Importance Weighting in Client Satisfaction Measures:

Lessons from the Life Satisfaction Literature

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ABSTRACT

This article examines the role of perceived importance of service elements, or importance weighting, in client satisfaction measures. Drawing on the debate over importance weighting in the life satisfaction literature, this article assesses the adequacy of and the need for importance weighting in client satisfaction measures. Based on a client satisfaction survey ($N = 156$), the current study explored 1) whether or not all service elements of homecare services were considered equally important, and 2) whether or not the relationships between overall satisfaction with homecare services and satisfaction with various service elements of homecare services varied significantly across perceived importance of service elements. Findings showed that 1) not all service elements of homecare services were considered equally important, and 2) relationships between overall satisfaction with homecare services and satisfaction with various service elements of homecare services varied significantly across perceived importance of service elements. The findings support the incorporation of perceived importance of service elements into client satisfaction measures.

Importance Weighting in Client Satisfaction Measures: Lessons from the Life Satisfaction

Literature

1. Introduction

A decade ago, Hsieh and Essex (2006) proposed a client-centered approach for constructing client satisfaction measures in social services. A main feature of the approach was the incorporation of clients' perceived importance of various service elements into client satisfaction measures (Hsieh, 2006; Hsieh & Essex, 2006). Take elderly case management services as an example, a client's satisfaction with the elderly case management services as a whole may depend on the client's satisfaction with various service elements involved in elderly case management services, including 1) assessment of needs, 2) plan of care, 3) case manager's knowledge about services available, 4) case manager's ability to get services for her/him, and 5) case manager's availability (Hsieh, 2006). Often times, evaluators will use rating scale items to measure clients' satisfaction for each service element (assessment of needs, plan of care, and so on) and then average or sum the satisfaction scores across all service elements to represent the overall satisfaction. The practice of averaging or summing the satisfaction scores across service elements makes an implicit assumption: all service element satisfactions contribute equally to the overall satisfaction. The assumption of equal contribution, often termed equal weight (e.g., Hsieh, 2009, 2012a, 2012b, 2014), is counter-intuitive because it seems unlikely that all service elements are perceived equally important to all clients. To account for the potential individual differences, Hsieh and Essex (2006) suggested the use of perceived importance of service element as a weighting factor for client satisfaction measures. The approach by Hsieh and Essex (2006) defines client satisfaction as the client's sense of service quality that stems from

satisfaction or dissatisfaction with the service elements that are important to him or her

The argument for using perceived importance as a weighting factor, also known as importance weighting, has been seen in different areas of literature, including quality of life (subjective well-being and life satisfaction, in particular), self-esteem, and job satisfaction (e.g., Hsieh, 2012c; Russell & Hubley, 2005). Although importance weighting appears to be intuitively appealing (e.g., Campbell, Converse, & Rogers, 1976; Hsieh 2003, 2004), arguing against the use of importance weighting has not been uncommon (e.g., Campbell et al., 1976; Russell, Hubley, Palepu, & Zumbo. 2006; Wu, 2008a, b; Wu & Yao 2006a, b, 2007). The purpose of this paper is to examine the role of importance weighting in the context of client satisfaction measures that follow the so-called formative-indicators measurement approach (e.g., Bollen & Lennox, 1991). Before presenting empirical findings regarding the role of importance weighting in the context of client satisfaction measures, it is important to summarize and evaluate the major claims for and against importance weighting. The literature review section below is a summary and assessment of the major claims for and against importance weighting.

2. Literature Review

Although debate over the adequacy of or the need for importance weighting occurs in multiple areas of research, the major arguments against importance weighting are similar (e.g., Russell & Hubley, 2005). These arguments can be categorized as conceptual and empirical (e.g., Hsieh, 2012c, 2013, 2014), and the following is a discussion of these arguments.

2.1. Conceptual Basis Opposing Importance Weighting

As Hsieh (2012c, 2013, 2014) indicated, the main conceptual basis for arguing against importance weighting (e.g., Wu, 2008a, 2008b; Wu & Yao, 2006a, 2006b, 2007) was based on the literature on life satisfaction and job satisfaction. Specifically, the main conceptual basis was

