

ORIGINAL ARTICLE

Validity and reliability of the Turkish version of the Ostomy Self-Care Index

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Abstract

Although stoma is often life-saving, evacuation outside of natural ways and changes in body image negatively affect the quality of life of the individual. To our knowledge, there is no Turkish scale that evaluates the self-care of individuals with a stoma. This study aimed to examine the validity and reliability of the Ostomy Self-Care Index in Turkish. This is a methodological study. The study sample consisted of 253 individuals with ostomy. 'Ostomy Individual Information Form' and 'Ostomy Self-Care Index' were used as data collection tools. Data were collected between September 2020 and January 2021 through face-to-face interviews conducted at two public hospitals in Turkey. In the analysis of the data, descriptive statistics, language and content validity, confirmatory factor analysis, item analysis, internal consistency and test-retest methods were used. The content validity index was 0.99, and Cronbach's alpha was 0.949. According to confirmatory factor analysis, the goodness of fit indices were at the desired level, the factor loads of the items were between 0.575 and 0.964, and all items were included in eight sub-dimensions in line with the original scale. As in the original version of the scale, item 18, which was not statistically significant, was excluded in the analysis and was accepted as an addition. The correlation of scale items in the test-retest was between 0.837 and 0.988. This study determined that the Ostomy Self-Care Index is valid and reliable for measuring the self-care of stoma patients in Turkey. This scale can be used as a guide for evaluating the self-care of individuals with a stoma and planning their care.

KEYWORDS

index, ostomy, reliability, self-care, stoma, validity

What is known about this topic

The number of individuals with stomas is increasing day by day. In addition to being life-saving, a stoma can cause very complex situations in an individual's life. Nurses play a key role in adapting to this complex situation and maintaining their self-care. By evaluating the self-care of individuals with stoma, effective interventions can be made and complications can be prevented. Thus, it can directly contribute to increasing the quality of life of individuals.

What this paper adds

This study provides evidence that the Ostomy Self-Care Index has good psychometric properties in assessing the self-care of Turkish individuals with stoma. This scale can be used as a guide in evaluating the self-care of Turkish individuals with stoma. Using scales with proven validity and reliability that evaluate the self-care of individuals with a stoma, screening and identification of patients needing support and appropriate intervention planning can be achieved. Ostomy Self-Care Index is an easy and practical scale for systematically improving interdisciplinary communication and self-care outcomes for all patients with a stoma.

1 | INTRODUCTION

The stoma is the opening that connects an organ to the skin by surgical method. Colostomy, ileostomy and urostomy, in which evacuation is provided from the anterior wall of the abdomen with an opening created outside the normal ways, are the most frequently created stomas.^{1,2} While these stomas are formed for many reasons, such as trauma, fistula and obstruction, the most common indications for the opening include colorectal cancers and bladder cancer. The exact number of individuals with stoma throughout the world is not known. However, estimated that 18%–35% of individuals diagnosed with cancer must live with a temporary or permanent stoma as part of their treatment. In addition, the number of individuals with a stoma will increase with the increase in colorectal and bladder cancers.³

Although stoma is often life-saving, evacuation outside of natural ways and changes in body image negatively affect the quality of life of the individual. The individual may feel emotions such as denial, guilt, anger, fear and hopelessness and may think of losing control by worrying about gas, odour and leakage from the stoma. In addition, social activities, such as work, school, sexuality, travel and interpersonal relationships, may be affected due to the fear of not being accepted and stigmatized by the social environment.^{4,5}

Nurses' education and counselling play an important role in helping individuals adapt to life with a stoma and maintain self-care. Deciding on the area to create a stoma with the training given by nurses to the individual and the family on preoperative stoma care and activities of daily living supports independent postoperative self-care practices, facilitates compliance with the stoma, and reduces the incidence of complications. Continuing education and counselling of the stoma care nurse after the operation and during the discharge process positively affects the individual's acquisition of stoma self-care skills, enables early recognition of possible complications and enables faster adaptation to the new lifestyle.^{6,7}

This study was conducted to evaluate the self-care of patients with a stoma by examining the Turkish validity and reliability of the Ostomy Self-Care Index and contributing to the nursing literature on the measurement tool.

