

# Examining the appropriateness of importance weighting on satisfaction score from range-of-affect hypothesis: hierarchical linear modeling for within-subject data

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**Abstract** This study examines the range-of-affect hypothesis in a within-subject context using the weighting situation faced in quality of life (QOL) measurement. Data collected in Wu and Yao's (2006b) study were used (332 undergraduates at National Taiwan University). The mean age was 19.80 years ( $std = 1.98$ ). They completed a QOL questionnaire and indicated satisfaction, importance, and perceived have-want discrepancy on 12 life domains. Hierarchical linear modeling with a random-coefficients regression model was applied. At the first level (within-individual level), the satisfaction scores for each item were regressed on the have-want discrepancy, importance, and the interaction between have-want discrepancy and importance (have-want discrepancy  $\times$  importance) of the same item. At the second level (between-individual level), the intercept, coefficients of have-want discrepancy, importance and the interaction between have-want discrepancy and importance at the first level were regarded as varying randomly over all participants. Results of this study supported the range-of-affect hypothesis, showing that the relationship between item have-want discrepancy and item satisfaction is stronger for high importance items than low importance items for a given individual. Implications for important weighting on item satisfaction scores were discussed.

**Keywords** Discrepancy · Importance · Satisfaction · Hierarchical linear modeling · Quality of life

## 1 Introduction

Importance weighting is a common idea in quality of life (QOL) research. The normal procedure is to weight the satisfaction score with the importance score at the item level. Several instruments adopt this weighting method, such as the Comprehensive Quality Of

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Life Scale (ComQol, Cummins 1997), the Quality of Life Index (QOL Index, Ferrans and Powers 1985), the Quality of Life Inventory (QOL Inventory, Frisch 1992), the Quality of Life Profile-Adolescent version (QOLPAV, Raphael et al. 1996), and the Flanagan Quality of Life Scale (QOLS, reviewed in Dijkers 2003), to name a few.

However, Wu and Yao's (2006a) study adopting the four weighting algorithms developed by Cummins (1997), Raphael (1996), Ferrans and Powers (1985), and Frisch (1992) showed that the importance-weighted satisfaction score is not better than the unweighted score for predicting global life satisfaction. Hsieh (2003) and Russell, Hubley, Palepu, and Zumbo (2006) had similar findings for QOL measurements. Moreover, many empirical studies on job satisfaction have also reported that importance-weighted satisfaction scores are not superior to unweighted satisfaction scores in predicting criterion variables, such as employee turnover (e.g., Mikes and Hulin 1968; Waters and Roach 1971) and global job satisfaction (e.g., Ewen 1967; Rice, Gentile and McFarlin 1991; Staples and Higgins 1998; Waters, 1969; Waters and Roach 1971). Empirical results from these studies reveal that the satisfaction score weighted with the importance rating is not better than the unweighted score.

Recently, Wu and Yao (2006b, *in press*) explained the null finding on importance weighting in QOL measurements using Locke's (1969, 1976) range-of-affect hypothesis, which postulates that satisfaction evaluations reflect dual value judgments: (a) the discrepancy between what the individual wants and what he/she perceives himself/herself as getting, and (b) the importance to the individual of what is wanted. The level of satisfaction is influenced by the interaction of the have-want discrepancy with importance. Specifically, at a given level of discrepancy, an item with high personal importance can produce a wide affective reaction ranging from great satisfaction to great dissatisfaction, while an item with low personal importance can only produce a restricted affective reaction around the neutral point of the satisfaction-dissatisfaction dimension. Item satisfaction, therefore, already has incorporated within it information regarding the item's importance, which renders weighting item satisfaction with item importance redundant. The range-of-affect hypothesis was supported by Wu and Yao's (2006b, *in press*) study and has also been supported by many empirical studies on job satisfaction (McFarlin et al. 1995; McFarlin and Rice 1992; Mobley and Locke 1970; Rice et al. 1991a,b).