Locke's range-of-affect hypothesis (Locke, 1969, 1976, 1984). According to the range-of-affect

hypothesis, satisfaction with specific job facets (such as pay/salary, opportunity for promotion

and so on) is determined by: 1) have-want discrepancy, or the perceived discrepancy between the

amount of the job facets that individuals feel they experience (have) and the amount they want to

experience, and 2) facet importance, or the importance that individuals perceive with various job

facets (Locke, 1969, 1976). The range-of-affect hypothesis proposed that facet (of job)

satisfaction is influenced by the interaction of the facet have-want discrepancy and facet

importance. In particular, at a given discrepancy level, a facet with high importance should

produce a wide range of satisfaction level, while a facet with low importance should only

produce a narrow range of satisfaction level -- around the middle of the satisfaction-

dissatisfaction spectrum (Locke, 1969, 1976). Support for the range-of-affection hypothesis has

mostly appeared in the job satisfaction literature (e.g., McFarlin, Coster, Rice & Coopper-Alison,

1995; McFarlin & Rice, 1992; Rice, Gentile & McFarlin, 1991; Rice, Markus, Moyer &

McFarlin, 1991), and more recently, in the life satisfaction literature (e.g., Wu, 2008a, 2008b;

Wu & Yao, 2006a, 2006b, 2007).

Extending the range-of-affect hypothesis, Locke (1969, 1976) argued that the relationship

between facet satisfaction and overall job satisfaction should follow an unweighted additive

model. That is, overall job satisfaction should be a simple sum of satisfactions across various

facets of job. Specifically, Locke (1969, 1976) argued that facet satisfaction had already included

the judgment of facet importance (also known as implicit weighting), weighting facet satisfaction

with facet importance would be redundant. Support for implicit weighting has been provided by

showing that each individual facet importance did not moderate the relationship between the

specific facet satisfaction and overall job satisfaction in the job satisfaction literature (e.g.,

McFarlin & Rice, 1992; McFarlin et al., 1995) or that each individual facet importance did not

moderate the relationship between the specific facet satisfaction and overall life satisfaction in

the life satisfaction literature (e.g., Wu 2008a, b; Wu & Yao 2006a, b, 2007).

2.2 Unsettled Issues Regarding Conceptual Arguments Opposing Importance Weighting

Arguments against importance weighting based on Locke's range-of-affect hypothesis

(1969, 1976) appear straightforward. After all, if importance has already been included in the

evaluation of satisfaction, it would be redundant to weight satisfaction with importance (the

concept of implicit weighting). The issue, however, may not necessarily be so clear-cut for at

least two reasons. First, the concept of implicit weighting speaks to the relationships between

discrepancy, importance and satisfaction *within* a *single* facet. In other words, implicit weighting

does *not* speak directly to the relationships *between* satisfactions with *multiple* facets. The major

focus of the topic of importance weighting, on the other hand, is on the relationships between

(and across) satisfactions with multiple facets. The concept of implicit weighting, which does not

speak directly to the relationships between or across satisfactions with multiple facets, does not

necessarily offer a sound conceptual basis to argue against importance weighting.

Second, Locke (1969, 1976) argued that overall job satisfaction should be obtained by

simply adding across all facet satisfactions. That is, the relationship between facet satisfactions

and overall job satisfaction is an unweighted additive one. In order to support the argument, there

has to be a consistent relationship that has the characteristic of perfect substitution between facet

satisfactions for all facets (see Rojas, 2006 for a detailed discussion). However, the literature on

range-of-affect hypothesis has not offered any concrete conceptual justifications for the

argument of a consistent and perfect substitution relationship between facet satisfactions (e.g.,

Hsieh, 2012c). As a matter of fact, empirical evidence from job satisfaction literature seemed to suggest against the simple additive relationship advocated by Locke (1969, 1976). For example, in a study with 97 working college students, Rice, Gentile, and McFarlin (1991) showed that there was a significant curvilinear (quadratic form) relationship between global job satisfaction and two (out of a total 12) facet satisfactions. The same curvilinear relationship between global job satisfaction and facet satisfaction was not found in the remaining 10 facets studied. Since the relationship between global (job) satisfaction and facet satisfaction did not appear consistent across facets, assuming a consistent and perfect substitution relationship between facet satisfactions is questionable.

