

## Validation of the Service Leadership Attitude Scale in Hong Kong

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### Abstract

To cultivate leadership of university students under the service economy, there is a need to help them develop positive attitude towards service leadership. Unfortunately, validated service leadership attitude measures do not exist. In this study, validation of the Service Leadership Attitude Scale was reported. Based on the responses of 4,486 students, internal consistency, convergent validity and construct validity of the 73-item Service Leadership Attitude Scale (SLA-SF-73) were examined. Exploratory factor analyses further showed that seven stable factors (Vision and Competence, Social Competence, Caring Disposition, People Orientation, Self-Reflection and Self-Understanding, Positive Views about Human Beings, and Ethical Role Models) were abstracted from the final 46-item scale (SLA-SF-46E), providing support for the factorial validity of the scale.

**Keywords:** College students, service leadership attitude, scale validation, service leadership theory

### Introduction

Hong Kong has shifted from a manufacture-oriented economy to a service economy since the 80s of the last century (1). Till the end of 2016, four service-oriented pillars including banking and investment services, tourism services, logistics transportation and business support services have become the key engines driving the Hong Kong economy (2). The number of working adults in the service-oriented sectors has increased from 3.14 million in 2011 to 3.31 million in 2016, accounting for 84.57% of all working adults (2), indicating the importance of service industries to the Hong Kong economy. Previous studies have devoted increasing attention to human capital and organizational climate in service sectors (3, 4), which are two primary mechanisms to obtain organizational success by influencing employees (5, 6). Although traditional research

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emphasizes the positive influence of the bundles of Human Resource Management (HRM) Practice on human capital and organizational climate, Jiang and his colleagues (7) found other than HRM, both human capital and organizational climate are also positively shaped by a new ideology of leadership, service leadership, in service-economies.

Jiang and his colleagues (7) adopted the definition of service leadership in the study of Schneider and his colleagues (8), which claimed service leadership is essentially a behavioral focus on improving the service quality of an organization. Chung (9) extended the scope (i.e., not service manufacturing) and claimed that service leadership is essentially a behavioral focus on consistently offering quality personal service to meet the demand at individual, organizational, and social levels. Based on the framework of the Hong Kong Institute of Service Leadership and Management Limited (HKI-SLAM) (9), service leadership is featured by seven core beliefs which increase the competitiveness the service-oriented economy in Hong Kong. First, service leaders believe service leadership is the service satisfying the needs of stakeholders at different levels, including individuals, groups, communities, systems and environments (10), which well responds to the service-dominant logic in the service-oriented economy that all social units compete with service, and compete through service (11). Second, service leaders believe everyone can be a leader to improve service effectiveness and quality anytime (10), which spurs service innovation as the core competency of a service organization (12). Third, service leadership supports the notion that leadership effectiveness and service satisfaction are jointly determined by task competencies, unique character and exhibiting care (10), which promotes the effectiveness of relationship marketing and emphasizes on keeping loyal customers by setting their satisfaction as priorities instead of emphasizing on the number of transactions completed. Researchers (1, 13) asserted that this is the most common strategy to retain customers in the service organizations. Fourth, service leaders believe that service leadership aims to ethically promote the competitiveness, abilities, and willingness of offering service to others (10), which is a particular prerequisite of improving service quality in Hong Kong, where the economic return of service does not wholly

depend on service quality. Fifth, service leadership is focused on consistently creating personal service to change the life of others, responding to the transformation of profit model from indiscriminate commodities in the manufacture-oriented economy to customized service in the service-oriented economy (14). Sixth, service leadership is seen as the longest and most competitiveness business model (10), which can be adopted as a main business model for Hong Kong, considering a majority of its domestic production is supported by service-related industries. Last, other than specific skills and knowledge, leadership competencies, appropriate character strengths and caring social dispositions are also key requirements for high status positions in the service-oriented economy (10), which highlight that the soft skills are valuable assets in leading people-oriented projects in the service organizations (11).