Most studies examining the range-of-affect hypothesis employed a between-subjects design (e.g., McFarlin et al. 1995; McFarlin and Rice 1992; Rice et al. 1991a; Rice et al. 1991b; Wu and Yao 2006b). Most also used regression analysis to show that item have-want discrepancy and item importance have a significant interaction effect in predicting item satisfaction. In this context, the range-of-affect hypothesis states that the relationship between item have-want discrepancy and item satisfaction is expected to be stronger among people attaching high importance to the said item than to people attaching low importance to that item.

However, a within-subject design is more desirable than a between-subject design in discussing the issue of importance weighting on satisfaction scores because an individual's QOL score is usually computed from scores in that person's various life areas. If Locke's hypothesis is supported by a within-subject design study, it would demonstrate that the degree of importance has already been considered when the individual makes a satisfaction evaluation of a life area and that weighting the item satisfaction score with item importance is unnecessary.

Some studies have examined the range-of-affect hypothesis in a within-subject context (Locke 1969; Mobley and Locke 1970; Wu and Yao *in press*). However, all of these studies were experimental. For example, Locke (1969) and Mobley and Locke (1970) used

different factors to manipulate conditions with different levels of importance, such as a condition with payment (important) versus non-payment (unimportant), a condition with intrinsic interest (important) versus non-intrinsic interest (unimportant), and a condition with a regular quiz (importance) versus a research quiz (unimportant). They found that participants' satisfaction or dissatisfaction with their performance was more extreme in important conditions than in unimportant conditions.

Wu and Yao (*in press*) used four scenarios to test the range-of-affect hypothesis. In each scenario, two people were described as wanting the same circumstances with respect to an ideal object defined by two dimensions. For example, in the first scenario, both A and B wanted "a large house in a convenient location". The house was the ideal object defined by the dimensions of size and location. However, in the scenario, A and B were described as having different opinions about the two dimensions. For example, A regarded size to be of greater importance than location, and B regarded location to be of greater importance than size. After reading this information, participants were asked to rate A's and B's level of satisfaction with respect to several objects. The proposed objects were defined by different levels of the same two dimensions, such as a 30-ping (1 ping = 3.3 square meters) house located in the city center (indicating convenient location), a 50-ping house located in the city center, a 30-ping house located in the suburbs, and a 50-ping house located in the suburbs. According to the range-of-affect hypothesis, it was predicted that when participants used A's viewpoint, the satisfaction ratings would depend on the size of the house, and when participants used B's viewpoint, the satisfaction ratings would depend on the location of the house. Indeed, in the four scenarios, when participants regarded one dimension as more important than the other, they were sensitive to the have-and-want gap for that dimension; the degree of satisfaction was affected. This finding reveals that altering participants' importance perceptions can affect satisfaction evaluations.

Although past findings support the range-of-affect hypothesis in a within-subject context (Locke 1969; Mobley and Locke 1970; Wu and Yao *in press*), the research contexts were not the same as when individuals make satisfaction and importance ratings of on several life domains. Existing studies have not shown that for a given person's response, the relationship between item have-want discrepancy and item satisfaction is stronger on the high-importance items than on low-importance ones. To apply the range-of-affect hypothesis to the standard weighting situation, it is necessary to test the hypothesis in that situation—this is the main purpose of this study.

Specifically, the range-of-affect hypothesis is examined in a within-subject context with data provided by each participant. The data were collected in Wu and Yao's (2006b) study, in which participants were asked to rate their satisfaction, have-want discrepancy, and importance on 12 life areas (one item for each area). Originally, Wu and Yao (2006b) tested the range-of-affect hypothesis with the data by each *life area* to show that the relationship between item have-want discrepancy and item satisfaction was stronger among people attaching high importance to the given item than to people attaching low importance to that item. In this study, the range-of-affect hypothesis is tested with the same data by each *person* to show that the relationship between item have-want discrepancy and item satisfaction is stronger among high importance item than low importance items for a given person. This analysis can be achieved through hierarchical linear modeling (or multilevel modeling). A two-level model was applied. At the first level (within-individual level), the satisfaction score of each item was regressed on the have-want discrepancy, importance, and the interaction between have-want discrepancy and importance (have-want discrepancy  $\times$  importance) of the same item. At the second level (between-individual level), the intercept, coefficients of have-want discrepancy, importance, and the interaction between

have-want discrepancy and importance at the first level were regarded as varying randomly over all participants. This model is also called the random-coefficients regression model. The mathematical equations for  $i$  items and  $j$  individuals of the model were:

Level-1:

$$SAT_{ij} = \beta_{0j} + \beta_{1j}(DIS_{ij} - \overline{DIS}_j) + \beta_{2j}(IMP_{ij} - \overline{IMP}_j) + \beta_{3j}(DIS_{ij} - \overline{DIS}_j) \times (IMP_{ij} - \overline{IMP}_j) + r_{ij},$$

Level-2:

$$\begin{aligned} \beta_{0j} &= \gamma_{00} + \mu_{0j}, \\ \beta_{1j} &= \gamma_{10} + \mu_{1j}, \\ \beta_{2j} &= \gamma_{20} + \mu_{2j}, \\ \beta_{3j} &= \gamma_{30} + \mu_{3j}, \end{aligned}$$

where  $r_{ij} \sim N(0, \sigma^2)$  and  $\begin{pmatrix} \mu_{0j} \\ \mu_{1j} \\ \mu_{2j} \\ \mu_{3j} \end{pmatrix} \sim N \left( \begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \end{pmatrix}, \begin{pmatrix} \tau_{00} & \tau_{01} & \tau_{02} & \tau_{03} \\ \tau_{10} & \tau_{11} & \tau_{12} & \tau_{13} \\ \tau_{20} & \tau_{21} & \tau_{22} & \tau_{23} \\ \tau_{30} & \tau_{31} & \tau_{32} & \tau_{33} \end{pmatrix} \right)$

In this model, SAT means satisfaction, DIS means have-want discrepancy, and IMP means importance for the three main variables. All three variables were centered with respect to the mean of each individual to gain a meaningful intercept and avoid multicollinearity from interaction terms. The main focus was to determine whether the interaction effect between have-want discrepancy and importance was significant in predicting satisfaction across items at a within-individual level. If so, it can be inferred that the relationship between item have-want discrepancy and item satisfaction is stronger among high importance items than low importance items for individuals and the range-of-affect hypothesis will be supported for the standard weighting situation in QOL research.

## 2 Method

### 2.1 Data Description

The dataset was taken from Wu and Yao (2006b). It included 332 undergraduate students (63.3% female ( $n = 210$ ) and 35.8% male ( $n = 119$ ), three participants did not report their gender) from National Taiwan University. The mean age was 19.80 years ( $SD = 1.98$ ). They completed a QOL questionnaire, which contains 12 life areas, including (1) energy and fatigue, (2) sleep and rest, (3) work capacity (with learning), (4) social support, (5) physical safety and security, (6) financial resources, (7) health and social care (accessibility and quality), (8) opportunities for acquiring new information and skills, (9) physical environment, (10) home environment, (11) transport, and (12) participation in and opportunities for recreation/leisure. In the first section, participants rated their satisfaction with these 12 items on a seven-point Likert scale ranging from 1 (*very dissatisfied*) to 7 (*very satisfied*). A seven-point Likert scale was used to ensure enough variance on satisfaction. Next, they rated their have-want discrepancy on the 12 items on a five-point Likert-type scale ranging from  $-4$  (*large discrepancy from the want status*) to 0 (*the same as the want status*). In the following analysis, the scores were recoded from 5 to 1 to let the

higher values indicate larger a discrepancy. Finally, they were asked to rate the importance of the 12 items on a five-point Likert scale ranging from 1 (*not at all important*) to 5 (*very important*).

### 3 Results

#### 3.1 Descriptive Statistics

Table 1 presents the mean and standard deviation of item satisfaction, item discrepancy, and item importance.

#### 3.2 Correlation Analysis

In Table 2, correlations between item satisfaction, item importance, and item discrepancy for the 12 items are presented. According to the results, item satisfaction had a strong correlation with item discrepancy (correlations ranged from  $-0.45$  to  $-0.73$  with a mean of  $-0.62$ ), item importance generally had a moderate or non-significant relation with item satisfaction (correlations ranged from  $-0.19$  to  $0.50$  with a mean of  $0.10$ ), and item discrepancy (correlations ranged from  $-0.28$  to  $0.29$  with a mean of  $0.08$ ).