2.3 Conceptual Support for Importance Weighting

The practice of importance weighting is not without any conceptual support. Conceptual support for importance weighting can be found in the life satisfaction and quality of life (QoL) literature (e.g., Hsieh, 2012c). Although different terms have been used, such as "domain importance" (Campbell et al., 1976), "value priority" (Inglehart, 1978), and "psychological centrality" (Ryff & Essex, 1992), these terms similarly reflect the potential inter-person differences in perceived importance of various life facets, or the commonly termed life domains, in the QoL as well as life satisfaction, literature. These different terms, domain importance, value priority, and psychological centrality, may reflect the psychological construct of valence (Barrett, 2006; Soloman & Stone, 2002). For example, contribution of satisfaction or dissatisfaction with the marriage domain (or facet) to overall life satisfaction may be different for people who are in the process of a divorce than for people who are newlywed and on their honeymoons. These different terms, domain importance, value priority, and psychological centrality, may also

capture the psychological construct of salience (e.g., Taylor & Fiske, 1978; Taylor & Thompson, 1982). For example, contribution of satisfaction or dissatisfaction with campus/school related life domains (or facets) to overall life satisfaction may be different for people who are (full-time) students than for people who are not students. In addition, some researchers conceptualized satisfaction and importance following an interactive model (Hsieh, 2012c). For example, the Quality of Life Index (QLI) of Ferrans and Powers defined QoL as "a person's sense of well-being that stems from satisfaction or dissatisfaction with the areas of life that are important to him/her" (Ferrans, 1990, p.15). Given that satisfaction and importance are not identical concepts (Russell et al., 2006), weighting satisfaction with importance appears justified, based on the definition of QoL of the Ferrans and Powers' QLI (Ferrans & Powers, 1985).

2.4 Arguments Opposing Importance Weighting Based on Empirical Evidence

The empirically-based arguments used to oppose importance weighting centered on showing the evidence that facet or domain importance as a weighting factor failed to show any noticeable increase in the power to explain variations in global satisfaction measures, in comparison with a simple sum of facet or domain satisfaction scores (e.g., Campbell et al., 1976; McFarlin & Rice, 1992; McFarlin et al., 1995; Russell et al., 2006; Wu, 2008a, 2008b). In general, studies exploring the topic of importance weighting follow an approach with the following three characteristics: 1) selecting a limited number of global satisfaction measures as criterion variables (often a single one) to assess the performance of importance weighting, 2) using a limited number of weighting methods to develop importance weighting, and 3) choosing a limited number of facets or domains to construct the satisfaction measures (Hsieh, 2003; 2004; 2012c; Russell et al., 2006). For example, Wu and Yao (2006a) assessed the performance of importance weighting, using the Satisfaction with Life Scale (Diener, Emmons, Larsen, &

Griffin, 1985) as the only criterion variable, four weighting methods and 12 life domains.

Finding that domain importance as a weighting factor failed to show any detectable increase in

the power to explain variations in the global satisfaction measure, Wu and Yao (2006b) argue for

the abandonment of importance weighting. Other examples following this similar approach to

examine the issue importance weighting are abundant in the literature (e.g., Philip, Merluzzi,

Peterman, & Cronk, 2009; Wu, 2008a, 2008b; Wu, Chen, & Tsai, 2009; Wu & Yao, 2007).

Another popular approach was to demonstrate that facet or domain importance did not

necessarily moderate the relationship between facet or domain satisfaction and global

satisfaction measures. The approach of moderated regression analysis could be found in the life

satisfaction literature (e.g., Wu & Yao, 2006a, 2006b) and the job satisfaction literature (e.g.,

McFarlin & Rice, 1992; McFarlin et al., 1995).

2.5 Unsettled Issues Regarding Empirical Evidence Opposing Importance Weighting

Arguing against importance weighting based on empirical evidence appear straight-

forward. More specifically, the reasoning is that if empirical evidence does not support

importance weighting, it would be questionable to advocate for importance weighting.

Unfortunately, this line of reasoning is misleading, if not mistaken. There is a difference between

not finding evidence to support importance weighting and finding direct evidence against

importance weighting. So far, empirical evidence presented in the literature used to argue against

importance weighting has been about not having evidence to support importance weighting

rather than about providing direct empirical evidence against importance weighting (see Hsieh,

2016). Not finding evidence to support importance weighting can mean either that importance

weighting is erroneous or that evidence is out there but has not been found yet. In order to

oppose importance weighting completely, evidence should be presented that no weighting

functions can lead to a noticeable increase in the power to explain variances in any global

satisfaction measure. Given the range of possibilities of importance weighting functions and the

number of global satisfaction measures, it is very unlikely, if not impossible, for any study to

complete the task.

In addition, quality of the empirical evidence used to argue against importance weighting

remain controversial, given the way that importance weighting has been assessed. Specifically, at

least four issues that can significantly influence the results of the assessment of importance

weighting have often been overlooked. These issues are summarized as follows (see Hsieh, 2015

for a detailed discussion):

2.5.1 The Choice of Global Satisfaction Measures as Criterion Variables

Generally, there are multiple global satisfaction measures available, be it in life

satisfaction or in job satisfaction. Given that it is unlikely to include all available global

satisfaction measures in a study that assesses importance weighting, choices have to be made to

select specific global satisfaction measures as criterion variables. The main issue is that the

performance of importance weighting can be highly dependent on the criterion variables chosen

(e.g., Hsieh, 2012c; Russell & Hubley, 2005). Empirical evidence used to argue against

importance weighting based on arbitrary choices of criterion variables must be interpreted with

caution.

