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Cross Cultural Validation and Psychometric Testing of the Supportive Supervisory Scale in Spanish

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Manuscripts

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3 **Title:** Cross Cultural Validation and Psychometric Testing of the Supportive Supervisory Scale in
4 Spanish
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6
7 **ABSTRACT**
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9 **Objective:** To develop and psychometrically test the Supervisory Support Scale in Spanish. The
10 Spanish version of the Supportive Supervisory Scale could be useful for cross-cultural
11 comparisons of supervisory support, which is a key factor to improving work relationships in long-
12 term care facilities.
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15 **Design:** Validation was carried out with 405 participants in 37 long-term care facilities between
16 October 2015 and July 2016 in two phases: 1) Translation and retrotranslation using “forward-
17 back-forward” method; 2) Psychometric Testing Procedures, testing the scale’s reliability,
18 dimensionality and construct validity.
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21 **Methods:** One-way analysis of variance was the test of significance performed to examine the
22 differences among the facilities and Pearson product-moment correlations were used to assess
23 construct validation of the scale. After the mean and standard deviation were calculated for each
24 supervisory score for each facility. Structural equation modeling was used to confirm the
25 dimensions of the scale.
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28 **Results:** The item-to-item correlations were positive, ranging from 0.44 to 0.78, indicating good
29 reliability of the scale. The coefficient alpha for the total scale was 0.96. The 15-item had mean
30 item scores which ranged from 2.89 to 3.96 (SD = 1.01–1.26). Standardized factor loadings ranged
31 within a narrow range: 0.75-0.86 for the “respecting uniqueness” latent variable and 0.76-0.88
32 for the “being reliable” latent variable. Construct validity was demonstrated as measure was
33 positively associated with job satisfaction ($r = 0.412$, $p < 0.0001$) and was negatively correlated
34 with HCAs’ stress and burden.
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37 **Conclusion:** There is evidence for the validity of the supervisory support perceived by staff in
38 Catalonia nursing facilities, despite cultural and health service contextual differences. The two-
39 factor solution identified in the original scale that highlighted two key attributes of the
40 supervisor; being reliable and respecting uniqueness, was also demonstrated in the Spanish
41 Supervisory Support Scale as there was a moderate fit of the model.
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44 **Key words:** instrument translation; long-term care facilities; nurse leadership; supervisory
45 support scale; supervisors; nursing
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SUMMARY STATEMENT OF IMPLICATIONS FOR PRACTICE

What does this research add to existing knowledge in gerontology?

- To adapt and translate a tool to measure supervisors' supportive characteristics working in long-term care facilities designed in Canada, to make it culturally viable in Spanish.
- The Spanish version of the Supportive Supervisory Scale is a key factor to improving work relationships in long-term care facilities, and ultimately the quality of care delivered to patients.

What are the implications of this new knowledge for nursing care with older people?

- The Supportive Supervisory Scale is a useful tool that measures supportive supervision, conceptualized as the extent to which regulated nurses demonstrated empathy and reliability while supervising health care aides.
- The relationships and coordination within professionals are key factors in the development of the routinely tasks and the organization of care.

How could the findings be used to influence policy or practice or research or education?

- The Spanish version of the Supportive Supervisory Scale could be useful for cross-cultural comparisons of supervisory support.
- The two-factor solution identified in the original scale that highlighted two key attributes of the supervisor; being reliable and respecting uniqueness, was also demonstrated in the Spanish Supervisory Support Scale.

Introduction

Globally, health systems are facing challenges linked to the growth of an ageing population and their dependence on the health care system which may vary based on their specific health care needs. A policy response that includes support for cost-effective health services is required (Song & Chen, 2015) while maintaining a focus on quality. Increasing numbers of older people in the population will require more long-term care facilities (United Nations & Department of Economic and Social Affairs, 2017). With this growing demand, attention has focused on leadership and staff management in long-term care facilities, including the implications when nurses in supervisory (or leadership) roles are placed in these positions without any additional education or preparation (West et al., 2016). Interprofessional relationships and the coordination of professionals are key factors in the design, organization and delivery of care. Specifically in long-term care facilities, where the role of nurses as leaders of care could contribute to better outcomes and greater stability in the work environment (Corazzini et al., 2010), the research in this field of inquiry has been limited (McGilton et al., 2016).