#### 3.3 Hierarchical Linear Modeling

Table 3 presents the results of the random-coefficients regression model from a PROC MIXED procedure in SAS 8.1 (SAS Institute Inc. 1999, 2000). Generally, this model was better than the null model ( $\chi^2(df = 10) = 874.61, p < 0.01$ ). The  $R^2$  for the within-individual level (defined as the proportion reduction of error for predicting an individual outcome) was 0.33. For each parameter, the intercept estimate ( $\gamma_{00}$ ) showed that the mean

**Table 1** Descriptive Statistics of Item Satisfaction, Discrepancy, and Importance Ratings ( $n = 332$ )

Items	Satisfaction		Discrepancy		Importance	
	Mean	Std.	Mean	Std.	Mean	Std.
1. Energy	4.25	1.38	3.00	1.04	4.09	0.77
2. Sleep	3.89	1.54	3.01	1.22	4.27	0.80
3. Learning	4.23	1.33	2.81	1.14	4.41	0.66
4. Social support	5.05	1.39	2.03	1.12	3.93	1.06
5. Safety and security	4.92	1.21	2.26	1.00	3.83	0.90
6. Financial resources	4.38	1.49	2.43	1.19	4.02	0.82
7. Health care	4.83	1.22	1.93	0.90	3.62	0.92
8. Information	5.01	1.23	1.86	0.92	3.92	0.88
9. Physical environment	3.48	1.33	3.22	1.13	3.85	0.93
10. Living condition	4.31	1.44	2.68	1.11	4.00	0.83
11. Transport	4.47	1.38	2.30	1.03	3.89	0.84
12. Recreation	4.29	1.35	2.53	1.07	4.09	0.86

**Table 2** Correlations between Item Importance, Item Satisfaction and Item Discrepancy for Each Item

Item	Corr (SAT, DIS)	Corr (SAT, IMP)	Corr (DIS, IMP)
1. Energy	-0.56**	0.14**	-0.02
2. Sleep	-0.70**	0.03	0.08
3. Learning	-0.64**	0.00	0.11*
4. Social support	-0.73**	0.50**	-0.28**
5. Safety and security	-0.45**	0.00	0.11*
6. Financial resources	-0.72**	-0.19**	0.29**
7. Health care	-0.51**	0.16**	-0.04
8. Information	-0.60**	0.16**	0.02
9. Physical environment	-0.62**	-0.10	0.23**
10. Living condition	-0.66**	-0.06	0.03
11. Transport	-0.65**	0.03	0.07
12. Recreation	-0.59**	0.14**	0.03

\*  $p < 0.05$ , \*\*  $p < 0.01$

**Table 3** Results of random-coefficients regression model

Effects	Coefficient	Standard Error
Fixed effect		
Intercept ( $\gamma_{00}$ )	4.44	0.06
DIS ( $\gamma_{10}$ )	-0.80**	0.03
IMP ( $\gamma_{20}$ )	0.06*	0.03
DHS $\times$ IMP ( $\gamma_{30}$ )	-0.11**	0.03
Random effect - Variance component		
Intercept ( $\tau_{00}$ )	0.59**	0.07
DIS slope ( $\tau_{11}$ )	0.05**	0.01
IMP slope ( $\tau_{22}$ )	0.01	0.01
DIS $\times$ IMP slope ( $\tau_{33}$ )	0.01	0.01
Residual ( $\gamma_{ij}$ )	0.71**	0.02
Random effect - Covariance component		
Intercept and DIS slope ( $\tau_{10}$ )	-0.02	0.02
Intercept and IMP slope ( $\tau_{20}$ )	0.05*	0.02
Intercept and DIS $\times$ IMP slope ( $\tau_{30}$ )	0.05*	0.03
DIS slope and IMP slope ( $\tau_{21}$ )	0.01	0.01
DIS slope and DIS $\times$ IMP slope ( $\tau_{31}$ )	-0.01	0.01
IMP slope and DIS $\times$ IMP slope ( $\tau_{32}$ )	-0.00	0.01
Deviance = 6090.2; $R^2$ for the within-individual level = 0.33.		