In order to maintain the competitiveness of the service-oriented economy of Hong Kong in the global market, strengthening the service leadership in the service organizations is a necessity. With the requirement of cognitive and social-emotional competence, service leadership should be introduced before joining the labor market. Hence, the best time to conduct the related education is during tertiary education. To achieve this goal, HKI-SLAM and the Victor and William Fung Foundation cooperated and founded the Fung Service Leadership Education Initiative in 2012, and William Fung Foundation resolved to allocate HK\$40 million to design and conduct education programs of service leadership among college students in eight publically funded tertiary institutions in Hong Kong. The initiative aimed at promoting service leadership among local college students. Although the eight universities designed and implemented the courses and projects based on their own needs, there is a call for valid scales measuring service leadership attitude, knowledge and behavior to evaluate the effectiveness of these courses and projects as well as comparing the evaluation outcomes cross eight universities.

In the framework of cognitive and behavioral development, attitude plays an important mediation role connecting knowledge and behavior (15-17). Knowledge can positively shape attitude, which in turn leads to the formation of a behavioral intention (15). Ajzen (15) argued the more favorable the

attitude, the stronger should be the person's intention to perform the specific behavior under consideration. Unfortunately, although attitude to service leadership is important, there has been no valid scales measuring service leadership attitude in Hong Kong based college students. To fill the gap, a 132-item scale (SLA-LF-132) was initially developed to measure service leadership attitude among local college students by our team based on the SLAM framework, 25 principles of service leadership (18), 12 dimensions of a service leader (19) and relevant literature authored by Shek and his colleagues (20, 21). The 132-item scale showed good content validity (22). Based on the preliminary criterion-related validation results which are unpublished, 73 items were retained as the short version (SLA-SF-73). This study aimed to explore the internal consistency, convergent validity and factorial validity of these 73 items.

## Methods

The participants were sampled from undergraduate students of eight publically funded universities in Hong Kong. Students from each university were invited to fill out a customized online survey. The purpose of the research and how the data would be used were presented to students at the title page of the survey. Students were informed they have the rights to stop the online survey anytime. The title page also revealed that all information would be kept confidential and the individual identity of students would not be disclosed at any point. Students were informed that a supermarket voucher worth HK\$100 (roughly equivalent to US\$13) would be given to them upon successful completion of the whole survey with 252 items which would be completed within 45-60 minutes. The survey would not be activated unless students gave formal consent to be the participants of this study.

The online survey covered the measures of service leadership attitude, knowledge, behavior, external criterion measures and demographic attributes. It was administered in English. The link to online survey was offered to students with the assistance of administrators in eight universities. The data were collected between late March and early June, 2017.

## Measures

1. **Service Leadership Attitude Scale (SLA-SF-73).** Students were invited to respond to 73 items on a 6-point Likert scale ranging from "1" (strongly disagree) to "6" (strongly agree).
2. **Service Leadership Knowledge Scale (SLK-SF-40).** The original 200-item scale (SLK-LF-200) was also developed based on the literature related to the SLAM framework, service leadership and service leader (18-21). The 200-item scale showed good content validity (23). The initial criterion validation study shortened the 200 items to 63 items (24). After considering the face validity and duplication of the items, 63 items were further shortened into 50 items (SLK-SF-50). After evaluating the internal consistency, 50 items were shortened into 40 items (SLK-SF-40). Factor analyses reported in a paper in this Special Issue showed that the scale possessed excellent factorial validity. These 40 items were used in this study and presented in the form of multiple choice questions. Value "1" was assigned to all correct answers and Value "0" was assigned to all incorrect answers. The Cronbach's alpha cross all items was 0.93 (mean inter-item correlations = 0.21). The score of service leadership knowledge was calculated as the sum of all 40 items. A higher total score indicates a higher level of knowledge.
3. **Service Leadership Behavior Scale (SLB-SF-38).** Based on the aforementioned literature on service leadership and other published work on leadership (25, 26), a 97-item scale (SLB-LF-97) was developed to measure the extent to which the respondents demonstrated the behaviors that are representative of a service leader. On the basis of a Principal Axis Analysis (PAA) conducted, 97 items were shortened into 65 items (SLB-SF-65). After one round of Principal Component Analysis (PCA, see paper in this Special Issue) and one round of Confirmatory Factor Analysis (CFA) conducted, 65 items were

further shortened into 38 items (SLB-SF-38), which demonstrated good convergent validity. Six stable factors were identified in the 38 items. They were Self-Improvement and Self-Reflection, People and Principle Orientation, Resilience, Social Competence, Problem-Solving, and Mentorship. The 38 items were adopted in this study. The items were formulated as statements, and responses were given on 6-point Likert items (1: very dissimilar to me; 6: very similar to me). The Cronbach's alpha crosses all 38 items was 0.96. The Cronbach's alpha of the items of six subscales ranged from 0.85 to 0.91 (mean inter-item correlations ranged from 0.42 to 0.65). The score of service leadership behavior was calculated as the mean of all 38 items.