2.5.2 The Methods/approaches by Which Importance is Measured and Weighting is Constructed

To implement importance weighting, importance of individual facet/domain should be

measured. There is evidence showing that the way by which importance is measured (rating vs

ranking) can influence the results of importance weighting (e.g., Hsieh, 2003, 2004). In addition,

how importance is weighted (i.e., weighting methods or approaches) also is likely to affect the results of importance weighting (e.g., Hsieh, 2004; Russell et al., 2006). Empirical evidence used to argue against important weighting often relied on the use one importance measure and a small number of weighting methods/approaches. Caution should be given so the evidence will not be over-generalized.

2.5.3 Not Covering All Facets/domains Comprehensively in Assessing Importance Weighting

As Hsieh and Kenagy (2014) demonstrated, assessment of importance weighting for measures that follow a formative-indicators measurement model (Chin & Newsted, 1999; Cohen, Cohen, Teresi, Marchi, & Velez, 1990; Hsieh, 2004) must not ignore the consequences of not including all possible facets/domains. Take life satisfaction as an example, the literature on life satisfaction suggests that there had been close to 200 different domain (such as health, finance, and religion) names included in the study of global life satisfaction, and the potential number of domains is even larger (Cummins, 1996). It is, therefore, unlikely for any individual measure of life satisfaction that follows a formative-indicators measurement model to comprehensively cover all possible life domains. To date, empirical evidence used to oppose importance weighting has neglected to take into account the consequences of not including all possible facets/domains (Hsieh & Kenagy, 2014), and caution must be given in interpreting the evidence available.

2.5.4 Lacking Adequate Statistical Power

As pointed out by Hsieh (2015), majority of the empirical evidence used to argue against importance weighting was based on studies with relatively small sample sizes (for example, Phillip et al., 2009; Wu & Yao, 2006a) without considering the potential issue of statistical

power. Studies that fail to consider statistical power are prone to type II error, or failure to reject the null hypothesis of no effect when the null hypothesis is actually false (e.g., Aberson, 2010; Cohen, 1988). As Hsieh (2015) observed, the sample size required for adequate statistical power to assess importance weighting appeared larger than most previous studies could offer.

2.6 Empirical Support for Importance Weighting

To provide empirical evidence to support importance weighting, study results should show that 1) at least one type of importance weighting function can lead to a detectable increase in the power to explain variances in one or more global satisfaction measures; and/or 2) the relationships between global satisfaction and facet/domain satisfactions depend upon facet/domain importance (Hsieh, 2014). There has been empirical support for importance weighting, especially in the literature of life satisfaction, or quality of life (e.g., Hsieh, 2003, 2004, 2012c, 2014, 2016; Hsieh & Kenagy, 2014; Guardiola & Picazo-Tadeo, 2014; Tiefenbach & Kohlbacher, 2015). Empirical support for importance weighting has shown that using importance as a weighting factor produced detectable increase in the power to explain variations in global satisfaction measures, in comparison with a simple sum of facet or domain satisfaction scores (e.g., Hsieh, 2003, 2004, 2012c; Tiefenbach & Kohlbacher, 2015). Empirical evidence has also shown that the relationships between global satisfaction and facet/domain satisfactions varied, depending upon importance (e.g., Hsieh, 2016; Tiefenbach & Kohlbacher, 2015).

2.7 Relevance to Client Satisfaction

Although the discussion above did not come directly from the client satisfaction literature, similarities between client satisfaction, job satisfaction and life satisfaction in measurement and conceptualization made the discussion relevant and applicable to the client satisfaction literature. As Hsieh (2006, 2012c) indicated, at least three similarities between client