\*  $p < 0.05$ , \*\*  $p < 0.01$

item satisfaction was 4.44. Also, the three slopes associated with item have-want discrepancy, item importance, and the interaction between item have-want discrepancy and item importance were all significant in predicting item satisfaction. The coefficients showed that item have-want discrepancy has a negative relation with item satisfaction, item importance has a slightly positive relation with item satisfaction, and that the negative

relationship between item have-want discrepancy and item satisfaction is stronger when importance is higher. This finding is consistent with the range-of-affect hypothesis and also with the regression results for each item in Wu and Yao's (2006b) study.

In addition, results showed significant variance of intercept ( $\tau_{00}$ ) and slope of item have-want discrepancy ( $\tau_{11}$ ), implying that there were significant individual differences in mean item satisfaction and in the relation between item have-want discrepancy and item satisfaction. The significant residual ( $\gamma_{ij}$ ) also indicated there was a great amount of variance that was not accounted for by this model.

Moreover, the significant covariance between intercept and item importance slope ( $\tau_{20}$ ) revealed that the contribution of item importance to item satisfaction was stronger among people with higher mean item satisfaction. The significant covariance between intercept and interaction slope ( $\tau_{30}$ ) revealed that the moderating effect of item importance on the relationship between item have-want discrepancy and item satisfaction was stronger among people with higher mean item satisfaction, suggesting that the phenomena described in range-of-affect hypothesis is more salient among people with higher mean item satisfaction.

#### 4 Discussion

The main purpose of this study was to examine the range-of-affect hypothesis in the within-subject context of the weighting situation faced in QOL measurement. Results of this study support the range-of-affect hypothesis, showing that the relationship between item have-want discrepancy and item satisfaction is stronger for high importance items than low importance items for an individual.

The range-of-affect hypothesis was cogently supported because it has been supported in different contexts with different research methods. It has been supported in a between-subject context with an ordinary regression model demonstrating that the relationship between item have-want discrepancy and item satisfaction is stronger among people attaching high importance to a particular item than to people attaching low importance to that item (e.g., McFarlin et al. 1995; McFarlin and Rice 1992; Rice et al. 1991a; Wu and Yao 2006b). In addition, Rice et al. (1991b) conducted two between-subject experiments to show that the level of have-want discrepancy contributes more to satisfaction evaluations for people in the high importance condition than for those in the low importance condition. In a within-subject context, the range-of-affect hypothesis was first supported by within-subject experiments conducted by Locke (1969), Mobley and Locke (1970), and Wu and Yao (in press). These experiments showed that at a given have-want discrepancy level, altering personal importance perceptions can affect the satisfaction evaluations made by an individual. Finally, in the current study, the range-of-affect hypothesis was again supported in a within-subject context using a common weighting situation in which an individual provided satisfaction, have-want discrepancy, and importance ratings for various items. All these results revealed that item satisfaction reflects not only the item have-want discrepancy, but also the item importance. Hence, these findings imply that weighting item satisfaction scores with item importance is redundant.

The range-of-affect hypothesis also has implications for QOL promotion. Specifically, the range-of-affect hypothesis postulates that there are two components that influence satisfaction evaluations, that is, have-want discrepancy and importance perceptions. To enhance an individual's QOL, one can either reduce the gap between the current status and the wanted status, or change the person's importance perception to stress life areas with a

small have-want discrepancy and discount life areas with larger have-want discrepancies. It is well known in QOL research that reducing have-want discrepancy can promote an individual's life satisfaction. For example, Campbell, Converse, and Rogers (1976) proposed that QOL is related to the perceived discrepancy between current and wanted life status, that is, the larger the discrepancy, the lower the QOL. Other scholars have also proposed similar definitions of QOL (e.g., Calman 1984; Diener et al. 1985; Locke 1969, 1976; Michalos 1985; Shin and Johnson 1978). This perspective has also been empirically supported, revealing that a large discrepancy between have and want in life status is associated with lower life satisfaction (e.g., Cohen 2000; Schulz 1995; Vermunt, Spaans, and Zorge 1989; Welham, Haire, Mercer, and Stedman 2001).