More recently, there is growing attention to the characteristics of the effective nurse leader. This includes the supportive dimension of leadership, which include actions that develop supportive relationships among team members (Akerjordet & Severinsson, 2008). One of the key factors of an effective supervisor is their ability to nurture and maintain positive relationships with each staff member (McGilton, 2010). Health professionals have to work together in interdisciplinary approaches to care. Collaborative respectful relationship within teams leads to the development of advanced competencies that contribute to the achievement of best practices. The leader who respects the uniqueness of each team member fosters an environment where their relationships with the team and its members flourish (Sousa & Rojjanasrirat, 2011). Supportive leadership contributes to work satisfaction and the development of a qualified team resulting in a shared understanding of the goals of care and the achievement of the best possible outcomes (Chamberlain et al., 2016). Effective nurse supervisors foster improved work environments and determine the staff's capability to attend residents' needs (Escrig-Pinol, Hempinstall et al., 2019)

The Supportive Supervisory Scale of regulated nurses in long-term care facilities, developed by McGilton (2010), is a useful tool that measures supportive supervision, conceptualized as the extent to which regulated nurses demonstrated empathy and reliability while supervising health care aides (i.e. often referred to as nursing assistants or nursing aides). The Supervisory Support Scale has been used in several studies related to job satisfaction and intent to turn over among health care aides in long-term care facilities (Bethell et al., 2018; Caspar et al., 2019). Construct validation of the Supervisory Support Scale has been demonstrated in that the supportive supervisors (as measured with the Supervisory Support Scale) have been

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3 positively correlated with health care aides' job satisfaction, and a negative relationship has been
4 associated with the amount of supportive supervision and the stress of their staff, that is, more
5 satisfied with the supervisor and less stress perceived in the workplace (McGilton et al., 2007).
6 But the conception and development of the Supervisory Support Scale was made in Canada and
7 its use outside of the Canadian system is limited.
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11 A similar validated tool is necessary in the Spanish context, in order to gain an
12 understanding of effective supervision in Spanish long-term care facilities. The Supervisory
13 Support Scale is a tool which can be used in human resources, team management and research,
14 and with the adaptation and validation to the Spanish context, cross-cultural comparisons could
15 be made if there is evidence that this translated scale has good psychometric properties. The
16 cultural translation of the scale into Spanish provides an extension to the application to other
17 Spanish speaking countries (even as, depending on the country of implementation, we
18 recommend a review of local meanings and differences on work positions and their
19 categorizations).
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24 The purpose of this study was to translate the Supervisory Support Scale to make it
25 culturally viable, and to determine its reliability and validity in the Catalonia region in Spain and
26 to compare the factor structures of the tool between Canada and Spain.
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29 **Design**

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31 An analysis of responses to the Supervisory Support Scale was undertaken to obtain reliability
32 and validity information about the Supervisory Support Scale Spanish Version. This process of
33 cultural adaptation was based on previous steps related to instrument translation
34 (Maneesriwongul & Dixon, 2004; Sousa & Rojjanasrirat, 2011) and was executed in **two phases**.
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38 Phase 1: Translation and retrotranslation using "forward-back-forward" method.
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40 In this phase, three bilingual linguistic experts translated the English scale into Spanish and the
41 first version of the Spanish instrument was created when they achieved consensus. Then two
42 different linguists translated this first Spanish version into English independently. Afterwards, the
43 new English version was translated back into Spanish again and a second version was created.
44 During the creation of the second final Spanish version, an agreement was reached by three
45 nurses on the best translation while attending to the cultural context of the tool. For example,
46 during the consensus process, an agreement about the translation of specific terms (i.e. long-
47 term care-Facilities/Centros de Larga Estancia) was achieved, words related with the name of the
48 work position (charge nurse = enfermera con responsabilidades gestoras; role = rol; current job
49 = función actual) and other linguistic, grammatical and semantic issues were addressed to
50 facilitate the understanding of the scale by the long-term care staff. Overall, the individual items
51 appeared to have face validity and Spanish speaking participants were able to understand the
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3 items. The amended Spanish version of the tool retained the same form and consisted of the
4 same 15 questions as the Canadian version. It also included a 5-point scale to measure the
5 supervisors' behaviors, with response options "always," "often," "occasionally," "seldom," and
6 "never" similar to the original scale (McGilton, 2010).
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10 Furthermore, in terms of who was being asked to complete the scale and rate their
11 supervisors, we had to adapt the name to identify the comparable work position in the Spanish
12 context. In Canada the staff member that usually completed the scale was the health care aides
13 (McGilton, 2010) however in Spain both, the auxiliares de enfermería (nursing assistants) and the
14 auxiliares de geriatría/gerocultores (geriatric assistants) were asked to complete the scale.
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17 Phase 2: Psychometric Testing Procedures

