needs to be discussed to further our understanding of the nature, determinants, and consequences of QOL. Because researchers use the term 'QOL' to represent different things, it may well be important to disentangle these.

One facet of QOL is health perception — the subjective judgement of one's own bodily health. Although this may be viewed as a part of health belief (i.e. people's perception of their susceptibility, possibility of suffering, and likelihood of self-control of a disease[11]) Jette *et al*. showed that these health beliefs and health perceptions consist of different factor structures.[12] Health perception is correlated with the objective assessment of health,[13] and is also linked to later mortality.[14–19]

Another facet of QOL is life satisfaction.[8,9] This is a very important part of happiness and is often used as its synonym; a closely related concept is subjective well-being (SWB).[20] Life satisfaction refers to people's belief that their life is close to their ideal, is satisfactory, and gives important things to them.[21]

A third facet which is related to QOL is self-esteem — subjective judgement of one's own ability, worthiness, and other components of the self.

These three concepts (health perception, life satisfaction, and self-esteem) may be strongly correlated. For example, people with good health perception may be more likely to be confident in themselves or vice versa,[22] people with high self-confidence may be more likely to be satisfied with their life.[23–25] Studying the life satisfaction of students of an advanced psychology course (mean age 31.3 years, SD 14.4 years), Belgian researchers Finkenauer and Rimé found that the total illness score on the Southern Methodist University Health Questionnaire showed a significantly negative parameter estimate with life satisfaction score.[26] This suggests that poor health perception leads to poor life satisfaction.[27–30] This was also reported by Cutler,[31] Markides and Martin,[32] and Palmore,[33] who studied an elderly population. However, people who are satisfied with their life may not always feel physically well. People can feel confident in something related to their own attributes, even when they are physically unfit or when their life is far from ideal. Little has been studied about this relationship, and the first aim of the present study was to clarify it.

It is conceivable that each of these concepts of different aspects of QOL is influenced by many factors. For example, when feeling upset, depressed, or anxious, people may see their health as poor, their life as unsatisfactory,[34,35] and themselves as less confident. It is also feasible that these are, to some extent, personality traits.[36–38] Their origin may date back to childhood experience, as well as to the present mental state. Thus, the second aim of the present study was to investigate correlates of each of these concepts in terms of: (i) present mental state, (ii) personality, and (iii) childhood experiences.

METHOD

Participants

The present data were extracted from a study of 220 community inhabitants in area A of Kofu, the capital of Yamanashi Prefecture, Japan. This study focussed on mental health and mental illness in a community population. Briefly, we sent an invitation letter to request participation in our questionnaire and interview study for all residents aged 18 years or over in a district of the City of Kofu, Yamanashi Prefecture. Yamanashi is a rural area and although Kofu is the prefectural capital, it is fairly stable in the flow of inhabitants. Kofu was chosen for this study because one of the authors (S.F) was the then director of the Prefectural Mental Health and Welfare Center, having a strong personal tie with the local community. This enabled the authors to carry out the study of 'mental health' in a society with very harsh stigma towards it. The number of the residents in this district was 508 and of these, 228 (45%) agreed to participate in the study. Successful interviews were carried out with 207 people, the remaining 21 failing to attend the interview for a variety of reasons. Nine months later, when we conducted a follow-up investigation, we requested the participation of those who had declined initially. An additional 13 individuals agreed to do so. Thus, the final sample consisted of 220 people, 96 men and 124 women. They were aged between 18 and 91 years, and their mean age (SD) was 53.9 (16.6) years.

Using these data, we have already reported the epidemiology and psychosocial correlates of panic disorder,[39] marital adjustment,[40] epidemiology of child abuse,[41] the mental health of a working population,[42] hopelessness,[43] epidemiology of psychiatric disorders,[44] and chronic fatigue,[45] relationship between marital and social adjustment[46] and early parental loss and affective disorders.[47]

Measures

Health perception, life satisfaction and self-confidence were all rated with a single-item measure using a 5-point scale in the interview. In all three areas, higher scores reflected a better condition (better health perception, higher life satisfaction, and higher self-confidence). Each of these may be assessed by a multiple-item measure. However, we used a single-item measure because we were interested in these three concepts of QOL derived from our overview of the literature and because the space was limited due to the necessity to measure other aspects of mental health.

Health perception

A 5-point single item was provided to measure the participant's subjective assessment of the degree of fitness. A probe question was asked by the interviewer: 'To begin with, I should like to ask about your bodily condition in general. Have you recently been feeling well physically? Have you felt unwell or had any symptoms?' Further questions could be given by the interviewer if he/she thought it necessary. The five anchor points were: 1, many symptoms; 2, very unwell with a few symptoms; 3, slightly unwell; 4, slightly well; 5, very well.

Life satisfaction

Subjective well-being was measured by the direct question, 'Have you recently been satisfied with your life? Have you had anything you feel dissatisfied with?' This single item was rated with a 5-point scale: 1, very dissatisfied; 2, slightly dissatisfied; 3, neither dissatisfied nor satisfied; 4, slightly satisfied; 5, very satisfied.