4. **Revised Servant Leadership Profile (RSLP).** RSLP is a 20-item instrument measuring attitudes toward servant leadership, commitment to develop others in the service, skills concerning servant leadership and capacity of leading a team in the service (27). For each item, the respondent was invited to respond on a 7-point Likert scale with options ranging from "1" (strongly disagree) to "7" (strongly agree). The Cronbach's alpha cross all items is 0.94 (mean inter-item correlations = 0.46). The total score of Servant Leadership was calculated as the mean of all 20 items.
5. **Moral Self-Concept (MSC).** The Chinese Adolescent Self-Esteem Scales (CASES) consists of 60 items measuring overall self-esteem and six specific self-esteem including Cognitive, Family, Social, Moral, Body Image, and Physical Performance (28). MSC is one of them consisting of 8 items (29), which was used to assess the moral self-concept of university students in this study. Students were invited to respond to a 7-point Likert scale with response options ranging from "1" (strongly disagree) to "7" (strongly agree). The Cronbach's alpha cross all items was 0.83 (mean inter-item correlations=0.44). The total score of MSC was calculated as the mean of all 8 items.

6. **Leadership Efficacy (LEF).** LEF was measured by the 8-item scale developed by Murphy (30) with the focus on assessing the generalized capability in the leadership role (31). The participants were invited to respond to items with a 5-point Likert scale with responses ranging from "1" (strongly disagree) to "5" (strongly agree). Three items were reversely coded. The Cronbach's alpha cross all items was 0.72 (mean inter-item correlations = 0.25). The total score of LEF was calculated as the mean of all 8 items.
7. **Interpersonal Reactivity Index (IRI).** IRI is a 28-item self-reported scale in which 7-item subscales were extracted: Empathic Concern (EC), Perspective Taking (PT), Fantasy (FS) and Personal Distress (PD) (32). The present study only measured the first two aspects with a total of 14 items. Participants were invited to respond on a 5-point Likert scale ranging from "1" (Does not describe me well) to "5" (Describe me very well). The Cronbach's alpha cross all items was 0.74 (mean inter-item correlations = 0.17), while the Cronbach's alpha cross EC and PT were 0.62 and 0.59 respectively (mean inter-item correlations were 0.19 for both measures). The score of interpersonal reactivity, empathic concern, and perspective thinking were calculated as the mean of relevant items.

### *Data analysis*

The item-total correlation of each of 73 items was examined using SPSS 23 (IBM, New York), and those with an item-total correlation less than 0.25 were dropped. Then we randomly and evenly split the data into two sets: A and B. Set A was adopted for main analysis and Set B was only used to test the factorial structural stability. We performed the Principal Components Analysis (PCA) with varimax rotation to investigate the factor structure. Coefficients of congruence (33) were computed to test the factorial stability by quantifying the similarity of the factor structure across two subsamples. Only items with the factor loading equaled to or above 0.50 were retained. Regarding reliability, the

Cronbach's alpha value was adopted to examine the internal consistency. For convergent validity, correlation analysis was used to evaluate the association between the scores of SLA (and its subscales) and the scores of SLK-SF-40, SLB-SF-38 (and its subscales), RSLP, MSC, LEF, IRI, EC and PT respectively.