Only a few studies have tried to show that changing importance perceptions can contribute to a better QOL. This attempt is usually referred to as *response shift*. Response shift refers to

a change in the meaning of one's self-evaluation of a target construct as a result of: (a) a change in the respondent's internal standards of measurement (scale recalibration, in psychometric terms); (b) a change in the respondent's values (i.e. the importance of component domains constituting the target construct); or (c) a redefinition of the target construct (i.e., reconceptualization) (Sprangers and Schwartz 1999).

Several studies have found that people will change the importance of life domains or reconceptualize the meaning of life according to their health status (e.g., Jansen et al. 2000; Rapkin 2000; Rapkin and Shwartz 2004; Schwartz, Coulthard-Morris, Cole, and Vollmer 1997). This response shift phenomena has been used to explain why people with severe chronic illnesses report QOL equal or superior to less severely ill or healthy people (see Rapkin and Shwartz 2004; Sprangers and Schwartz 1999). People with severe chronic illnesses change their life purpose and standards according to the progress of their illness, therefore, their QOL is maintained at a certain level because they use different standards to evaluate their life at different times.

A similar notion has also been discussed in the goal adjustment process in psychology. Wrosch and Scheier (2003) pointed that QOL is related to the process of giving up unattainable goals and finding new and more meaningful goals to pursue. They argued that people who confront unattainable goals are better at disengaging from those goals and re-engaging in alternative, meaningful activities. Many empirical studies have found that people who can shift their importance perception of different life goals according to their situation have higher life satisfaction (e.g., Moskowitz, Folkman, Collette, and Vittinghoff 1996; Rapkin 2000; Tunali and Power 1993; Wrosch and Heckhausen 1999; Wrosch, Scheier, Miller, Schulz and Carver 2003). All these studies stress that changing importance perceptions or standards of life areas can also be beneficial to an individual's QOL. However, QOL researchers have not paid much attention to this pathway for enhancing an individual's QOL. In future studies, it would be worth investigating whether people who have a tendency to upgrade the importance of life areas with a small have-want discrepancy and downgrade the importance of life areas with a large have-want discrepancy have a higher QOL, and to determine whether this tendency is intensified when people face dramatic life changes as a buffer against these changes.

Finally, several limitations of this study should be addressed. First, although the random-coefficients regression model supported the range-of-affect hypothesis, there were also significant individual differences in mean item satisfaction and the slope between item have-want discrepancy and item satisfaction. In addition, the significant residual also



indicated there was a great amount of variance that was not accounted for by this model. With hierarchical linear modeling, the unexplained variance can be easily accounted for by adding predictors at the second level (between-individuals level). However, because the original design of the survey was to examine the range-of-affect hypothesis, not to investigate which characteristics influence effects in the range-of-affect hypothesis, no between-individual characteristics were assessed in the survey, resulting in a restriction for explaining the individual differences observed in the random-coefficients regression model.

This is the first study to examine the range-of-affect hypothesis with questionnaire data by hierarchical linear modeling. It is not clear whether the individual differences observed in this study are reliable across different samples and contents. However, cross-validation can be easily done by applying the same analysis to survey data collected in previous studies, such as McFarlin et al. (1995), McFarlin and Rice (1992) and Rice et al.'s (1991a) studies. These studies measured participants' satisfaction, have-want discrepancy, and importance ratings on various items for different job facets. The random-coefficients regression model could be easily applied to this data to determine whether the results can be replicated.

In summary, this study showed that the relationship between item have-want discrepancy and item satisfaction was stronger for high importance items than low importance items for a given individual, supporting the range-of-affect hypothesis in the common weighting situation faced in QOL measurement. This result revealed that weighting item satisfaction scores with item importance scores may be unnecessary because item importance has been considered in a satisfaction evaluation. However, additional replications from other samples and circumstances should be provided to evaluate the utility of important weighting on satisfaction scores. Further, the two pathways for enhancing QOL that can be derived from the range-of-affect hypothesis (reducing have-want discrepancy and changing importance perceptions) can be elaborated and extended in future QOL research.