Self-confidence

Self-confidence is global self-esteem.[48] This was measured by asking, 'As compared to other people whom you either know or don't know, how confident do you feel in yourself in terms of ability, effort, appearance, way of thinking, etc.?' This was rated on a 5-point scale; 1, very little; 2, less; 3, neither more nor less; 4, more; 5, very much.

Psychiatric diagnoses

For the assessment of current and past psychiatric diagnoses for the participant, we developed the Time-Ordered Stress and Health Interview (TOSHI).[49] This is a structured interview which investigates (i) family and accommodation; (ii) occupation; (iii) life events and difficulties; (iv) coping behavior; (v) social adjustment; (vi) social support; (viii) life history, including early parental loss; (ix) present mental state; (x) past psychiatric history; and (xi) family history of psychiatric disorder. The psychiatric diagnosis followed the *Diagnostic and Statistical Manual of Mental Disorders* (3rd edn revised). The DSM-III-R is one of the international diagnostic criteria covering almost all psychiatric disorders. It is of note that we conducted the present investigation before the DSM-IV was published. The present mental state and psychiatric past history can indicate any non-psychotic, non-substance, common mental disorders. The wording of the probe questions was taken from structured diagnostic interviews including a Japanese draft of the Composite International Diagnostic Interview,[50] Schedule for Affective Disorders and Schizophrenia,[51] and others, which were modified to suit the culture of the target population as well as to be concise for use by lay interviewers. The TOSHI was originally designed in Japanese after taking into account wording of the English interviews. This was not translated into English.

Twenty-five interviewers including psychiatrists, physicians, psychiatric social workers, clinical psychologists, and postgraduate students of psychology and medicine were trained. The training took 4 days and included introductory lectures and role-playing.

The lifetime prevalence was 1.8% for generalized anxiety disorder, 0.9% for panic disorder, 14.1% for major depressive episode, 2.3% for dysthymic disorder, 0.9% for manic episode, 3.6% for phobic disorder, 0% for obsessive–compulsive disorder, and 18.6% for any of the above. The corresponding figures for the 12-month incidence were: 0.5%, 0.0%, 2.7%, 0.0%, 0.0%, 0.9%, 0.0%, and 3.6%, respectively.

Personality

The Japanese version of the Eysenck Personality Questionnaire (EPQ) was made available by Professor S. Iwawaki (pers. comm., 1984). It consists of 100 items, each being rated as either yes (1) or no (0). It has three subscales: neuroticism (N), extraversion (E), and psychoticism (P). The neuroticism (N) (23 items) score measures emotional instability; extraversion (E) (21 items) score measures extraversion as compared to introversion; psychoticism (P) (25 items) score measures psychological isolation and aloofness. Cronbach's α-coefficients were 0.84 for E, 0.82 for N, and 0.55 for P scores.

Response style

Because the QOL measures used in the present study were likely to be influenced by the participant's response style, we added the Social Desirability Scale (SDS)[52] to the questionnaire. The SDS was translated into Japanese.[53] Ten items were found to be suitable for a Japanese population, which had a base rate of more than 0.1 and had significant correlations with the total SDS score.

Early parental loss

Early loss of a parent by death or separation for 12 months or longer before the age of 16 years was enquired about in the interview, separately for the father and mother.[54]

Perceived parenting

The participant was asked in the questionnaire to recall retrospectively how he/she perceived the parent's attitudes towards him/her. The Parental Bonding Instrument was used.[55] It has 25 each items, each with a 4-point scale (very unlikely (0) to very likely (3)). Parker *et al*. suggested two subscales: care and overprotection.[55] Only data from those participants without any early loss experience of a parent were used for the analyses related to that particular parent, because we thought the participants with early parent loss experience might report unreliably.

Child abuse

The participant was asked if he/she had experienced child abuse from the father and mother, separately, in terms of scolding, slapping, punching with a fist, hitting with an object, and burning.[41] When the participant answered 'yes' to any of these five categories of child abuse, further enquiry was performed as to the frequency of the conduct (when it was most frequent) with a 5-point scale (never, 1; several times a year, 2; several times a month, 3; several times a week, 4; and almost every day, 5). The frequency scores of these five categories were entered into factor analyses (principal component solution) for the father and mother separately. Using Kaiser criterion (eigen value of 1 or more),[56] we found only one factor for parental abusive behavior. Therefore, we calculated two composite variables by adding the frequency scores of the five categories for the father and mother. Because these two variables were strongly positively skewed, they were log transformed to be used for further analyses. As with perceived parenting, only participants without early loss experience of a parent were used for analyses, in terms of that particular parent's abusive behavior.

Statistical analyses

We examined the correlations between the three QOL measures. The sex and cohort differences in these QOL measures were then calculated, with a cut-off point between the ages of 54/55 years. This was chosen because it was likely to separate the subjects into those who had or had not reached the menopause (by this age all subjects may be postmenopausal). Furthermore, those aged 55 or more at the time of the interview had spent their childhood before or during World War II, while those under 55 years had spent their childhood in the postwar period. Around the end of the war, the cultural atmosphere saw a remarkable change in Japan. This represented approximately a median of the subjects ($n = 98$ for those 18–54 years, $n = 122$ for those ≥54 years). The effects of the present episodes of DSM-III-R disorders were examined. Because there were sex differences in health perception and age cohort differences in life satisfaction and self-confidence (see results), correlates of the QOL measures were correlated to the QOL measures in four groups (men *vs* women and aged 18–54 *vs* aged ≥54), separately. We did not correct the type I error by Bonferroni method because of the exploratory rather than confirmatory nature of the study. We were interested in the generation of hypothesis as to the psychosocial determinants of QOL.