Considering that the attitude of service-oriented organizational citizenship is positively related with the related knowledge (34), we hypothesized that SLA would be positively correlated with SLK-SF-40 (Hypothesis 1). As one's beliefs about leadership to some extent directs one's behavior when performing the duties as a leader (15, 17), it was hypothesized that SLA would be positively associated with SLB-SF-38 and with its subscales (Hypothesis 2a to 2f). Given that the basic propositions are consistent with those of service leadership, it was hypothesized that SLA would be positively correlated with RSLP (Hypothesis 3). Considering service leaders normally believe that good leaders must be of high moral quality (22), this study hypothesized that SLA would be positively associated with MSC (Hypothesis 4). Considering service leaders should have a positive attitude toward a commitment to continuous improvement in service leadership (22) and that positive attitude is positively correlated with self-efficacy (15), it was hypothesized that SLA would be positively associated with LEF (Hypothesis 5). As service leaders should have multiple intrapersonal competencies and interpersonal competencies (22), so SLA would be expected to be positively correlated with IRI (Hypothesis 6). Besides, as service leaders are expected to exhibit care to peers and subordinates, and given that empathic concern is an important prerequisite to exhibit care (35), SLA would be expected to be positively correlated with EC (Hypothesis 7). Considering that the service leadership model posits that service quality should be judged by service receivers and that the service provided based on the needs of the service receivers is more likely to lead to their satisfaction (36), SLA would also be expected to be positively correlated with PT (Hypothesis 8).

## Results

A total of 4,555 completed questionnaires were received by the research team. After excluding those declining to participate ( $n = 6$ ), multiple participation ( $n = 33$ ), ineligible responses ( $n = 30$ ), the final sample consisted of 4,486 undergraduate students. Around 500 students were affiliated to each university except for The Hong Kong Polytechnic University, whose sample was doubled to around 1,000. Among the 4,486 respondents (i.e. Mean age = 20.47;  $SD = 1.67$ ), 1,517 (33.8%) were male and 2,969 (66.2%) were female. The full data set was randomly split into two sets: Set A contained 2,246 respondents, whereas Set B was composed of 2,240 respondents.

### *Factor structure*

After checking the item-total correlation coefficients, 9 items with values less than 0.25 were deleted from the original 73-item scale. To avoid double loading and to derive a conceptually meaningful picture, a seven-factor solution was tested. The solution could explain for 53.67% of the whole variance. The factor loading of all items was over 0.30. Table 1 reports the factor loadings of all items. Seven factors identified were Vision and Competence (18 items), Social Competence (8 items), Caring Disposition (13 items), People Orientation (11 items), Self-Reflection and Self-Understanding (5 items), Positive Views about Human Beings (3 items), and Ethical Role Models (6 items). Based on this finalized factor structure, the coefficient of congruence across two subsamples was 0.97 and the coefficient of congruence of each subscale ranged from 0.96 to 0.98 (see Table 2), indicating that the seven-factor structure across two subsamples were almost the same (33). After removing 18 items with the factor loading less than 0.50 to keep a more robust factor solution, the finalized 7-factor scale contained 46 items (SLA-SF-46E). In another paper under preparation, CFA was further conducted to look at the factor structure of the scale.