## References

- Calman, K. C. (1984). Quality of life of cancer patients-A hypothesis. *Journal of Medical Ethics*, 10, 124–127.
- Campbell, A., Converse, P. E. & Rogers, W. L. (1976). *Quality of American life: Perceptions, evaluations and satisfaction*. New York: Russell Sage Foundation.
- Cohen, E. H. (2000). A facet theory approach to examining overall and life facet satisfaction relationships. *Social Indicators Research*, 51, 223–237.
- Cummins, R. A. (1997). *Comprehensive quality of life scale – Adult: Manual*. Deakin: University Australia.
- Diener, E., Emmons, R. A., Larsen, R. J. & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, 49, 71–75.
- Dijkers, M. P. (2003). Individualization in quality of life measurement: Instruments and approaches. *Archives of Physical Medicine and Rehabilitation*, 84, S3–14.
- Ewen, R. B. (1967). Weighting components of job satisfaction. *Journal of Applied Psychology*, 51, 68–73.
- Ferrans, C. & Powers, M. (1985). Quality of life index: Development and psychometric properties. *Advances in Nursing Science*, 8, 15–24.
- Frisch, M. B. (1992). Use of the quality of life inventory in problem assessment and treatment planning for cognitive therapy of depression. In: Freeman, A. & Dattlio, F. M., (Eds.), *Comprehensive Casebook of Cognitive Therapy*. New York: Plenum Press.
- Hsieh, C. M. (2003). Counting importance: The case of life satisfaction and relative domain importance. *Social Indicators Research*, 61, 227–240.
- Jansen, S. J., Stiggelbout, A. M., Nooij, M. A., Noordijk, E. M. & Kievit, J. (2000). Response shift in quality of life measurement in early-stage breast cancer patients undergoing radiotherapy. *Quality of Life Research*, 9, 603–615.