RESULTS

Quality of life measures

There was a significant moderate correlation between health perception and self-confidence ($r = 0.22$, $P < 0.01$), and between life satisfaction and self-confidence ($r = 0.17$, $P < 0.05$), but the correlation between health perception and life satisfaction was not significant ($r = -0.04$).

Because these findings suggest independence of the three QOL measures, we examined the link of correlates with these measures separately. We did not create a composite variable by adding scores of health perception and self-confidence because we were interested in whether these had different patterns of links with the correlates.

Quality of life measures and basic demographic variables

Health perception was significantly better among men than among women ($P < 0.05$), but life satisfaction or self-confidence did not differ between the two sexes (Table 1). On the other hand, health perception did not differ between the two age cohorts, while life satisfaction and self-confidence were both significantly higher in those aged 18–54 than in those aged 55 or over.

We hypothesized that existing DSM-III-R disorders of any category at the time of the interview would reduce the scores of all the three QOL measures. However, this was not the case. At the time of the interview, 16 participants had a current episode (or episodes) of DSM-III-R disorders. Of the 220 participants, three had major depressive episode, one had dysthymic disorder, seven had phobic disorder, and eight had obsessive–compulsive disorder. Some subjects had multiple diagnoses. None of the three QOL measures differed between those participants with and without any DSM-III-R disorders. No differences were found in terms of the scores of the three QOL measures when the participants were divided into those with and without major depressive episode, phobic disorder, or obsessive–compulsive disorder, separately.

Quality of life measures and the current variables

The three EPQ subscales (N, E scores and P) showed differential correlations with the QOL measures (Table 2). N scores were negatively correlated with the life satisfaction score only in the younger women. E scores were positively correlated with health perception in the older women, with life satisfaction in the older men, and with self-confidence in both younger and older women. P scores were negatively correlated with life satisfaction in the older men.

Social Desirability Scale scores were negatively correlated with self-confidence in the younger men and in the older women.

Quality of life measures and early experiences

We examined whether any early parental loss experiences (death of or separation from either parent before the age of 16 years) had a significant link with any of the three QOL measures. Only self-confidence differed between those older men with and without early parental loss experiences (no loss, mean = 3.4, SD = 0.9; loss, mean = 3.0, SD = 0.7; $t = 2.1$; $P < 0.05$).

Of the Parental Bonding Instrument (PBI) measures, overprotection scores showed significant links with health perception (Table 3). Thus, paternal overprotection was negatively correlated with health perception in both the younger men and women, but maternal overprotection was positively correlated with health perception in the older women.

The child abuse scores did not show any significant correlation with any QOL measure.

Among both the positive and the negative life events experienced during childhood, several showed significant correlations with adult QOL (Table 4). Health perception was correlated negatively with the frequency of 'being bullied' and 'total of negative life events' in the younger women, and also negatively with those of 'changed school', 'moved home', 'being adopted by a relative or others for a short time', and 'total of negative events' in the older men. In the older men, health perception was unexpectedly correlated

Table 1. Correlates of quality of life measures: basic demographic and clinical variables

	Health perception (SD)	Life satisfaction (SD)	Self-confidence (SD)
Total			
Sex			
Men ($n = 96$)	4.20 (0.68)*	3.56 (1.14)	3.25 (0.91)
Women ($n = 124$)	3.93 (0.86)*	3.73 (1.13)	3.08 (1.08)
Age group			
18–54 ($n = 98$)	4.07 (0.87)	3.40 (1.23)**	2.99 (0.97)*
54 + ($n = 122$)	4.02 (0.73)	3.86 (1.02)**	3.29 (1.02)*
DSM-III-R present state			
No disorders ($n = 204$)	4.05 (0.77)	3.66 (1.12)	3.18 (0.99)
Any disorders ($n = 16$)	4.00 (1.03)	3.63 (1.36)	2.88 (1.26)

* $P < 0.05$; ** $P < 0.01$.

Table 2. Correlates of quality of life measures: Personality and perceived social support

	Health perception		Life satisfaction		Self-confidence	
	Men	Women	Men	Women	Men	Women
Aged 18–54 years						
EPQ						
Neuroticism	−0.05	−0.20	0.02	−0.37**	0.07	−0.02
Extraversion	−0.08	0.25	0.10	0.13	0.05	0.32*
Psychoticism	−0.30	−0.14	0.12	−0.25	−0.03	0.07
Perceived social support						
Number	0.13	−0.06	−0.26	0.04	0.05	0.13
Satisfaction	0.19	0.06	0.07	−0.01	−0.11	0.09
Response style						
Social desirability	−0.10	−0.03	0.06	0.12	−0.40*	−0.16
Aged 55+ years						
EPQ						
Neuroticism	−0.16	0.10	0.20	−0.16	−0.19	−0.03
Extraversion	−0.11	0.37**	0.39**	0.10	0.25	0.40**
Psychoticism	−0.06	0.13	−0.33*	−0.06	−0.23	0.09
Perceived social support						
Number	0.22	0.09	−0.05	0.13	0.11	0.03
Satisfaction	0.27	−0.06	0.24	0.09	−0.05	0.06
Response style						
Social desirability	0.20	−0.16	0.20	−0.16	0.19	−0.24*

* $P < 0.05$; ** $P < 0.01$.