**Table 1. Factorial structural of Service Leadership Attitude Scale (SLA-SF-73) using varimax rotation (N = 2,246)**

	Factor Loading of Component						
	1	2	3	4	5	6	7
Vision and Competence							
SL22	<b><u>0.64</u></b>	0.05	0.19	0.26	0.14	0.07	0.17
SL27	<b><u>0.61</u></b>	0.24	0.17	0.13	0.19	0.10	0.10
SL23	<b><u>0.60</u></b>	-0.01	0.16	0.14	0.10	0.06	0.25
SL21	<b><u>0.59</u></b>	0.16	0.17	0.32	0.17	0.11	0.15
SL26	<b><u>0.59</u></b>	0.21	0.16	0.22	0.22	0.02	0.13
SL15	<b><u>0.58</u></b>	0.02	0.16	0.37	0.11	-0.04	0.12
SL28	<b><u>0.58</u></b>	0.36	0.12	0.20	0.19	0.12	0.07
SL20	<b><u>0.58</u></b>	0.19	0.11	0.31	0.17	0.02	0.11
SL33	<b><u>0.55</u></b>	0.25	0.24	0.13	0.13	0.07	0.19
SL14	<b><u>0.52</u></b>	0.11	0.08	0.39	0.20	0.00	0.06
SL24	<b><u>0.51</u></b>	0.21	0.18	0.34	0.12	0.07	0.14
SL30	<b><u>0.49</u></b>	0.16	0.23	0.15	0.08	0.10	0.30
SL36	<b><u>0.48</u></b>	0.41	0.14	0.18	0.15	0.04	0.13
SL16	<b><u>0.48</u></b>	0.17	0.18	0.39	0.19	-0.08	0.06
SL19	<b><u>0.47</u></b>	0.20	0.17	0.34	0.13	-0.04	0.18
SL34	<b><u>0.47</u></b>	0.40	0.23	0.22	0.18	0.08	0.12
SL25	<b><u>0.45</u></b>	0.31	0.12	0.29	0.23	0.11	0.07
SL31	<b><u>0.44</u></b>	0.44	0.13	0.33	0.16	0.09	0.07
Social Competence							
SL37	0.38	<b><u>0.57</u></b>	0.17	0.31	0.16	0.10	0.08
SL35	0.39	<b><u>0.54</u></b>	0.17	0.29	0.22	0.06	0.08
SL38	0.39	<b><u>0.52</u></b>	0.16	0.27	0.15	0.06	0.12
SL41	0.37	<b><u>0.50</u></b>	0.21	0.29	0.26	0.05	0.11
SL40	0.30	<b><u>0.43</u></b>	0.23	0.21	0.21	0.11	0.22
SL49	0.14	<b><u>0.42</u></b>	0.35	0.36	0.15	-0.10	0.31
SL42	0.15	<b><u>0.41</u></b>	0.32	0.16	0.10	0.14	0.34
SL29	0.26	<b><u>0.37</u></b>	0.17	0.16	-0.04	0.18	0.32
Caring Disposition							
SL56	0.12	0.13	<b><u>0.64</u></b>	0.16	0.11	0.18	0.30
SL57	0.26	0.11	<b><u>0.63</u></b>	0.17	0.19	0.10	0.14
SL58	0.31	0.06	<b><u>0.60</u></b>	0.16	0.21	0.05	0.08
SL59	0.37	-0.02	<b><u>0.59</u></b>	0.10	0.23	0.04	0.14
SL55	0.12	0.15	<b><u>0.56</u></b>	0.04	0.08	0.20	0.25
SL53	0.12	0.25	<b><u>0.56</u></b>	0.19	0.05	0.10	0.38
SL54	0.07	0.18	<b><u>0.55</u></b>	0.17	0.06	0.23	0.36
SL60	0.34	0.09	<b><u>0.51</u></b>	0.21	0.29	0.03	0.10
SL52	0.18	0.28	<b><u>0.51</u></b>	0.23	0.12	0.08	0.31
SL51	0.16	0.36	<b><u>0.48</u></b>	0.36	0.14	0.03	0.29
SL51	0.16	0.36	<b><u>0.48</u></b>	0.36	0.14	0.03	0.29
SL50	0.15	0.34	<b><u>0.47</u></b>	0.31	0.13	-0.09	0.32