2 | MATERIALS AND METHODS

The methodological type of study for the purpose of psychometric evaluation of the instrument was planned. This study was conducted

in the general surgery, gastroenterology surgery and urology outpatient clinics of two public hospitals in Tekirdag, Turkey between September 2020 and January 2021. To evaluate the validity and reliability of a scale in different languages and cultures, it is recommended that the sample size should be 5–10 times the number of scale items.⁸ Since the number of items on the scale in this study was 32, it was aimed to reach at least 160 individuals with a stoma. The study sample consisted of 253 individuals who spoke, read and wrote Turkish, were older than 18 years, had a stoma (colostomy, ileostomy or urostomy) for at least 1 month, and did not have a cognitive problem that prevented them from expressing themselves, or had a severe psychiatric diagnosis, and gave written consent to participate in this study. Data were collected from patients who volunteered to participate and met the inclusion criteria. The data were collected by the researcher by face-to-face interview method, giving each individual approximately 30 min.

2.1 | Data collection tools

An 11-item 'Ostomy Individual Information Form' and 32-item 'Ostomy Self-Care Index' were used as data collection tools.

2.1.1 | Ostomy Individual Information Form

Ostomy Individual Information Form consists of questions about the demographic and clinical characteristics of individuals with a stoma.

2.1.2 | Ostomy Self-Care Index (Original Index)

The 'Ostomy Self-Care Index' was developed by Giulia Villa et al. in Italy between May 2017 and May 2018. The validity and reliability of the index applied to individuals with Italian colostomy, ileostomy and urostomy have been confirmed in English.^{9,10}

The 'Ostomy Self-Care Index' developed in English by Giulia Villa et al. consists of 32 items and four subsections; the scale items are evaluated with a 5-point Likert type.^{9,10} The Cronbach's alpha coefficient regarding the reliability of the scale was, respectively, 0.965 for 'Self-care Maintenance' in the first section consisting of nine items; 0.953 for 'Self-care Monitoring' in the second part consisting of 8 items; 0.930 for the third section 'Self-care Management' consisting

of five items; the fourth section, consisting of 10 items, is 0.962 for 'Self-care Confidence' and 0.975 for the entire scale. As a result of the factor analysis, 'Self-care Monitoring' and 'Self-care Confidence' sub-dimensions were collected under one factor; The 'Self-care Maintenance' sub-dimension (Caring for Appropriate Stoma Appliances and Stoma Care Behaviour) has two-factor loadings and the 'Self-care Management' sub-dimension (Autonomous Self-care Management Behaviours, Consultative Self-care Management Behaviours, and in the 18th article, by evaluating the complication status of the individual, the additional accepted) exhibited three-factor loads. The highest score is 160 on the scale, and it is stated that as the total score increases, self-care also increases.^{9,10}

Permission was obtained from the owner of the original scale in order to examine whether this index, validity and reliability has been confirmed in the Italian society, is a valid and reliable tool in the Turkish society and in Turkish. English and Turkish versions of the Ostomy Self-care Index are given in the Supporting Information.

2.2 | Testing the validity and reliability

To minimize the change that occurs when a scale is translated into a different language, it should adapt to the translated language and culture. In this direction, to ensure language and content validity, the scale was translated from English into Turkish and from Turkish into English by two independent linguists in the first stage, and a common translation text was created. To examine and compare the compatibility of the translated text with the original work, each item is '(1) Not Relevant,' '(2) But Need Some Revision,' '(3) Relevant, But Needs Minor Revision' and '(4) Very Relevant'; 11 experts were consulted for the content validity index (CVI). The scale, arranged with expert opinions, was applied as a pilot study to a group of 16 individuals with a stoma, and the final form was obtained. Data from this group were not included in the analyses.¹²⁻¹⁶ In this study, confirmatory factor analysis (CFA) was used to test the validity of a previously developed scale in different languages and samples with goodness of fit indices and factor loads.¹⁶

Cronbach's alpha reliability coefficient and item-total score reliability were used, which measure the relationship between each independent item in the measurement tool and the other items and the whole scale.^{8,17} In this study, the scale was administered to 80 individuals with a stoma at four-week intervals using the interval test-retest method for its invariance over time. The scale forms were matched after the application. In this study, the scale was administered to 80 individuals with a stoma at 4-week intervals using the interval test-retest method for its invariance over time, and the scale forms were matched after the application.⁸