Table 3. Correlates of quality of life measures: perceived parenting and child abuse

	Health perception		Life satisfaction		Self-confidence	
	Men	Women	Men	Women	Men	Women
Aged 18–54 years						
Fathers						
Care	0.25	0.29	0.17	0.17	−0.13	0.15
Overprotection	−0.40*	−0.46**	0.12	−0.16	0.10	−0.12
Child abuse	−0.09	0.04	−0.22	−0.04	0.00	0.06
Mothers						
Care	0.09	0.06	−0.06	0.06	−0.11	0.21
Overprotection	−0.31	−0.07	0.29	−0.03	0.21	−0.15
Child abuse	−0.17	−0.12	0.22	0.06	−0.10	−0.18
Aged 55+ years						
Father						
Care	−0.19	−0.18	0.06	0.06	0.02	−0.18
Overprotection	−0.04	0.05	−0.18	0.08	−0.17	−0.07
Child abuse	−0.22	−0.05	−0.12	−0.06	−0.21	0.04
Mother						
Care	0.06	−0.15	0.01	0.18	0.12	−0.01
Overprotection	−0.11	0.35*	−0.09	0.22	−0.17	0.08
Child abuse	−0.04	0.26	0.16	0.06	0.16	0.16

* $P < 0.05$; ** $P < 0.01$.

Table 4. Correlates of quality of life measures: early life events

	Health Perception		Life Satisfaction		Self-Confidence	
	Men	Women	Men	Women	Men	Women
Aged 18–54						
Changed schools	0.06	−0.01	−0.08	−0.01	0.06	0.24
Elected as a 'class leader'	−0.05	−0.05	−0.03	−0.06	0.18	0.14
Won the first prize in art, calligraphy, carpentry or music	−0.00	−0.17	−0.21	−0.16	0.10	−0.10
Was bullied	0.11	−0.46**	−0.07	0.02	0.27	−0.19
A best friend died	–	0.10	–	−0.29*	–	−0.04
Moved home	0.06	0.17	−0.04	−0.07	0.06	−0.22
Parents had a row frequently	−0.09	−0.10	0.13	0.16	−0.05	−0.27*
Adopted by a relative or others for a short time	0.08	–	−0.05	–	0.18	–
A sibling died	–	0.01	–	0.06	–	−0.12
Total of negative life events	0.11	−0.37**	−0.11	−0.03	0.19	−0.06
Aged 55+ years						
Changed schools	−0.51**	0.07	0.14	−0.03	−0.04	0.14
Elected as a 'class leader'	0.17	−0.05	0.06	0.25*	0.07	0.14
Won the first prize in art, calligraphy, carpentry or music	−0.09	0.03	−0.06	0.25*	0.13	0.13
Was bullied	−0.03	0.16	0.19	0.12	0.11	0.17
A best friend died	−0.06	0.02	−0.08	−0.03	−0.17	0.11
Moved home	−0.29*	−0.02	0.20	−0.04	0.01	−0.03
Parents had a row frequently	−0.03	0.10	0.03	0.01	−0.04	−0.03
Adopted at a relative or others for a short time	−0.09*	0.11	0.06	0.08	−0.17	0.21
A sibling died	0.36**	0.10	−0.22	0.07	0.13	−0.13
Total of negative life events	−0.34*	0.14	0.17	0.07	0.00	0.15

* $P < 0.05$; ** $P < 0.01$.

positively with the frequency of the death of siblings. In younger women, life satisfaction was correlated negatively with the frequency of the death of a best friend, while in the older women it was correlated positively with those of 'being elected as a class leader', 'won the first prize in art, etc.'. Self-confidence was correlated negatively with the frequency of frequent rows between the parents in the younger women.

DISCUSSION

Quality of life measures

Our results showed that the three QOL measures were, if at all, only slightly correlated with each other. Finkenauer and Rimé demonstrated in a path analysis that high total illness score (poor health perception) would lead to poor life satisfaction.[26] However, in the present study they did not show a correlation coefficient between the two scores. In the present study, statistically significant correlations were observed between self-confidence and health perception as well as with self-confidence and life satisfaction. However, they were weak in magnitude. This suggests that these three measures are, though regarded as different facets of QOL, statistically independent. Therefore, we thought it would be justifiable to explore both current and past correlates of the measures separately.