	Factor Loading of Component						
	1	2	3	4	5	6	7
Caring Disposition							
SL48	0.13	0.31	<b><u>0.38</u></b>	0.30	0.19	0.02	0.32
SL32	0.21	0.10	<b><u>0.35</u></b>	-0.01	-0.14	0.34	0.27
People Orientation							
SL11	0.30	0.28	0.12	<b><u>0.62</u></b>	0.19	0.14	0.05
SL08	0.35	0.17	0.09	<b><u>0.60</u></b>	0.25	0.15	0.06
SL09	0.36	0.10	0.17	<b><u>0.59</u></b>	0.20	0.15	0.08
SL10	0.35	0.10	0.10	<b><u>0.58</u></b>	0.21	0.18	0.09
SL12	0.24	0.18	0.25	<b><u>0.58</u></b>	0.00	0.03	0.14
SL07	0.27	0.18	0.12	<b><u>0.56</u></b>	0.19	0.17	0.10
SL02	0.18	0.06	0.11	<b><u>0.54</u></b>	0.09	0.27	0.22
SL17	0.25	0.21	0.34	<b><u>0.54</u></b>	-0.02	-0.06	0.16
SL01	0.20	0.20	0.08	<b><u>0.53</u></b>	0.08	0.25	0.19
SL13	0.39	0.16	0.15	<b><u>0.53</u></b>	0.13	0.06	0.04
SL18	0.32	0.14	0.34	<b><u>0.49</u></b>	0.00	-0.11	0.25
Self-Reflection and Self-Understanding							
SL68	0.30	0.23	0.08	0.26	<b><u>0.61</u></b>	-0.01	0.13
SL66	0.27	0.27	0.17	0.19	<b><u>0.68</u></b>	0.03	0.11
SL65	0.21	0.16	0.14	0.14	<b><u>0.68</u></b>	0.05	0.21
SL67	0.26	0.19	0.21	0.18	<b><u>0.64</u></b>	-0.01	0.15
SL64	0.20	-0.05	0.19	0.06	<b><u>0.53</u></b>	0.02	0.14
Positive Views about Human Being							
SL04	0.02	0.06	0.09	0.14	0.03	<b><u>0.73</u></b>	0.13
SL03	0.04	0.05	0.16	0.21	-0.04	<b><u>0.71</u></b>	0.13
SL73	0.14	0.08	0.30	0.10	0.19	<b><u>0.33</u></b>	0.03
Ethical Role Model							
SL44	0.18	0.11	0.22	0.13	0.16	0.05	<b><u>0.74</u></b>
SL46	0.13	0.05	0.23	0.10	0.08	0.15	<b><u>0.70</u></b>
SL47	0.08	0.05	0.28	0.11	0.15	0.16	<b><u>0.67</u></b>
SL45	0.24	0.10	0.18	0.13	0.18	0.02	<b><u>0.66</u></b>
SL43	0.28	0.14	0.16	0.14	0.15	0.04	<b><u>0.62</u></b>
SL39	0.02	0.33	0.30	0.07	0.05	0.30	<b><u>0.40</u></b>

Table 2. Coefficients of congruence across two subsamples (N = 4,486)

	Between Two Random Sub-Samples
Service Leadership Attitude Scale (SLA-SF-73)	0.97
SLA-SF-73 - Vision and Competence	0.98
SLA-SF-73 - Social Competence	0.97
SLA-SF-73 - Caring Disposition	0.98
SLA-SF-73 - People Orientation	0.97
SLA-SF-73 - Self-Reflection and Self-Understanding	0.97
SLA-SF-73 - Positive Views about Human Being	0.96
SLA-SF-73 - Ethical Role Model	0.97

**Table 3. Internal consistency of Service Leadership Attitude Scale (SLA-SF-46E) and external criterions scales (N = 2,246)**

	$\alpha$	Mean Inter-Item Correlations
Service Leadership Attitude Scale (SLA-SF-46E)	0.96	0.36
SLA-SF-46E - Vision and Competence	0.91	0.46
SLA-SF-46E - Social Competence	0.84	0.56
SLA-SF-46E - Caring Disposition	0.89	0.47
SLA-SF-46E - People Orientation	0.89	0.46
SLA-SF-46E - Self-Reflection and Self-Understanding	0.82	0.49
SLA-SF-46E - Positive Views about Human Being	0.70	0.54
SLA-SF-46E - Ethical Role Model	0.85	0.53
Service Leadership Knowledge Scale (SLK-SF-40)	0.93	0.21
Service Leadership Behavioral Scale (SLB-SF-38)	0.96	0.38
SLB-SF-38 - Self-Improvement and Self-Reflection	0.91	0.53
SLB-SF-38 - People and Principles Orientation	0.87	0.42
SLB-SF-38 - Resilience	0.87	0.50
SLB-SF-38 - Social Competence	0.86	0.55
SLB-SF-38 - Problem-Solving	0.87	0.56
SLB-SF-38 - Mentorship	0.85	0.65
Revised Servant Leadership Scale (RSLP)	0.94	0.46
Moral Self-Concept Scale (MSC)	0.83	0.44
Leadership Efficacy Scale (LEF)	0.72	0.25
Interpersonal Reactivity Index (IRI)	0.74	0.17
IRI - Empathic Concern	0.62	0.19
IRI - Perspective Taking	0.59	0.19