satisfaction and life satisfaction in measurement and conceptualization could be observed. First, both client satisfaction and life satisfaction involve subjective evaluations of objective conditions (e.g., Diener, 1984; Reid & Gundlach, 1983). Second, client satisfaction is a multidimensional construct (Chou, Boldy, & Lee, 2001; Ruggeri & Greenfield, 1995); and similarly, life satisfaction is a multidimensional construct as well (e.g., Cummins, 1996; Diener, 1984). Third, client satisfaction can be measured by either a single-item overall or global satisfaction question or a composite of satisfactions with various service elements (e.g., Hsieh, 2006; Nguyen, Attkisson, & Stegner, 1983). Similarly, life satisfaction can be measured by a single-item overall satisfaction question or a composite of satisfactions with various life domains (e.g., Andrews & Withey, 1976; Cummins, 1996). Given these similarities, the issue of importance weighting is relevant to the study of client satisfaction. Specifically, the concept of facet or domain used in the job satisfaction literature or the life satisfaction literature parallel the concept of service element described by Hsieh and Essex (2006). The concept of domain importance, value priority, or psychological centrality in the life satisfaction literature is reflected by a client's perceived importance of various service elements. Importance weighting can be captured by incorporating perceived importance of various service elements in the client satisfaction measures (Hsieh & Essex, 2006).

Following the approach proposed by Hsieh and Essex (2006), Hsieh (2009, 2012c, 2014) provided empirical evidence to support incorporating perceived importance of service elements into the client satisfaction measures. Given the debate of importance weighting is, however, by no means settled, additional evidence, be it from the life satisfaction literature, job satisfaction literature or client satisfaction, can be beneficial in advancing our understanding in the topic. The

following presents an empirical example providing evidence to support incorporating perceived importance of service elements in client satisfaction measures.

3. An Empirical Example

An empirical example is used to address the following two research questions: 1) Are all service elements in a client satisfaction measure for homecare services perceived as equally important by clients? And 2) Do the relationships between overall client satisfaction and satisfactions with various service elements differ, depending upon perceived importance of service elements? Both of the questions are important to the topic of importance weighting. For question one, if all service elements are perceived to be equally important, then there would be no clear justification for importance weighting and equal weighting ought to be the standard practice. For question two, if the relationships between overall client satisfaction and satisfactions with various service elements do not differ across perceived importance of service elements, then there would not be any support for importance weighting.

3.1 Method

3.1.1 Sample and Setting

Empirical results presented here is based on a client satisfaction survey conducted by a social service agency serving the needs of Chinese Americans in a large city in the Midwest region of the United States. Survey questionnaires, with self-addressed, stamped envelopes included, were mailed to in December of 2015 to the residences of a total of 200 randomly selected clients of the agency's homecare services. Prior to sending out the surveys, a pilot testing of the survey questionnaire had been conducted with 5 clients of the agency's homecare services. Feedback received from the pilot testing indicated that the survey questions and response options were clear and understandable, and the length of time to complete the survey

was manageable. Of the 200 surveys mailed, a total of 186 (93%) were returned. After excluding

incomplete surveys, a total of 156 surveys had complete data. Among the 156 survey

respondents, most were female (67%). The mean age of the study participants was 79.64 ($SD =$

7.47), ranging from 61 to 97.

3.1.2 Measures

Overall satisfaction with homecare services. A single-item client satisfaction measure

was used. It asked: Altogether, how satisfied are you with the homecare services you receive

from your homecare aide? Response choice was a 7-point Likert-type scale, ranging from

completely dissatisfied (1) to completely satisfied (7).

Satisfaction with service element of homecare services. Satisfaction with each service

element of homecare services was measured by asking the respondents to rate from one to seven,

where seven means "completely satisfied" and one means "completely dissatisfied" for each of

six service elements: homecare aide's attitude at work, personal care received from homecare

aide, homecare aide's homemaker services, homecare aide's dependability, homecare aide's

communication, and homecare aide's job skills.

Perceived importance of service elements of homecare services. Perceived importance of

Satisfaction with each service element of homecare services was measured by asking the

respondents to rate from one to five, where five means "extremely important" and one means

"not important at all" for each of six service elements: homecare aide's attitude at work, personal

care received from homecare aide, homecare aide's homemaker services, homecare aide's

dependability, homecare aide's communication, and homecare aide's job skills.

3.1.3 Analysis

Given that responses of the measure items were based on Likert-type rating scales, both satisfaction and importance data collected were ordinal-level in nature (Stevens, 1946). Although many researchers (e.g., Jamieson, 2004; Kuzon, Urbanchek, & McCabe, 1996) have argued that ordinal-level data should not be treated as continuous data and must be analyzed using non-parametric statistics, many researchers (e.g., Carifio & Perla, 2008; Norman, 2010; Pell, 2005) have argued that it is appropriate to treat ordinal-level data as continuous data. It was not the intent of the current study to engage in the debate of how ordinal-level data must be analyzed. Since it has been common in the life satisfaction literature to treat ordinal-level data as continuous data (e.g., Mastekaasa, 1984; Tiefenbach & Kohlbacher, 2015; Wu, 2008), analysis for the current study included treating ordinal-level data as continuous data for comparative purpose. In addition, for the purpose of ensuring statistical conclusion validity (Shadish, Cook, & Campbell, 2002), analysis for the current study also included treating data as ordinal-level.