Quality of life measures and basic demographic variables

This study showed that a sex difference was found only for health perception (better among men), while an age difference was found for life satisfaction and self-confidence (better in those older). These findings suggest that the three QOL measures are influenced differentially by the basic demographic variables. This is consistent with previous findings that happiness was not different between the two sexes.[57–62]

Previous findings were inconsistent in relation to the correlation between age and life satisfaction. Thus, Kuhlen reported that young people were happier,[63] while Andrews and Withey,[64] Alston *et al.*,[27] and Spreitzer and Snyder[65] reported no age effect on

happiness. However, Czaja,[66] Bortner and Hultsch,[67] Clemente and Sauer[28] and Medley[68] reported that old people were happier. Our results are in line with this general trend. There has been a tradition of 'mujin' in Kofu. This kind of social gathering dates back to the feudal period and provides individuals sharing the same attribute (e.g. the same area, occupation, hobby, sending children to the same school, etc.) with a regular (e.g. once a month) meeting often accompanied with drink parties. An important element is the confidentiality; whatever is told in 'mujin' should not be disclosed elsewhere. More elderly than younger people attend 'mujin' because they have more free time; it may give older individuals a sense of integrity, and thus greater satisfaction with life.

This may be in line with Palys and Little's report that a high level of satisfaction was associated with the presence of a social network that shared project involvement and offered social support.[69] Leisure satisfaction was also reported to be associated with the morale of elderly people.[70–72] However, this interpretation needs empiric examination.

Quality of life measures and the current variables

In the present study, health perception was correlated with the E score only among the older women. Among the EPQ scores, it is the N score that was reported to be linked to susceptibility to the common cold,[73] Crohn's disease,[74] and psychiatric morbidity after stoma surgery.[75] Horner reported a negative correlation between the N score and the Seriousness of Illness Rating Scale in a sample of first-year psychology students (mean age 20.3 years) in Canada.[76] They also showed in a path analysis that this effect was mediated by the perception of stressors and by negative affect. These studies dealt with somatic diseases, while the present study concerned the subjective perception of bodily condition among subjects none of whom were diagnosed as suffering from any serious disease. It may be that personality traits would not affect somatic conditions unless the subjects had physical illness, but women who have reach middle or old age may feel physically better if they are extraverts. Unlike men, extravert women are more likely to participate in a variety of activities than are introvert women, and activities may maintain their subjective feeling of fitness.

In the present study, the N score of the EPQ was correlated with poor life satisfaction only, and this was found solely among the younger women.

Tolor studied a population of college students in the US and found that joy of life was higher among those who were high in sensation-seeking.[62] Although Tolor analyzed the data separately for the two sexes and for different age-groups,[62] this is consistent with the present result that life satisfaction was related to the E score among the older men. Our results, however, also showed that the N score was negatively correlated with life satisfaction among younger women. These findings suggest an interaction between personality traits and gender in the perception of life.

The present study showed that extraversion was linked to women's self-confidence, regardless of age. This may be interpreted as indicating that in the collective, interdependent national culture of Japan,[77,78] women can maintain their self-confidence by relating to others.

Only younger men and older women showed significant correlations between the self-confidence and social desirability scores. Thus, they were more likely to report in a socially desirable manner. Social desirability showed no correlation with any other QOL measures in the participants, and it may be that the QOL measures are unlikely to be influenced substantially by the social desirability response style.

Quality of life measures and early experiences

Among PBI measures, paternal overprotection was correlated with women's health perception. This correlation was negative among the younger women, but positive among the elder ones. A negative correlation of paternal overprotection with health perception was also observed among the younger men. This is difficult to interpret, but excessive respect for the child's autonomous decisions may reduce the perception of health during young adulthood. They may make avenues to early interventions towards poor health behavior. This suggests that healthcare providers should pay more attention to the maintenance of self-determination in clinical settings. This may take place among children or adults.

The correlation between self-esteem and parental style has been studied in a child and adolescent population. Most of the studies showed that parents respecting a child's autonomy (i.e. low overprotection) is linked to children's high self-esteem.[79–84] Many investigations have noted that this trend was stronger among boys than among girls.[85–90] However, Openshaw *et al*. reported a stronger trend among girls,[91] while no sex difference was reported by Litovsky and Dusek.[84] Only a few studies have addressed this topic among an adult population. De Man studied adults aged in their 20s, and found a link between their parents' respect for the autonomy of the children (the subjects) and the current level of self-acceptance.[92] The present study showed no effects of early parenting on adult self-

confidence, regardless of the sex and age. The effects of parenting on the development of self-confidence may be significant only in adolescents.

Sex difference was observed in the link between negative life events during childhood and adult perception of health. Thus, these events are related to poor health perception of young women and older men. Of interest is that the strongest correlation with poor health perception was shown by 'being bullied' in women, while it was by 'changed schools' in men. Because the frequencies of these school-related life events did not differ significantly between men and women,[93] this difference cannot be explained by the sex difference of life events experienced. This is difficult to explain but may be worthy of further studies on the impact of early school experiences on the children's health perception and health behavior.

Limitations

The present study should be viewed only as preliminary, for several reasons. First, the number of the subjects was modest and limited geographically. Second, information regarding past experience was collected through self-report, which is subject to bias. Third, the cross-sectional design of the study should limit causal interpretation. Finally, the multiple comparisons employed for statistical analyses may have yielded chance products.

Nevertheless, the present study seems to have suggested that the QOL is partly explainable as a trait, the origins of which belong to personality and early experiences. The impact of personality and early experiences on a variety of psychological variables may be expected. The cultural limitation to Japan is a drawback of the present study, but the present finding may warrant further studies on the psychosocial determinants of the perception of QOL in a cross-cultural setting. Within the cultural context of the present study, these findings suggest that the three aspects of the QOL are discrete in their psychosocial correlates. This leads to the hypothesis that QOL is a multifaceted concept and thus deserves treatment as such in both research and practice. Differential correlations of these QOL aspects with personality and early experiences may also suggest different psychological interventions depending on the individual's psychosocial attributes. These practical suggestions should be examined in clinical settings.