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19 We aimed to recruit a representative sample of the 928 long-term care centers in Catalonia. To
20 do so, we set a confidence level of 95% and precision of +/- 0.05 (SD 0.15), resulting in a required
21 sample size of at least 34 long-term care facilities.
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24 Participants

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26 The Spanish version of the scale was completed by 405 participants the majority of whom were
27 either Spanish or Catalan. Only 7% of the participants had a first language different other than
28 Spanish or Catalan. Ninety- two percent of the participants were women, and 82% had full-time
29 positions. The average age was 42.83 years old (SD 12.26) with an average of time working in the
30 center of 9.80 years (SD 7.42). More characteristics of the sample of the health care aides are
31 shown in Table 1.
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36 Data collection

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38 The data collection took place between October 2015 and July 2016 with a voluntary
39 participation. Validation was carried out with 405 participants after rejecting void questionnaires
40 (badly fulfilled, blank). We were able to distribute the measure in 37 facilities as part of a larger
41 study, and they were purposively sampled according to variations in the facility sized and
42 different types of funding (public, private or mixed). The research protocol was approved by the
43 Ethics Committee of the Official College of Nurses of Lleida (089352). The centers and subjects
44 participated after being informed and guaranteed that data collection was on a volunteer basis
45 and all information was anonymized.
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50 Data analysis

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53 An analysis of the replies to the Spanish Supervisory Support Scale was undertaken to evaluate
54 its reliability, validity, and dimensionality. Exploratory factor analysis was used to understand its
55 factor structure: (1) eigenvalues of the polychoric correlation matrix were compared to
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3 eigenvalues expected from random data using Parallel Analysis (Hayton, Allen, & Scarpello,
4 2004), and (2) rotated factor loadings of the Spanish version were compared to those of the
5 English version (McGilton, 2010). Confirmatory factor analysis using structural equation
6 modelling evaluated the validity and reliability of the measures and the goodness-of-fit. Analyses
7 were performed with Stata 16 (StataCorp, 2019).
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11 The Spanish Supervisory Support Scale was assessed for discriminative validity by
12 examining if supervisory support varied between the different facilities in Spain. It was
13 hypothesized that there would be differences between the 37 long-term care facilities in Spain,
14 given the differing workload of the supervisors within the facilities as some were private and for
15 profit. One-way analysis of variance was the test of significance performed to examine the
16 differences among the facilities. After, the mean and standard deviation were calculated for each
17 supervisory score for each facility.
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20 21 22 **Results**

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24 As less than 1% of the data were missing; no corrections had to be made. Scores on the Spanish
25 Supervisory Support Scale were found to be distributed normally and covered the range of
26 possible scores between 15–75. The mean score was 49 out of a possible 75 for the supervisors,
27 which represents a moderate level of support.
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30 31 **Reliability**

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33 The coefficient alpha for the Spanish Supervisory Support Scale was 0.96 and item-to-item
34 correlations ranged from +0.44 to +0.78 (Table 2); indicating good reliability for the scale. Mean
35 item scores ranged from 2.89 to 3.96 with standard deviations from 1.01 to 1.26 (Table 3).
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38 The exploratory factor analysis showed that the two factor structure of the Spanish Supervisory
39 Support Scale was consistent with the structure of the original English version. A parallel analysis
40 comparing the eigenvalues of the polychoric correlation matrix with random expectations
41 justified two factors. Rotated factor loadings upheld the pattern of item membership in each
42 factor. The confirmatory factor analysis supported the validity and reliability of these measures
43 and confirmed a factor structure where 10 items represented the supervisor's ability to respect
44 the uniqueness of the staff member, "respecting uniqueness"; and 5 items represented the
45 supervisor's ability to be reliable with staff, "being reliable". Standardized factor loadings ranged
46 within a narrow range: 0.75-0.86 for the "respecting uniqueness" latent variable and 0.76-0.88
47 for the "being reliable" latent variable. The fit of the model was moderate (Table 3).
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52 53 **Discriminant Validity**