**Table 4. Correlation coefficients with external criterion scales and other Service Leadership scales (N = 2,246)**

	SLK-SF-40	SLB-SF-38	RSLP	MSC	LEF	IRI	EC	PT
SLA-SF-46E	0.29	0.58	0.59	0.55	0.24	0.40	0.33	0.37
SLA-SF-46E-F1	0.37	0.46	0.46	0.50	0.18	0.38	0.33	0.34
SLA-SF-46E-F2	0.17	0.50	0.53	0.45	0.20	0.33	0.28	0.30
SLA-SF-46E-F3	0.17	0.50	0.53	0.45	0.20	0.33	0.28	0.30
SLA-SF-46E-F4	0.33	0.47	0.50	0.49	0.20	0.37	0.32	0.34
SLA-SF-46E-F5	0.24	0.47	0.44	0.44	0.19	0.29	0.22	0.29
SLA-SF-46E-F6	0.04	0.26	0.29	0.21	0.13	0.13	0.11	0.11
SLA-SF-46E-F7	0.04	0.42	0.45	0.36	0.16	0.25	0.20	0.23

Note. SLK-SF-40: One-factor Service Leadership Knowledge Scale (40 items); SLB-SF-38: Six-factor Service Leadership Behavior Scale (38 items); RSLP: Revised Servant Leadership Profile; MSC: Moral Self-Concept; LEF: Leadership Efficacy; IRI: Interpersonal Reactivity Index; EC: IRI- Empathic Concern; PT: IRI- Perspective Taking. SLA-SF-46E-F1: Vision and Competence; SLA-SF-46E-F2: Social Competence; SLA-SF-46E-F3: Caring Disposition; SLA-SF-46E-F4: People Orientation; SLA-SF-46E-F5: Self-Understanding and Reflection; SLA-SF-46E-F6: Positive View About Human Beings; SLA-SF-46E-F7: Ethical Role Model. All correlations are significant at the level of 0.01(two-tailed).



**Table 5. Correlation coefficients with subscales of SLB-SF-38**

	SLB-SF-38-F1	SLB-SF-38-F2	SLB-SF-38-F3	SLB-SF-38-F4	SLB-SF-38-F5	SLB-SF-38-F6
SLA-SF-46E	0.52	0.62	0.38	0.50	0.36	0.35
SLA-SF-46E-F1	0.48	0.55	0.33	0.45	0.36	0.25
SLA-SF-46E-F2	0.43	0.53	0.27	0.44	0.29	0.19
SLA-SF-46E-F3	0.43	0.53	0.34	0.42	0.28	0.39
SLA-SF-46E-F4	0.43	0.54	0.29	0.44	0.28	0.23
SLA-SF-46E-F5	0.44	0.47	0.30	0.40	0.33	0.24
SLA-SF-46E-F6	0.36	0.42	0.31	0.31	0.22	0.38
SLA-SF-46E-F7	0.21	0.26	0.21	0.22	0.13	0.24

Note. SLB-SF-38-F1: Self-Improvement and Self-Reflection; SLB-SF-38-F2: People and Principles Orientation; SLB-SF-38-F3: Resilience; SLB-SF-38-F4: Social Competence; SLB-SF-38-F5: Problem-Solving; SLB-SF-38-F6: Mentorship. SLA-SF-46E-F1: Vision and Competence; SLA-SF-46E-F2: Social Competence; SLA-SF-46E-F3: Caring Disposition; SLA-SF-46E-F4: People Orientation; SLA-SF-46E-F5: Self-Understanding and Reflection; SLA-SF-46E-F6: Positive View About Human Beings; SLA-SF-46E-F7: Ethical Role Model. All correlations are significant at the level of 0.01 (two-tailed).

### *Internal consistency and convergent validity*

Full SLA-SF-46E and its seven subscales demonstrated high internal consistency. The Cronbach's value of full SLA-SF-46E scale was 0.96 and those of subscales were between 0.70 and 0.91 (see Table 3), showing good internal consistency. As expected, the scores of SLA-SF-46E and seven subscales were all positively correlated with those of SLK-SF-40, SLB-SF-38, RSLP, MSC, LEF, IRI, EC, and PT (see Table 4). Consistently, the scores of SLA-SF-46E and seven subscales were found positively associated with the scores of each subscale of SLB-SF-38 (see Table 5). The findings supported all hypotheses, establishing the convergent validity of SLA-SF-46E and seven subscales among Hong Kong undergraduate students.