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REFERENCES

1. World Health Organization. *Constitution of The World Health Organization*. WHO, Geneva, 1948.
2. Fava GA, Magnani B. Forum: Quality of life: a review of contemporary confusion. *Med. Sci. Res.* 1988; **16**: 1051–1054.
3. Miettinen OS. Quality of life from the epidemiologic perspective. *J. Chronic Dis.* 1987; **40**: 641–643.
4. Schuessler KF, Fisher GA. Quality of life research and sociology. *Ann. Rev. Sociol.* 1985; **11**: 129–149.
5. Siegrist J, Junge A. Background material for the workshop on QALYs: Conceptual and methodological problems in research on the quality of life in clinical medicine. *Soc. Sci. Med.* 1989; **29**: 463–468.
6. Siegrist J, Junge A. Measuring the social dimension of subjective health in chronic illness. *Psychotherapy Psychosomatics* 1990; **54**: 90–98.
7. Ross CE, Willigen MV. Education and the subjective quality of life. *J. Health Soc. Behav.* 1997; **38**: 275–297.
8. Najman JM, Levine S. Evaluating the impact of medical care and technologies on the quality of life. A review and critique. *Soc. Sci. Med.* 1981; **15**: 107–115.
9. Campbell A. Subjective measures of well-being. *Am. Psychol.* 1976; Feb: 117–124.
10. Orley J, Saxena S, Herrman H. Quality of life and mental illness. *Br. J. Psychiatry* 1998; **172**: 291–293.
11. Haefner DP, Kirscht JP. Motivational and behavioral effects of modifying health beliefs. *Public Health Rep.* 1970; **85**: 478–484.
12. Jette AM, Cummings KM, Brock BM, Phelps MC, Naessens J. The structure and reliability of health belief indices. *Health Serv. Res.* 1981; **16**: 81–98.
13. Wells KB, Stewart A, Hays RD *et al.* The functioning and well-being of depressed patients. *J. Am. Med. Assoc.* 1989; **262**: 914–919.
14. Idler EL, Angel RJ. Self-rated health and mortality in the NHANES-I epidemiologic follow-up study. *Am. J. Public Health* 1990; **80**: 446–452.
15. Kaplan GA, Camacho T. Perceived health and mortality: a nine-year follow-up of the human population laboratory cohort. *Am. J. Epidemiol.* 1983; **117**: 292–304.
16. Maddox GL, Douglass EB. Self-assessment of health: a longitudinal study of elderly subjects. *J. Health Soc. Behav.* 1973; **14**: 87–93.
17. McCallum J, Shadbolt B, Wang D. Self-rated health and survival: a 7-year follow-up study of Australian elderly. *Am. J. Public Health* 1994; **84**: 1100–1105.