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3 The discriminant validity of the Spanish Supervisory Support Scale differed significantly between
4 facilities ($F=4.13$, $p<0.0001$, see Table 4). For example, within Facilities 9, 13, and 35 scores on
5 the tool are significantly higher than those for Facilities 32, 14, and 11 (Bonferroni multiple-
6 comparison tests $p < .05$, see Table 4).
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9 10 **Discussion**

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12 We adapted a tool developed in Canada to measure the supportive capacities of supervisors in
13 Catalonia, Spain. The tool was translated into Spanish and refined by experts and nurses working
14 in Spain. Then, we determined the measure's reliability and selected items to analyze the factors
15 structure. The psychometric testing of the Spanish Supervisory Support Scale was carried out
16 with a large Spanish sample of 'auxiliares de enfermería' and 'auxiliares de geriatría/gerocultores'
17 (i.e., Spanish health care aides) and the findings lend support for the scale's utility. It appears that
18 supportive supervisors in Spanish long-term care facilities may be of importance to the work
19 environments of health care aides as it is in Canada.
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24 In terms of the reliability of the adapted scale, the results are similar to those of the
25 original (McGilton, 2010). A positive internal consistency between items was found a range
26 between 0.44 and 0.78 with an alpha of 0.96, while the original scale situated between 0.40 and
27 0.70 with an alpha of 0.94.
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30 The two-factor solution identified in the original scale that highlighted two key attributes
31 of the supervisor; being reliable and respecting uniqueness, was also demonstrated in the
32 Spanish Supervisory Support Scale as there was a moderate fit of the model. It would appear
33 that in Catalonia, supervisors working in long-term care facilities are also expected to be reliable
34 and dependable with the staff they supervise. As found in other work settings, having a
35 supportive supervisor who can be relied upon to facilitate workload and support care helps to
36 create a healthy work environment (Escrig-Pinol, Corazzini et al., 2019). In addition, respecting
37 the uniqueness of the health care aides in Spanish nursing facilities is also important for the
38 supervisor as respecting uniqueness has been found by other researchers (Sousa & Rojjanasirat,
39 2011). Taking time to listen to staff, recognizing their strengths, meeting their needs, helps build
40 effective work relationships necessary for the work that is required in long-term care facilities
41 (McGilton, 2010). In addition, evidence of the construct validity of the Spanish version of the
42 Supervisory Support Scale was demonstrated in a similar process used in earlier work by
43 McGilton et al (2007), in that, if staff perceived their supervisors in Spanish long-term care
44 facilities as supportive this was positively associated with staff members' job satisfaction.
45 Likewise, if they perceived their supervisors as supportive, they perceived less burden in their
46 workplace. It appears that supervisors can influence health care aides' job satisfaction and intent
47 to stay (Bethell et al., 2018; Chamberlain et al., 2016) and as such, more education and support
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3 might be required to ensure supervisors in Spanish long-term care facilities have the prerequisite
4 knowledge, skills and attitudes to supervise effectively.
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7 The discriminate validity of the scale was also examined. There were significant variations
8 between health care aides' assessments of their supervisors in different Catalan long-term care
9 facilities. This implies that the Spanish Supervisory Support Scale can identify differences in the
10 amount of supportive supervision which occurs in the different long-term care facilities in the
11 region, which is similar to results obtained by the English Supervisory Support Scale tool in
12 Canada (McGilton, 2010). The ability to discriminate has yielded the opportunity to conduct case
13 study research focusing on long-term care facilities with either a high or low rating in terms of
14 supervisory support (Escrig-Pinol, Corazzini et al., 2019). As the scale did not require major
15 modifications with participants in different countries speaking different languages, the
16 opportunity to conduct cross-cultural comparison in future work is encouraging.
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22 Understanding best practices in long-term care facilities internationally is important work
23 as we need to learn from one another and identify best practices. Efforts to create common data
24 metrics for global use will support thriving among long-term care residents and staff and an
25 international team of researchers are currently focusing on this endeavor (Corazzini et al., 2019).
26 WE-THRIVE (Worldwide Elements To Harmonize Research In Long-term care Living
27 Environments), is a consortium with the main goal to develop jointly an international long-term
28 care research measurement body of knowledge that can be used in diverse long-term care
29 facilities (including low and middle socio-economic countries) for comparative research
30 (Corazzini et al., 2019), and the Supervisory Support Scale tool may be one such instrument to
31 advance this goal.
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36 **Limitations**