- Locke, E. A. (1969). What is job satisfaction? *Organizational Behavior and Human Performance*, 4, 309–336.
- Locke, E. A. (1976). The nature and causes of job satisfaction. In: Dunnette, M. D. (Eds.), *Handbook of industrial and organizational psychology*. (pp 1297–1343). Chicago: Rand McNally.
- McFarlin, D. B., Coster, E. A., Rice, R. W. & Cooper-Alison, T. (1995). Facet importance and job satisfaction: Another look at the range of affect hypothesis. *Basic and Applied Social Psychology*, 16, 489–502.
- McFarlin, D. B. & Rice, R. W. (1992). The role of facet importance as a moderator in job satisfaction processes. *Journal of Organizational Behavior*, 13, 41–54.
- Michalos, A. C. (1985). Multiple discrepancy theory (MDT). *Social Indicators Research*, 16, 347–413.
- Mikes, P. S. & Hulin, C. L. (1968). Use of importance as weighting component of job satisfaction. *Journal of Applied Psychology*, 52, 394–398.
- Mobley, W. H. & Locke, E. A. (1970). The relationship of value importance to satisfaction. *Organisational Behavior and Human Performance*, 5, 463–483.
- Moskowitz, J. T., Folkman, S., Collette, L. & Vittinghoff, E. (1996). Coping and mood during AIDS-related caregiving and bereavement. *Annals of Behavioral Medicine*, 18, 49–57.
- Raphael, D., Rukholm, E., Brown, I., Hill-Bailey, P. & Donato, E. (1996). The quality of life profile-Adolescent version: Background, description, and initial validation. *Journal of Adolescent Health*, 19, 366–375.
- Rapkin, B. D. & Shwartz C. E. (2004). Toward a theoretical model of quality of life appraisal: Implications of findings from studies of response shift. *Health and Quality of Life Outcomes*, 2, 14.
- Rapkin, B. D. (2000). Personal goals and response shifts: Understanding the impact of illness and events on the quality of life of people living with AIDS. In: Schwartz, C. E. & Sprangers, M. A. G. (Eds.), *Adaptation to changing health: Response shift in quality of life research*. Washington D.C.: American Psychological Association.
- Rice, R. W., Gentile, D. A. & McFarlin D. B. (1991a). Facet importance and job satisfaction. *Journal of Applied Psychology*, 76, 31–39.
- Rice, R. W., Markus, K., Moyer, R. P. & McFarlin, D. B. (1991b). Facet importance and job satisfaction: Two experimental tests of Locke's range of affect hypothesis. *Journal of Applied Social Psychology*, 21, 1977–1987.
- Russell, L. B., Hubley, A. M., Palepu, A., Zumbo, B. D. (2006). Does weighting capture what's important? Revisiting subjective importance weighting with a quality of life measure. *Social Indicators Research*, 75, 141–167.
- SAS Institute Inc (1999). SAS/STAT User's guide, version 8 (SAS Institute Inc, Cary, NC).
- SAS Institute Inc (2000). SAS/STAT Software: Changes and enhancements, Release 8.1 (SAS Institute Inc, Cary, NC).
- Schulz, W. (1995). Multiple-discrepancies theory versus resource theory. *Social Indicators Research*, 34, 153–169.
- Schwartz, C. E., Coulthard-Morris, L., Cole, B. & Vollmer, T. (1997). The quality-of-life effects of Interferon-Beta-1b in multiple sclerosis: An Extended Q-TWiSt analysis. *Archives of Neurology*, 54, 1475–1480.
- Shin, D. C. & Johnson, D. M. (1978). Avowed happiness as an overall assessment of the quality of life. *Social Indicators Research*, 5, 475–492.
- Sprangers, M. A. G. & Schwartz, C. E. (1999). Integrating response shift. into health-related quality of life research: A theoretical model. *Social Science and Medicine*, 48, 1507–1515.
- Staples, D. S. & Higgins, C. A. (1998). A study of the impact of factor importance weightings on job satisfaction measures. *Journal of Business and Psychology*, 13, 211–232.
- Tunali, B. & Power, T. G. (1993). Creating satisfaction: A psychological perspective on stress and coping in families of handicapped children. *Journal of child psychology and psychiatry*, 34, 945–957.
- Vermunt, R., Spaans, E. & Zorge, F. (1989). Satisfaction, happiness and well-being of Dutch students. *Social Indicators Research*, 21, 1–33.
- Waters, L. K. (1969). The utility of importance weights in predicting overall job satisfaction and dissatisfaction. *Educational and Psychological Measurement*, 29, 519–522.
- Waters, L. K. & Roach, D. (1971). Comparison of unweighted and importance-weighted job satisfaction measures for three samples of female office workers. *Psychological Reports*, 28, 779–782.
- Welham J., Haire M., Mercer D. & Stedman T. (2001). A gap approach to exploring quality of life in mental health. *Quality of Life Research*, 10, 421–429.
- Wrosch, C. & Heckhausen, J. (1999). Control processes before and after passing a developmental deadline: Activation and deactivation of intimate relationship goals. *Journal of Personality and Social Psychology*, 77, 415–427.

- Wrosch, C. & Scheier, M.F. (2003). Personality and quality of life: The importance of optimism and goal adjustment. *Quality of Life Research*, 12, 59–72.
- Wrosch, C., Scheier, M. F., Miller, G. E., Schulz, R. & Carver, C. S. (2003). Adaptive self-regulation of unattainable goals: Goal disengagement, goal re-engagement, and subjective well-being. *Personality and Social Psychology Bulletin*, 29, 1494–1508.
- Wu, C. H. & Yao, G., (2006a). Do we need to weight satisfaction scores with importance ratings in measuring quality of life?. *Social Indicators Research*, 78, 305–326.
- Wu, C.H. & Yao, G. (2006b). Do we need to weight satisfaction scores with importance ratings in measuring quality of life?. *Social Indicators Research*, 79, 485–502.
- Wu, C.H., Yao, G. in press, Importance has been considered in satisfaction evaluation: An experimental examination of Locke's range-of-affect hypothesis. *Social Indicators Research*. (in press).