18. Mossey JM, Shapiro E. Self-rated health: a predictor of mortality among the elderly. *Am. J. Public Health* 1982; **72**: 800–808.
19. Okun MA, George LK. Physician- and self-ratings of health neuroticism and subjective well-being among men and women. *Person Individ. Diff.* 1982; **5**: 533–539.
20. Diener E. Subjective well-being. *Psychol. Bull.* 1984; **95**: 542–575.
21. Diener E, Emmons RA, Larsen RJ, Griffin S. The satisfaction with life scale. *J. Pers. Assess.* 1985; **49**: 71–75.
22. Muhlenkamp AF, Sayles JA. Self-esteem, social support, and positive health practices. *Nurs. Res.* 1986; **35**: 334–338.
23. Kozma A, Stones MJ. Some research issues and findings in the study of psychological well-being in the aged. *Can. Psychol. Rev.* 1978; **19**: 241–249.
24. Reid DW, Ziegler M. Validity and stability of a new desired control measure pertaining to psychological adjustment of the elderly. *J. Gerontol.* 1980; **35**: 395–402.
25. Wilson W. Correlates of avowed happiness. *Psychol. Bull.* 1967; **67**: 294–306.
26. Finkenauer C, Rimé B. Keeping emotional memories secret; health and subjective well-being when emotions are not shared. *J. Health Psychol.* 1998; **3**: 47–58.
27. Alston JP, Lowe GD, Wrigley A. Socioeconomic correlates for four dimensions of self-perceived satisfaction. *Hum. Organisation* 1972; **33**: 99–109.
28. Clemente F, Sauer WJ. Life satisfaction in the United States. *Social Forces* 1976; **54**: 621–631.
29. Larson R. Thirty years of research on the subjective well-being of older Americans. *J. Gerontol.* 1978; **33**: 109–125.
30. Wolk S, Telleen S. Psychological and social correlates of life satisfaction as a function of residential constraint. *J. Gerontol.* 1976; **31**: 89–98.
31. Cutler SJ. Membership in different types of voluntary associations and psychological well-being. *Gerontologist* 1976; **16**: 335–339.
32. Markides KS, Martin HW. A causal model of life satisfaction among the elderly. *J. Gerontol.* 1979; **34**: 86–93.
33. Palmore E. Predictors of successful aging. *Gerontologist* 1979; **19**: 427–431.
34. Beiser M. Components and correlates of mental well-being. *J. Health Soc. Behav.* 1974; **15**: 320–327.
35. Farmer MM, Ferraro KF. Distress and perceived health: mechanisms of health decline. *J. Health Soc. Behav.* 1997; **39**: 298–311.
36. Cooley EJ, Keesey JC. Moderator variables in life stress and illness relationship. *J. Hum. Stress* 1981; **7**: 35–40.
37. Schmidt LA, Fox NA. Individual differences in young adults' shyness and sociability: personality and health correlates. *Person Individ. Diff.* 1995; **19**: 455–462.
38. Watson D, Clark LA. Negative affectivity: The disposition to experience aversive emotional states. *Psychol. Bull.* 1984; **96**: 465–490.
39. Aoki Y, Fujihara S, Kitamura T. Panic attacks and panic disorder in a Japanese non-patient population: Epidemiology and psychosocial correlates. *J. Affective Disord.* 1994; **32**: 51–59.
40. Kitamura T, Watanabe M, Aoki M, Fujino M, Ura C, Fujihara S. Factorial structure and determinants of marital adjustment in a Japanese population. *J. Commun. Psychol.* 1995; **23**: 117–126.
41. Kitamura T, Kitahara T, Koizumi T, Takashi N, Chiou ML, Fujihara S. Epidemiology of child abuse in Japan: How big is the iceberg? *J. Forensic Psychiat.* 1995; **6**: 425–431.
42. Kawakami N, Iwata N, Tanigawa T *et al.* Prevalence of mood and anxiety disorders in a working population in Japan. *J. Occup Environ. Med.* 1996; **38**: 899–905.
43. Tanaka E, Sakamoto S, Ono Y, Fujihara S, Kitamura T. Hopelessness in a community population in Japan. *J. Clin. Psychol.* 1996; **52**: 609–615.
44. Kitamura T, Fujihara S, Iwata N, Tomoda A, Kawakami N. Epidemiology of psychiatric disorders in Japan. **In**: Nakane Y (ed.). *Images in Psychiatry, Japan.* World Psychiatric Association, Paris, 1999; 37–46.
45. Kawakami N, Iwata N, Fujihara S, Kitamura T. Prevalence of chronic fatigue syndrome in a community population in Japan. *Tohoku J. Exp. Med.* 1998; **186**: 33–41.
46. Kitamura T, Aoki M, Fujino M *et al.* Sex differences in marital and social adjustment. *J. Soc. Psychol.* 1998; **138**: 26–32.
47. Furukawa T, Ogura A, Hirai T, Fujihara S, Kitamura T, Takahashi K. Early parental separation experiences among patients with bipolar disorder and major depression: a case-control study. *J. Affective Disord.* 1999; **52**: 85–91.
48. Rosenberg M, Schooler C, Schoenbach C, Rosenberg F. Global self-esteem and specific self-esteem: Different concepts different outcomes. *Am. Sociol. Rev.* 1995; **60**: 141–156.
49. Kitamura T. *Time-Ordered Stress and Health Interview*. National Institute of Mental Health National Center of Neurology and Psychiatry, Ichikawa; 1992.
50. World Health Organization. *The Composite International Diagnostic Interview*. WHO, Geneva, 1990.
51. Endicott J, Spitzer RS. A diagnostic interview. The schedule for affective disorders and schizophrenia. *Arch. Gen. Psychiatry* 1978; **35**: 837–844.
52. Crowne DP, Marlowe D. A new scale of social desirability independent of psychopathology. *J. Consult. Psychol.* 1960; **24**: 349–354.
53. Kitamura T, Suzuki T. Nihongo-ban Social Desirability Scale ni tsuite [Japanese version of Social Desirability Scale]. *Jpn. J. Soc. Psychiatry* 1986; **9**: 173–180.
54. Brown GW, Harris T, Copeland JR. Depression and loss. *Br. J. Psychiatry* 1977; **130**: 1–18.
55. Parker G, Tupling H, Brown LB. A parental bonding instrument. *Br. J. Med. Psychol* 1979; **52**: 1–10.
56. SPSS Inc. *SPSS-X User's Guide, 3rd edn.* SPSS Inc, Chicago, 1988.
57. Cameron P. Mood as an indicant of happiness: Age sex social class and situational differences. *J. Gerontol.* 1975; **30**: 216–224.
58. Goodstein J, Zautra A, Goodhart D. A test of the utility of social indicators for behavioral health service planning. *Social Indicators Res.* 1982; **10**: 273–295.