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38 The study has some limitations and the first is related to the original scale. It is based on a
39 relational theory, not a leadership theory, and the validation of the scale occurred only in one
40 Canadian province. However, given that some leadership theories are grounded in the
41 importance of relationships this is not problematic. The Spanish translated version was only
42 validated in the Catalan context, but the measure was easy to use and appears applicable to other
43 Spanish speaking countries, because it does not include cultural connotations that made
44 translation difficult to achieve.
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49 **Conclusion**

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51 We demonstrated that the amount of supervisory support perceived by their staff can be
52 reported. The Canadian designed SSS was translated to Spanish and there is evidence for the
53 validity of the measure. Future research is required to determine if different factors contribute
54 to the ability of a supervisor to be supportive in different societies and how this then relates to
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3 staff or resident outcomes. This may ultimately lead to international research focused on how to
4 improve supervisory effectiveness through interventions focused at the individual and facility
5 level in English and Spanish speaking countries.
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Table 1: Characteristics of the sample of the health care aides (n=405).

	Health Care Aides (n = 405) Number (% of total)
Gender, female	372 (92%)
First spoken language	
Spanish	223 (55%)
Catalan	136 (34%)
Catalan-Spanish	16 (4%)
Other	30 (7%)
Education	
Nursing Assistant	264 (64%)
Geriatric Assistant	105 (26%)
Trainee Nurse	10 (3%)
Other	26 (7%)
Job Title	
Nursing Assistant	216 (53%)
Geriatric Assistant	181 (44%)
Other	8 (2%)
Currently working	
Full time	332 (82%)
Part time	63 (15%)
Causal	10 (3%)
Years worked in this role [quartiles: 25 th %tile, median, 75 th %tile]	[5, 11, 16]
Years worked in Long-Term Care [quartiles]	[4, 8, 13]
Number of residents responsible for [quartiles]	[15, 25, 35]
Number of support workers you work with [quartiles]	[1, 3, 4]

Table 2. Item-to-item correlations for 15-item Supportive Supervisory Scale, for health care aides

Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1														
2	0.78	1													
3	0.66	0.72	1												
4	0.67	0.75	0.67	1											
5	0.67	0.76	0.70	0.74	1										
6	0.55	0.67	0.58	0.72	0.68	1									
7	0.46	0.53	0.44	0.51	0.55	0.57	1								
8	0.56	0.65	0.57	0.74	0.67	0.75	0.66	1							
9	0.52	0.57	0.50	0.56	0.59	0.58	0.74	0.67	1						
10	0.56	0.62	0.56	0.60	0.65	0.65	0.65	0.69	0.72	1					
11	0.65	0.72	0.63	0.68	0.70	0.68	0.60	0.75	0.64	0.71	1				
12	0.67	0.71	0.61	0.64	0.69	0.62	0.59	0.70	0.60	0.67	0.78	1			
13	0.55	0.59	0.55	0.64	0.61	0.62	0.54	0.67	0.57	0.58	0.61	0.59	1		
14	0.54	0.61	0.56	0.60	0.63	0.63	0.59	0.71	0.61	0.62	0.68	0.63	0.66	1	
15	0.63	0.68	0.65	0.63	0.66	0.64	0.55	0.66	0.57	0.62	0.66	0.74	0.59	0.70	1

Note: All correlation coefficients were highly significant (p-value < .001).

Table 3 Confirmatory factor analysis of two factor model proposed by McGilton (2010), including mean, standard deviation, and standardized factor loadings of each Supervisory Support Scale item, for health care aides (N = 405).