2.3 | Statistical analysis

Data were analysed using IBM SPSS V22 and R Project package programs. Descriptive statistical methods (mean, standard deviation, frequency and percentage) were used to analyse the demographic and

clinical variables of the participants. Shapiro-Wilk test was used for normality tests. Mann-Whitney *U* test for two-group data, considering the normal distribution of score points in the selection of the tests and the number of groups of demographic and clinical variables; Kruskal-Wallis test was used for data with more than two groups. Multiple comparison tests for multi-group data were based on Dunn's test with Bonferonni correction. In the validity analysis of the scale, the CVI for language and content analysis and CFA for construct validity were used. In the reliability analysis of the scale, Cronbach's alpha coefficient for item analysis and internal consistency and

TABLE 1 Descriptive characteristics of individuals with stoma.

Variables	Group	n	%
Age	30-44	40	15.8
	45-59	117	46.3
	60+	96	37.9
Gender	Women	111	43.9
	Man	142	56.1
Marital status	Single	77	30.4
	Married	176	69.6
Education level	Literate	19	7.5
	Primary school	93	36.8
	Middle school	66	26.1
	High school	38	15.0
	College	21	8.3
Profession	Working	150	59.3
	Not working	103	40.7
The person with whom the person with stoma lives	Alone	11	4.4
	Spouse	63	24.9
	Child	54	21.3
	Family	123	48.6
	Other	2	0.8
Ostomy type	Colostomy	134	53.0
	Ileostomy	76	30.0
	Urostomy	43	17.0
Cause of ostomy opening	Cancer	166	65.6
	Obstruction	55	21.7
	Trauma	25	9.9
	Other	7	2.8
Time to have an ostomy	1-5 months	102	40.3
	6-11 months	74	29.3
	1-3 years	42	16.6
	3-5 years	29	11.5
	5 years+	6	2.4
Status of receiving ostomy care training before discharge	Yes	138	54.6
	No	115	45.5
Need for support	Yes	127	50.2
	No	126	49.8

Pearson and Spearman correlation for test-retest were used. The margin of error was 5%, and the significance was evaluated as $p < 0.05$.¹¹

2.4 | Ethical considerations

The ethics committee of the Tekirdag Namik Kemal University approved the study (Date: 28 July 2020 Decision No: 2020.175.07.08). The researchers obtained authorization from the authors of the original instrument as well as from the hospitals where the questionnaire was previously applied. The procedures used in this

study adhere to the tenets of the Declaration of Helsinki, in accordance with good clinical practice. The study was carried out on a voluntary basis. For this purpose, verbal and written informed consent was obtained from the patients.

3 | RESULTS

3.1 | Descriptive characteristics

Individuals with stoma participating in the present study, 46.3% ($n = 117$) were between the ages of 44 and 59; 56.1% ($n = 142$) were

TABLE 2 Confirmatory factor analysis statistics of Ostomy Self-Care Index.

Sub-dimension	Item	Estimate	Standardized-estimate	Standard error	t-value	p
Caring for Appropriate Stoma Appliances (CASA)	Item 1	1	0.885	-	-	-
	Item 2	0.972	0.893	0.048	20.394	<0.001
Stoma Care Behaviour (SCB)	Item 3	1	0.815	-	-	-
	Item 4	0.875	0.799	0.040	21.789	<0.001
	Item 5	0.672	0.692	0.034	19.996	<0.001
	Item 6	1.142	0.785	0.052	21.945	<0.001
	Item 7	0.893	0.744	0.041	21.812	<0.001
	Item 8	0.886	0.786	0.041	21.666	<0.001
	Item 9	0.710	0.575	0.039	18.331	<0.001
Self-care Maintenance	CASA	1	0.840	-	-	-
	SCB	1.043	0.964	0.068	15.334	<0.001
Self-care Monitoring	Item 10	1	0.842	-	-	-
	Item 11	0.942	0.820	0.029	32.257	<0.001
	Item 12	0.863	0.798	0.027	32.093	<0.001
	Item 13	0.876	0.809	0.027	32.462	<0.001
	Item 14	0.867	0.786	0.028	31.444	<0.001
	Item 15	0.966	0.796	0.030	31.816	<0.001
	Item 16	0.917	0.788	0.029	31.995	<0.001
	Item 17	0.992	0.841	0.031	32.333	<0.001
Autonomous Self-care Management Behaviours (ASMB)	Item 19	1	0.672	-	-	-
	Item 20	0.916	0.642	0.057	16.103	<0.001
Consultative Self-care Management Behaviours (CSMB)	Item 21	1	0.588	-	-	-
	Item 22	1.308	0.607	0.089	14.770	<0.001
Self-care Management	ASMB	1	0.910	-	-	-
	CSMB	0.683	0.925	0.045	15.010	<0.001
Self-care Confidence	Item 23	1	0.753	-	-	-
	Item 24	1.064	0.770	0.034	31.190	<0.001
	Item 25	1.153	0.841	0.036	32.220	<0.001
	Item 26	1.004	0.768	0.033	30.305	<0.001
	Item 27	1.061	0.776	0.035	30.333	<0.001
	Item 28	1.041	0.775	0.035	29.802	<0.001
	Item 29	1.105	0.789	0.036	30.723	<0.001
	Item 30	1.085	0.787	0.036	30.463	<0.001
	Item 31	1.172	0.818	0.037	31.387	<0.001
	Item 32	1.188	0.827	0.037	31.821	<0.001