## **Discussion**

This study reported the shortening of the SLA-LF-73 from 73 items to 46 items after factor analyses based on 4,468 college students in Hong Kong, and tested the reliability, convergent validity and factorial validity of the 46-item scale. Exploratory factors analyses showed that seven factor emerged from the scale and this seven-factor structure was stable across two sub-samples of Hong Kong college students. Based on the cut-offs of inter-item correlation and factor loading, 73 items were further shortened into 46 items. The findings suggested that both the full scale and seven

sub-scales demonstrated excellent reliability status. In addition, both the 46-item scale and all seven sub-scales demonstrated convergent validity, which is proven by their significant correlations with SLK-SF-40, SLB-SF-38 (and sub-scales), RSLP, MSC, LEF, IRI, EC, and PT.

As expected, there were positive correlations between SLA-SF-46E and SLK-SF-40, echoing to a series of previous findings that knowledge and information establish the understanding of importance of a subject, shaping positive attitudes toward it at the next stage (33, 37). SLA-SF-46E was found positively correlated with SLB-SF-38 and its subscales, which is consistent with the theory of planned behavior that positive attitude is able to shape positive behavior through behavioral intentions (15). There were positive correlations detected between SLA-SF-46E and RSLP, echoing the common philosophy and practices of both service leadership and servant leadership that enriches the lives of individuals and creates a caring environment (27). Besides, SLA-SF-46E was positively correlated with MSC, which is consistent with the core philosophy of service leadership that service leaders should possess moral character and practice following the principles of integrity, fairness, and humanity (22). For service leaders, the strong motivation of being ethical role models make them take efforts to shape their moral character and improve their moral self-concept, causing the strong positive correlations between SLA-SF-46E and MSC. As expected, SLA-SF-46E was positively correlated with LEF as confidence is

normally generated from the behavior and experience and positive attitude always drives positive behaviors (38). SLA-SF-46E was found positively correlated with IRI, echoing the core belief of service leadership that service leaders should demonstrate interpersonal and intrapersonal competencies in terms of the willingness of collaborating with peers, capacity of addressing conflicts within a team, and capabilities in constructing communication channels to promote information exchange (22). More specific, the positive correlations between SLA-SF-46E and EC are consistent with the literature that empathic concern increases the likelihood of exhibiting care, which is believed to be one of core practices of service leaders (35). The positive correlations between SLA-SF-46E and PT echo the literature that thinking from the perspective of service receivers is positively associated with their satisfaction on the service received (36).

This study helps develop a briefer and focused measure of service leadership attitude for Hong Kong undergraduate students. The SLA-SF-46E is important to local universities in view of the need to objectively evaluate service leadership programs, which has long term impacts on the healthy operation of the Hong Kong's service economy.

Although current study makes sound contribution, some limitations should be noted. First, the study examined service leadership attitude and behavior by directly asking students only without checking the accuracy of their answers by comparing with the assessment from the perspective of teachers and peers. Similar to other self-report measures, it is noteworthy that social desirability may cloud the findings. Comparatively, their attitudes and behavior may be more accurately recognized by teachers and peers, suggesting future studies should invite teachers and peers to rate the same items. Second, the data in this study are from eight publically funded universities only. It is noteworthy that there are a number of undergraduate students studying in the self-funded tertiary institutions. Future studies might consider extending the sample of this study to cover students in self-funded tertiary institutions. Third, as the sample adopted in this study is essentially a convenient sample, there is a problem of generalizability of the findings, which should be addressed in the future studies.

## Acknowledgments

The validation project is financially supported by the Victor and William Fung Foundation. The preparation for this paper is supported by the Foundation and the Endowed Professorship in Service Leadership Education at The Hong Kong Polytechnic University.

## Ethical compliance

The authors have stated all possible conflicts of interest and sources of funding for this work. If this work involved human participants, informed consent was received from each individual, and it was conducted in accordance with the 1964 Declaration of Helsinki. If this work involved experiments with humans or animals, it was conducted in accordance with the related institutions' ethics guidelines.

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*Submitted:* April 10, 2018. *Revised:* May 03, 2018.  
*Accepted:* May 10, 2018.

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