Item Response options: 1=never, 2=seldom, 3=occasionally, 4=often, 5=always	Mean ± Standard Deviation	Standardized factor loading (95% confidence interval) Two latent variables
Items associated with <i>Respecting uniqueness</i> latent variable		
1. My supervisor recognizes my ability to deliver quality care.	3.31 ± 1.09	0.79 (0.75, 0.83)
2. My supervisor tries to meet my needs.	3.10 ± 1.13	0.86 (0.83, 0.89)
3. My supervisor knows me well enough to know when I have concerns about resident care.	3.31 ± 1.20	0.78 (0.74, 0.82)
4. My supervisor tries to understand my point of view when I speak to them.	3.38 ± 1.11	0.83 (0.80, 0.87)
5. My supervisor tries to meet my needs in such ways as informing me of what is expected of me when working with my residents.	3.20 ± 1.09	0.85 (0.82, 0.88)
11. My supervisor encourages me even in difficult situations.	3.07 ± 1.26	0.86 (0.83, 0.88)
12. My supervisor makes a point of expressing appreciation when I do a good job.	2.89 ± 1.26	0.84 (0.80, 0.87)
13. My supervisor respects me as a person.	3.96 ± 1.01	0.75 (0.70, 0.79)
14. My supervisor makes time to listen to me.	3.36 ± 1.14	0.78 (0.74, 0.82)
15. My supervisor recognizes my strengths and areas for development.	3.23 ± 1.20	0.82 (0.79, 0.85)
Items associated with <i>Being reliable</i> latent variable		
6. I can rely on my supervisor when I ask for help, for example, if things are not going well between myself and my co-workers or between myself and residents and/or their families.	3.47 ± 1.25	0.82 (0.78, 0.85)
7. My supervisor keeps me informed of any major changes in the work environment or organization.	3.16 ± 1.15	0.76 (0.72, 0.81)
8. I can rely on my supervisor to be open to any remarks I may make to him/her.	3.30 ± 1.11	0.88 (0.85, 0.91)
9. My supervisor keeps me informed of any decisions that were made in regards to my residents.	3.17 ± 1.13	0.80 (0.76, 0.84)
10. My supervisor strikes a balance between clients/ families' concerns and mine.	3.03 ± 1.10	0.83 (0.79, 0.86)
Covariance between latent variables		0.93 (0.90, 0.95)
Fit Indexes		
Chi-square (<i>df</i>) Test of model vs saturated		483.0 (89) p < 0.001
Root mean squared error of approximation		0.107
Comparative fit index		0.926
Tucker-Lewis index		0.912

Table 4. Divergent construct validity across the 37 facilities for health care aides

Facility	Supervisory Support Score Health Care Aides Mean \pm SD	Number of respondent health care aides in facility
13	67.14 \pm 10.12	7
26	63.67 \pm 10.97	3
9	62.11 \pm 10.15	9
15	61.67 \pm 6.66	3
10	60.50 \pm 2.12	2
3	59.00 \pm 13.53	5
35	58.82 \pm 8.68	11
8	55.67 \pm 11.93	3
16	55.64 \pm 12.03	11
4	55.53 \pm 9.62	19
24	55.47 \pm 10.89	15
31	54.75 \pm 11.85	8
30	53.11 \pm 10.74	9
12	52.75 \pm 8.96	4
20	52.50 \pm 14.66	14
5	52.05 \pm 13.78	20
28	51.50 \pm 11.63	8
6	50.57 \pm 8.06	7
1	50.39 \pm 7.28	18
21	50.09 \pm 12.21	11
36	50.09 \pm 6.99	11
18	49.91 \pm 16.56	23
7	49.83 \pm 12.59	6
2	49.21 \pm 12.18	14
37	48.23 \pm 11.82	13
29	47.27 \pm 11.64	11
27	46.56 \pm 8.52	9
25	45.57 \pm 11.95	14
34	45.46 \pm 19.91	13
17	45.00 \pm 10.83	23
23	40.94 \pm 10.67	18
19	40.86 \pm 9.87	7
22	40.00 \pm 16.23	10
33	37.47 \pm 14.02	15
11	37.12 \pm 15.97	17
14	33.67 \pm 13.76	6
32	26.88 \pm 12.83	8
Total	48.92 \pm 14.01	405
ANOVA	$F=4.13, p<0.0001$	