man; 69.6% ($n = 176$) were married, 36.8% ($n = 93$) were primary school graduates, 59.3% ($n = 150$) were employed and 48.6% ($n = 123$) lived with the family; 53% ($n = 134$) had a colostomy; the reason for 65.6% ($n = 166$) ostomy was cancer; 40.3% ($n = 102$) were living with a stoma for 1–6 months; 54.6% ($n = 138$) received ostomy care training and 50.2% ($n = 127$) needed support in ostomy care (Table 1).

3.2 | Validity analysis

After the Ostomy Self-care Index was translated and its language validity was ensured, the opinions of 11 experts were consulted for content validity, and the CVI value was 0.99. According to the results obtained with the CFA, the factor loads of the items were between 0.575 and 0.964, and the t -values were above 2.56. (Table 2) Goodness-of-fit indices were calculated as $\chi^2/SD = 0.424$, RMSEA = 0.000, SRMR = 0.037, GFI = 0.994, TLI = 1; CFI = 1, AGFI = 0.993 and NNFI = 1 (Table 3). All items were included in eight sub-dimensions, and item 18 was accepted as an additional, as it was in the original version of the scale.

3.3 | Reliability analysis

According to the reliability analysis statistics, the Chronbach's alpha coefficients were 0.949 for the overall scale, 0.915 for the 'Self-care Maintenance' sub-dimension, 0.939 for the 'Self-care Monitoring' sub-dimension, 0.684 for the 'Self-care Management' sub-dimension and 0.945 for the 'Self-care Confidence' sub-dimension, respectively. In addition, it was found that the correlation coefficient of all items was above 0.30, and there was no increase in the Cronbach's alpha value when the item was deleted (Table 4). The Pearson moment

correlation coefficient (r -value) of the scale items was between 0.837 and 0.988 with the test-retest method, in which the 'Ostomy Self-Care Index' was applied twice to 80 individuals with a stoma, 4 weeks apart (Table 5).

4 | DISCUSSION

The opening of a stoma causes individuals to be negatively affected socially, emotionally, economically, and psychologically as a result of radical changes in their daily living activities, body image, and interpersonal relationships. Nurses play an important role in helping individuals cope with these negative situations that reduce their quality of life, adapt to the stoma, and gain self-care skills.¹⁸ In this respect, it is extremely important that nurses provide training and counselling to individuals with a stoma for a wide period of time, starting from the preoperative period and including after discharge. Using scales with proven validity and reliability that evaluate the self-care of individuals with a stoma, screening and identification of patients needing support and appropriate intervention planning can be achieved. To our knowledge, there is no Turkish scale that evaluates the self-care of individuals with a stoma. In this study, the Turkish validity and reliability of the Ostomy Self-Care Index were examined.

The back-translation method was used in the language adaptation of the scale, and a common translation text was created. For content validity, the Davis method was used, in which at least 80% of the scale items were scored as 3 or 4, and a CVI value above 0.80 was considered sufficient.¹⁴ The CVI value of 0.99 in this study showed that language and content validity were appropriate.