To investigate if all service elements were perceived equally important (research question one), a Friedman test as well as a repeated measures ANOVA was used. To assess if the relationships between overall client satisfaction and satisfactions with various service elements differ across perceived importance of service elements, a three-step hierarchical regression analysis suggested by Evans (1991) as well as Mastekaasa (1984) was used. The analysis would start by estimating a regression model with overall satisfaction with homecare services as dependent variable and satisfaction with service element of all the elements together as independent variables. The second step would be to add perceived importance of service element for all the elements as independent variables. The third step would be to add to the second step the interaction/product terms of service element satisfaction by importance for all service elements as independent variables. Both ordered or cumulative logit regression (McCullaugh,

1980) and ordinary least square (OLS) linear regression models were used for the analysis. For the ordered logit regression models, the change in model fit statistics (likelihood ratio χ^2) from stage two to stage three would indicate the need for including the interaction terms. For the OLS linear regression models, the change in R^2 from stage two to stage three would indicate the need for the inclusion of the interaction (or importance weighting) terms (see Evans, 1991 for detail). It is important to note that the focus of this moderated regression analysis would be to determine whether or not the block of importance by satisfaction interaction terms significantly contributed to the model, not to focus on coefficients on service element satisfaction, service element importance, and satisfaction by importance terms (see Evans, 1991; Hsieh, 2012b; Mastekaasa, 1984). Results were divided into two parts. Analysis results treating data as ordinal-level were reported in part A, and analysis results treating data as continuous were reported in part B.

3.1.4 Results

3.1.4.1 Part A

Table 1 shows descriptive statistics of the main variables. On a seven-point response where one was completely dissatisfied and seven was completely satisfied, all satisfaction ratings showed the mode of 7. All satisfaction ratings had the median of 7 as well. Regarding perceived importance of service elements, the results showed that all service elements had the mode of 5 on a five-point scale. All perceived importance ratings of service elements had the median of 5. Given that the measures of central tendency for these ordinal-level data (mode and median) were the same for all the satisfaction variables as well as importance variables, it seemed that the use of mean and standard deviation (treating the data as continuous), as shown in Part B below, was more informative in assessing the difference among the variables.

[Table 1 about here]

Perceived importance of service elements. Given that ratings for perceived importance of all service elements had the same median of 7, it was important to assess whether there were statistically significant differences in the importance ratings of various service elements. The Friedman test results showed a chi-square value of 47.16, with 5 degrees of freedom, indicating statistically significant ($p < .001$). In other words, the results suggested that not all service elements were perceived as equally important to the survey respondents.

Overall client satisfaction, satisfactions with various service elements and perceived importance of service elements. Table 2 shows the model fit statistics and change in model fit statistics of the moderated (ordered logit) regression analysis. As shown in Table 2, the regression model with overall client satisfaction, as dependent variable and satisfaction with all six service elements together as independent variables had a likelihood ratio χ^2 of 180.74. When adding the block of perceived importance of service elements into the model as the second step, the change in likelihood ratio χ^2 was 2.9. With 6 degrees of freedom, the corresponding incremental change in likelihood ratio χ^2, χ^2 (6, N = 156) = 2.9, $p = .82$, was not statistically significant at the .05 level. When adding to the second step the additional block of the interaction/product terms of satisfaction by importance for service elements as the third step, the change in likelihood ratio χ^2 was 23.38. With 6 degrees of freedom, the corresponding incremental change in likelihood ratio χ^2, χ^2 (6, N = 156) = 23.38, $p = .0001$, was statistically significant at the .05 level. These results indicated that the relationships between overall client satisfaction (as measured by the single-item overall satisfaction with homecare services question) and satisfactions with various service elements differed significantly across client's perceived importance of service elements.

[Table 2 about here]

3.1.4.2 Part B

Table 3 shows descriptive statistics of the main variables. On a seven-point response where one was completely dissatisfied and seven was completely satisfied, the mean level of overall satisfaction with homecare services among the sample was 6.62 ($SD = 0.74$), indicating a relatively high level of overall life satisfaction. Satisfaction with all the service elements had mean ratings above 6.5, an indication of high satisfaction with all service elements. The results showed that clients were most satisfied with homecare aide's dependability and were not as highly satisfied with homemaker services or their communication with their homecare aides.