59. Palmore E, Kivett V. Change in life satisfaction: a longitudinal study of persons aged 46–70. *J. Gerontol.* 1977; **32**: 311–316.
60. Sauer W. Morale of the urban aged: a regression analysis by race. *J. Gerontol.* 1977; **32**: 600–608.
61. Toseland R, Rasch J. Correlates of life satisfaction: an aid analysis. *Int. J. Aging Hum. Dev.* 1979; **10**: 203–211.
62. Tolor A. Personality correlates of the joy of life. *J. Clin. Psychol.* 1978; **34**: 671–676.
63. Kuhlen RG. Age trends in adjustment during the adult years as reflected in happiness ratings. *Am. Psychol.* 1948; **3**: 307.
64. Andrews FM, Withey SB. Developing measures of perceived life quality: Results from several national surveys. *Social Indicators Res.* 1974; **1**: 1–26.
65. Spreitzer E, Snyder EE. Correlates of life satisfaction among the aged. *J. Gerontol.* 1974; **29**: 454–458.
66. Czaja SJ. Age differences in life satisfaction as a function of discrepancy between real and ideal self concepts. *Exp. Aging Res.* 1975; **1**: 81–89.
67. Bortner RW, Hultsch DF. A multivariate analysis of correlates of life satisfaction in adulthood. *J. Gerontol.* 1970; **25**: 41–47.
68. Medley ML. Life satisfaction across four stages of adult life. *Int. J. Aging Hum. Dev.* 1980; **11**: 193–209.
69. Palys TS, Little BR. Perceived life satisfaction and the organization of personal project systems. *J. Person Soc. Psychol.* 1983; **44**: 1221–1230.
70. Lemon BW, Bengtson VL, Peterson JA. An exploration of activity theory of aging: Activity types and life satisfaction among in-movers to a retirement community. *J. Gerontol.* 1972; **27**: 511–523.
71. Maddox GL. Activity and morale: a longitudinal study of selected elderly subjects. *Social Forces* 1963; **42**: 195–204.
72. Mancini JA, Orthner DK. Situational influences on leisure satisfaction and morale in old age. *J. Am. Geriatr. Soc.* 1980; **28**: 466–470.
73. Totman R, Kiff J, Reed SE, Craig JW. Predicting experimental colds in volunteers from different measures of recent life stress. *J. Psychosom. Res.* 1980; **24**: 155–163.
74. Sheffield BF, Carney MWP. Crohn's disease: a psychosomatic illness? *Br. J. Psychiatry* 1976; **128**: 446–450.
75. Thomas C, Madden F, Jehu D. Psychological effects of stomas – II. Factors influencing outcome. *J. Psychosom. Res.* 1987; **31**: 317–323.
76. Horner KL. Individuality in vulnerability: Influences on physical health. *J. Health Psychol.* 1998; **3**: 71–85.
77. Markus HR, Kitayama S. Culture and the self. Implications for cognition emotion and motivation. *Psychol. Rev.* 1991; **98**: 224–253.
78. Suh E, Diener E, Oishi S, Triandis HC. The shifting basis of life satisfaction judgements across cultures: Emotions versus norms. *J. Person Soc. Psychol.* 1998; **74**: 482–493.
79. Buri JR, Louiselle PA, Misukanis TM, Mueller RA. Effects of parental authoritarianism and authoritativeness on self-esteem. *Person Soc. Psychol. Bull.* 1988; **14**: 271–282.
80. Demo DH, Small SA, Savin-Williams RC. Family relations and the self-esteem of adolescents and their parents. *J. Marriage Family* 1987; **49**: 705–715.
81. Felson RB, Zielinski MA. Children's self-esteem and parental support. *J. Marriage Family* 1989; **51**: 727–735.
82. Hoelter J, Harper L. Structural and interpersonal family influences on adolescent self-conception. *J. Marriage Family* 1987; **49**: 129–139.
83. Kawash GF, Kerr EN, Clewes JL. Self-esteem in children as a function of perceived parental behavior. *J. Psychol* 1985; **119**: 235–242.
84. Litovsky VG, Dusek JB. Perceptions of child rearing and self-concept development during the early adolescent years. *J. Youth Adolesc.* 1985; **14**: 373–387.
85. Bartle SE, Anderson SA, Sabatelli RM. A model of parenting style adolescent individuation and adolescent self-esteem: Preliminary findings. *J. Adolesc. Res.* 1989; **4**: 283–298.
86. Conte HR, Plutchik R, Picard S, Buck L, Karasu TB. Gender differences in recalled parental childrearing behaviors and adult self-esteem. *Compr. Psychiatry* 1996; **37**: 157–166.
87. Gecas V, Schwalbe ML. Parental behavior and adolescent self-esteem. *J. Marriage Family* 1986; **48**: 37–46.
88. Growe GA. Parental behavior and self-esteem in children. *Psychol. Rep.* 1980; **47**: 499–502.
89. Isberg RS, Hauser ST, Jacobson AM *et al.* Parental contexts of adolescent self-esteem: a developmental perspective. *J. Youth Adolesc.* 1989; **18**: 1–23.
90. Medinnus GR. Adolescents' self-acceptance and perceptions of their parents. *J. Consult. Psychol.* 1965; **29**: 150–154.
91. Openshaw DK, Thomas DL, Rollins BC. Parental influences of adolescent self-esteem. *J. Early Adolesc.* 1984; **4**: 259–274.
92. De Man AF. Autonomy-control variation in child rearing and level of self-acceptance in young adults. *J. Psychol.* 1981; **107**: 137–140.
93. Kitamura T, Kaibori Y, Takara N *et al.* Child abuse, other early experiences and depression: I. Epidemiology of parental loss, child abuse, perceived rearing experience and early life events among a Japanese community population. *Arch. Women's Ment. Health* 2000; **3**: 47–52.