The construct validity of the scale was tested using CFA. The fit indexes obtained as a result of the analysis were at the desired level, and the factor loads of the items were above 0.30 according to the path diagram; in addition, 0.05 if the t -values of the items are above

TABLE 3 Ostomy Self-Care Index confirmatory factor analysis fit indices.

Statistics	Very good agreement	Acceptable fit	Index
χ^2/SD (chi-square goodness of fit)	<3	<5	0.424
CFI (comparative fit index)	$0.97 \leq CFI \leq 1$	$0.90 \leq CFI \leq 0.96$	1
GFI (goodness of fit index)	$0.95 \leq GFI \leq 1$	$0.90 \leq GFI \leq 0.96$	0.994
AGFI (adjusted goodness of fit index)	$0.95 \leq AGFI \leq 1$	$0.90 \leq AGFI \leq 0.96$	0.993
TLI (Tucker–Lewis index)	$0.95 \leq TLI \leq 1$	$0.90 \leq TLI \leq 0.96$	1
NNFI (non-normed fit index)	$0.97 \leq NNFI \leq 1$	$0.90 \leq NNFI \leq 0.96$	1
RMSEA (root mean square error of approximation)	$0 \leq RMSEA < 0.05$	$0.06 \leq RMSEA < 0.08$	0.000
SRMR (standardized root mean square residuals)	$0 \leq SRMR \leq 0.05$	$0.06 \leq SRMR \leq 0.08$	0.037

TABLE 4 Ostomy Self-Care Index internal consistency results.

Sub-dimension	Item	\bar{x}	SD	Corrected item-total correlations	Cronbach's alpha if item deleted	Cronbach's alpha
Self-care Maintenance	Item 1	4.119	0.922	0.730	0.949	0.915
	Item 2	4.091	0.888	0.737	0.949	
	Item 3	4.111	0.910	0.762	0.949	
	Item 4	4.213	0.813	0.763	0.949	
	Item 5	4.458	0.720	0.661	0.949	
	Item 6	3.648	1.080	0.741	0.949	
	Item 7	4.024	0.891	0.726	0.949	
	Item 8	4.186	0.836	0.731	0.949	
	Item 9	3.968	0.917	0.516	0.950	
Self-care Monitoring	Item 10	4.067	0.891	0.837	0.946	0.939
	Item 11	4.055	0.862	0.807	0.946	
	Item 12	4.016	0.811	0.769	0.946	
	Item 13	3.913	0.812	0.762	0.946	
	Item 14	3.881	0.827	0.770	0.947	
	Item 15	3.889	0.910	0.753	0.946	
	Item 16	3.905	0.872	0.747	0.947	
	Item 17	4.004	0.884	0.822	0.946	
Self-care Management	Item 19	4.281	0.670	0.446	0.949	0.684
	Item 20	4.356	0.642	0.540	0.949	
	Item 21	4.636	0.514	0.407	0.950	
	Item 22	4.403	0.651	0.484	0.950	
Self-care Confidence	Item 23	4.087	0.782	0.724	0.947	0.945
	Item 24	4.004	0.814	0.741	0.947	
	Item 25	3.901	0.808	0.794	0.946	
	Item 26	3.897	0.770	0.757	0.947	
	Item 27	3.854	0.806	0.786	0.947	
	Item 28	3.731	0.791	0.762	0.947	
	Item 29	3.652	0.825	0.765	0.947	
	Item 30	3.913	0.812	0.760	0.947	
	Item 31	4.040	0.844	0.806	0.947	
	Item 32	3.964	0.847	0.804	0.947	
Ostomy Self-Care Index						0.949

1.96; if it is above 2.56, it is considered statistically significant at the 0.01 level.^{8,16,19-21} In this study, the goodness of fit indices $\chi^2/SD = 0.424$ was below 3, and the RMSEA value was less than 0.05. In addition, the SRMR, GFI, TLI, CFI, AGFI and NNFI criteria showed very good agreement. The factor loads of the items were above 0.30, and the t-values were above 2.56, at the level of 0.01, which was statistically significant. These results showed that the items were correctly included in the original scale dimensions and were collected in eight sub-dimensions.