Regarding perceived importance of service elements, the results showed that all service elements were perceived to be important, with mean ratings all above 4.5 on a five-point scale. Based on mean ratings, the most important service element was homecare aide's dependability, followed, in order, by homecare aide's attitude at work, homecare aide's job skills, the way client and homecare aide communicate, homemaker services, and personal care services provided by the homecare aide.

[Table 3 about here]

Perceived importance of service elements. Based on the mean ratings, it appeared not all service elements were perceived as of equal importance. However, it was important to assess whether the observed differences in the importance ratings of various service elements were statistically significant. Results from the repeated-measures ANOVA results showed the following: Mauchly's test was significant ($\chi^2(14) = 83.62, p < .001$), an indication that assumption of sphericity had been violated. Therefore, degrees of freedom were corrected using

Greenhouse-Geisser estimates of sphericity ($\varepsilon = .82$). The results showed that not all service

elements were perceived as equally important to the survey respondents, $F(4.09, 635.09) = 9.31$,

$p < .001$.

Overall client satisfaction, satisfactions with various service elements and perceived

importance of service elements. Table 4 shows the R^2 and change in R^2 of the moderated (linear)

regression analysis. Given that coefficients on service element satisfaction, service element

importance, and satisfaction by importance terms were of not the focus, they were not shown

here. As shown in Table 4, the regression model with overall client satisfaction, as dependent

variable and satisfaction with all six service elements together as independent variables had an R^2

of .876. When adding the block of perceived importance of service elements into the model as

the second step, the change in R^2 was .004. The corresponding incremental change in F-tests was

$F(6, 143) = 0.85$, $p = .53$, which was not statistically significant at the .05 level. When adding to

the second step the additional block of the interaction/product terms of satisfaction by

importance for service elements as the third step, the change in R^2 (from step two to step three)

was .022. The corresponding incremental change in F-tests was $F(6, 137) = 5.06$, $p = .000$,

which was statistically significant at the .05 level. These results indicated that the relationships

between overall client satisfaction (as measured by the single-item overall satisfaction with

homecare services question) and satisfactions with various service elements differed significantly

across client's perceived importance of service elements.

[Table 4 about here]

4. Discussion

The purpose of this paper was to examine the role of importance weighting in the context

of client satisfaction measures. Empirical evidence was used to examine 1) whether or not all

service elements of homecare services (for older adults) were perceived as equally important;

and 2) whether or not the relationships between overall satisfaction and satisfaction with various

service elements varied significantly across perceived importance of various service elements.

Data analysis was conducted and reported by treating data as both ordinal and continuous. As

shown previously, perceived importance of the six service elements of homecare services for

older adults was identical based on mode and median. That is, there was no noticeable difference

in the ratings of perceived importance of the six service elements, based on mode and median.

However, when using the non-parametric statistics of a Friedman test to compare perceived

importance of the six service elements, the results indicated that not all service elements were

perceived as equally important. On the other hand, mean and standard deviation of the ratings of

perceived importance of the six service elements were not identical. Results from the parametric

statistics of a repeated measures ANOVA showed that not all service elements were perceived

equally important. In addition, both ordered regression and OLS linear regression models

provided consistent results that the relationships between overall satisfaction and satisfaction

with various service elements varied significantly across perceived importance of various service

elements. These findings suggest that for the current study, results from the analyses using both

non-parametric statistics and parametric statistics were coherent; and the results of the current

study showed that 1) not all six service elements of homecare services for older adults were

perceived equally important to the survey respondents; and 2) the relationships between overall

satisfaction and satisfaction with various service elements varied significantly across perceived

importance of various service elements.

Since the results presented here were based on only one client satisfaction measure developed for the homecare services for older adults, generalizability of the results can be limited. In addition, given the fact that the client satisfaction survey used in this study relied on self-report data of consistent response formats, method bias/variance (e.g., Lindell & Whitney, 2001; Williams & Brown, 1994) could be a potential factor influencing the results. Unfortunately, due to the fact that formative-indicators approach was an essential part of this study, statistically controlling for common method bias could not be easily achieved (e.g., Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). The results presented here, therefore, should by no means be considered conclusive. The findings, however, add to our understanding of importance weighting in the area of client satisfaction in the following ways:

First, consistent with findings from previous studies on client satisfaction (e.g., Hsieh, 2009, 2012a; b; 2014), results shown in the current study support the incorporation of perceived importance of service elements into client satisfaction measures. Specifically, the results that not all service elements were perceived equally important call into question the practice of equal weighting. That is, adding or averaging satisfaction rating scores across service elements to represent overall satisfaction with the services without considering importance of service elements may not necessarily capture the actual overall satisfaction with the services. The results that the relationships between overall satisfaction and satisfaction with various service elements varied significantly across perceived importance of various service elements reinforced the critical role that perceived importance of service elements played in linking overall satisfaction and satisfaction with various service elements. That is, importance weighting, or incorporating perceived importance of service elements into client satisfaction measures, should be carefully considered and implemented.