The reliability of the scale was examined by internal consistency and item analysis. Accordingly, Cronbach's alpha coefficient of 0.40–0.60 was reliable at a lowly level; a range of 0.60–0.80 indicates quite reliable, and a range of 0.80–1.00 indicates high reliability. In item-total score reliability, a correlation coefficient of over 0.30 indicates

the reliability of the item.^{8,17} In this study, Cronbach's alpha reliability coefficient was 0.949 on the overall scale and in the range of 0.684–0.945 in the sub-dimensions of the scale. The overall scale was highly reliable. In addition, in the item-total score analysis, it was found that the correlation coefficient of all items was above 0.30, and there would be no increase in the Cronbach's alpha value when the item was deleted.

Pearson moments correlation coefficients (*r*-value) are calculated using the test-retest method. The *r*-value indicating the degree of reliability takes a value between -1 and $+1$ and must be at least 0.70 for reliability to be accepted.⁸ As a result of the analysis, the Pearson moments correlation coefficients of the sub-dimensions were between 0.837 and 0.988. Accordingly, the sub-dimensions of the scale were highly reliable and did not change over time.

TABLE 5 Ostomy Self-Care Index test–retest results.

		<i>r</i>	<i>p</i>
Self-care Maintenance	Item 1	0.942	<0.001
	Item 2	0.951	<0.001
	Item 3	0.937	<0.001
	Item 4	0.962	<0.001
	Item 5	0.915	<0.001
	Item 6	0.957	<0.001
	Item 7	0.919	<0.001
	Item 8	0.901	<0.001
	Item 9	0.926	<0.001
Self-care Monitoring	Item 10	0.934	<0.001
	Item 11	0.837	<0.001
	Item 12	0.922	<0.001
	Item 13	0.912	<0.001
	Item 14	0.901	<0.001
	Item 15	0.933	<0.001
	Item 16	0.922	<0.001
	Item 17	0.885	<0.001
Self-care Management	Item 18	0.988	<0.001
	Item 19	0.923	<0.001
	Item 20	0.850	<0.001
	Item 21	0.931	<0.001
	Item 22	0.888	<0.001
Self-care Confidence	Item 23	0.960	<0.001
	Item 24	0.899	<0.001
	Item 25	0.891	<0.001
	Item 26	0.984	<0.001
	Item 27	0.946	<0.001
	Item 28	0.987	<0.001
	Item 29	0.942	<0.001
	Item 30	0.938	<0.001
	Item 31	0.941	<0.001
	Item 32	0.984	<0.001

The similarities of the original version of the scale with our study are that the scale items consist of eight sub-dimensions, the CVI is 0.93, and the Cronbach's alpha is 0.949 in the internal consistency analysis. However, since individuals with a stoma in two public hospitals in Turkey were included in this study, the results of the study cannot be generalized to the whole country. We suggest that the scale be used in different populations and samples to evaluate the self-care of stoma patients in the Turkish society.

4.1 | Applicability in nursing care

The Ostomy Self-Care Index consists of the most basic stoma care practices that individuals with a stoma should perform in their

daily lives. This index is effective in determining the self-care maintenance, self-care monitoring, self-care management, and self-care confidence of individuals with stoma. The Ostomy Self-Care Index can be used to evaluate the self-care of individuals with stoma quickly, clearly and easily. In addition, it can provide a common understanding in the multidisciplinary field when evaluating the self-care of individuals with stoma. The use of the index in individuals with urostomy, colostomy or ileostomy will be beneficial in terms of improving their quality of life, performing daily living activities independently and preventing complications. Using this index, nurses, who play a key role in a wide period of time from pre-operative to post-discharge, can systematically evaluate the self-care of individuals with stoma.

5 | CONCLUSION

The findings obtained in this study showed that the 'Ostomy Self-Care Index' is a valid and reliable scale in Turkish society and the Turkish language. This scale is suitable for use by all health professionals, especially nurses. Thanks to the scale, the levels of maintaining, monitoring, managing and confidence stoma care can be determined. Thus, by providing direct care for self-care practices, both the self-care and quality of life of the individual with stoma can be increased.

AUTHOR CONTRIBUTIONS

T. Y. and C. A.: Study design. C. A.: Data collection. T. Y. and C. A.: Analysis and manuscript preparation.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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