Second, incorporating perceived importance of service elements into client satisfaction not only is conceptually appealing (i.e., client-centered, see Hsieh & Essex, 2006), but also can provide practical utility for researchers, evaluators and service providers. For example, results of current study showed homecare aide's dependability was perceived as most the important service element among the survey respondents. Considering also the results that the survey respondents also reported the most highly satisfied service element was homecare aide's dependability, researchers, evaluators and service providers could infer that the clients were receiving high quality service in the service element they valued the most. In other words, an examination of consistency or inconsistency between satisfaction with and perceived importance of service elements can offer clear implications for service maintenance and/or improvement.

Third, it is important to note that although the evidence presented in the current study supported incorporating perceived importance of service elements into client satisfaction measures, the evidence did not provide any insight as to how perceived importance of service elements should be incorporated into client satisfaction measures. In other words, the evidence had to do with *whether* importance weighting is justified, not *how* importance weighting should be implemented. How importance weighting can be implemented in the context of client satisfaction measures is a topic that is beyond the scope of the current study (see Hsieh, 2014 for a discussion).

In conclusion, the current study supports importance weighting in the context of client satisfaction. There are still, however, areas related to importance weighting that deserve further studying. Future research that offers conceptual foundations for ways by which overall client satisfaction is linked to satisfaction with various service elements will be useful. In addition,

studies that identify ways to assess the adequacy and performance of importance weighting will

help to advance our understanding of this important topic of importance weighting.

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Table 1

Descriptive Statistics: Mode and Median (N = 156)

Variables	*Mode*	*Meidan*
Overall Satisfaction with homecare services	7	7
Satisfaction with homecare aide's attitude at work	7	7
Satisfaction with personal care	7	7
Satisfaction with homecare aide's homemaker services	7	7
Satisfaction with homecare aide's dependability	7	7
Satisfaction with homecare aide's communication	7	7
Satisfaction with homecare aide's job skills	7	7
Importance of homecare aide's attitude at work	5	5
Importance of personal care	5	5
Importance of homecare aide's homemaker services	5	5
Importance of homecare aide's dependability	5	5
Importance of homecare aide's communication	5	5
Importance of homecare aide's job skills	5	5

Table 2

Results of Moderated Ordered Logit Regression Analysis Predicting Overall Client Satisfaction

(N = 156)

	Step 1: Satisfaction Likelihood ratio χ^2	Step 2: Step 1 + Importance ΔLikelihood ratio χ^2	Step 3: Step 2 + Satisfaction x Importance Δ Likelihood ratio χ^2
Variables included			
Attitude at work			
Personal care			
Homemaker services	180.74***	2.9	23.38***
Dependability			
Communication			
Job skills			

*** *p* < .001

Table 3

Descriptive Statistics: Mean and Standard Deviation (N = 156)

Variables	Mean	Standard Deviation
Overall Satisfaction with homecare services	6.62	0.74
Satisfaction with homecare aide's attitude at work	6.58	0.76
Satisfaction with personal care	6.55	0.81
Satisfaction with homecare aide's homemaker services	6.53	0.82
Satisfaction with homecare aide's dependability	6.66	0.68
Satisfaction with homecare aide's communication	6.52	0.84
Satisfaction with homecare aide's job skills	6.58	0.79
Importance of homecare aide's attitude at work	4.77	0.47
Importance of personal care	4.59	0.65
Importance of homecare aide's homemaker services	4.67	0.52
Importance of homecare aide's dependability	4.81	0.43
Importance of homecare aide's communication	4.69	0.56
Importance of homecare aide's job skills	4.72	0.52

Table 4

Results of Moderated Linear Regression Analysis Predicting Overall Client Satisfaction (N =

156)

	Step 1: Satisfaction R^2	Step 2: Step 1 + Importance ΔR^2	Step 3: Step 2 + Satisfaction x Importance ΔR^2
Variables included			
Attitude at work			
Personal care			
Homemaker services	.876***	.004	.022***
Dependability			
Communication			
Job skills			

*** *p* < .001