

Examination of the Psychometric Properties of the Knowledge of Aging Social Work Quiz

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Acknowledgement

This study was supported by the Social Work Leadership Institute at the New York Academy of Medicine. An earlier version of this article was presented at the at the 60th Annual Meeting of the Gerontological Society of America, San Francisco, CA, November 19, 2007. We would like to thank Dr. Linda Weiss and the *Hartford Partnership Program for Aging Education* Committee for their critical comments on an earlier version of this article.

Abstract

Purpose: The study validated psychometric properties of the new Knowledge of Aging Social Work Quiz (KASW), which was adapted from the Palmore's Facts on Aging Quiz to evaluate social work-relevant biopsychosocial knowledge of aging.

Design and Methods: Using pre- and post test data from graduate social work students participating in the Hartford Partnership Program for Aging Education (HPPAE), the study examined convergent validity of KASW by correlating its items with the Knowledge of Services for Older Adults, the Geriatric Social Work Competency Scale II (GSWC-II), and students' aging-related experience. We also examined inter-item and item-total correlations, conducted the retest method, and calculated Cronbach's alpha for internal consistency.

Results: We found significant correlations between the KASW, Knowledge of Services for Older Adults, GSWC Scale-II, and students' aging-related educational and field experiences. Our analysis achieved good convergent validity of KASW. We also demonstrated room for growth in KASW for reliability estimates.

Implications: The KASW may be used in gerontological social work education to identify students' knowledge deficiencies and provide information relevant to the pedagogical agenda and guidance in the field education. A plan for further scale refinement is discussed in detail, including additional question types and research plans to modify the instrument.

Keywords: geriatric social work, gerontological education, program evaluation

Examination of the Psychometric Properties of the Knowledge of Aging Social Work Quiz

It is widely recognized that, with a rapidly growing aging population, it is essential for social workers to have gerontological knowledge and skills in serving older clients and their families (Hooyman & Lubben, 2009; Scharlach, Damron-Rodriguez, Robinson, & Feldman, 2000; Damron-Rodriguez, Villa, Tseng, & Lubben, 1997). The critical need for geriatrically prepared social work labor force has been recognized nationally and by panel of experts (Institute of Medicine, 2008). The Council Social Work Education [CSWE] (2001) set an agenda to increase knowledge about aging among MSW students in its blue print of a new millennium report. CSWE (2001) acknowledges that MSW curriculum have not adequately covered issues of adulthood and aging when teaching about the lifespan. Relevant to this point, the John A. Hartford Foundation has completed a decade of work addressing this issue in both classroom and field educations.

Although the fundamental need for geriatric education has been underscored in social work, a limited number of studies have examined the impact of geriatric social work education on students' understanding and knowledge of aging (e.g., Cummings, Galambos, & DeCoster, 2003; Cummings, Adler, & DeCoster, 2005). Gerontological education assessment and cross-research comparison is hindered by the lack of a satisfactory instrument that is reliable and valid for assessing the level of aging knowledge among social students.

Knowledge of Aging Quiz

The Facts on Aging Quiz [FAQ] (Palmore, 1977) was the first instrument to assess knowledge of aging, which has been used more than 100 studies since its first appearance in the

empirical literature (Harris & Changas, 1994; Knapp & Stubblefield, 2000). The FAQ was designed to meet two purposes: 1) to stimulate discussion on the importance of gerontological education and 2) to address the lack of a satisfactory instrument to assess knowledge of aging (Palmore, 1998). The value of the instrument has been well recognized as an educational tool (Barresi & Brubaker, 1998; Pennington, Pachana, & Coyle, 2001), and adopted and widely used by researchers, gerontologists, and students in undergraduate and graduate programs worldwide (Palmore, 1998). Cumulative evidence suggests that students' knowledge of aging is low, not only cross-disciplinarily, but also cross-culturally. A sample of working nurses marked significantly fewer correct answers and more "don't know" answers than those who were not employed (Seufert & Carrozza, 2002). Furthermore, considerable negative misconception remained among medical students even after they had received instructions on aging (van Zuilen, Rubert, Silverman, & Lewis, 2001). Finally, cross-cultural research comparisons consistently reported low levels of knowledge and misconception about older adults by FAQ testing performance in Canada (Matthews, Tindale, & Norris, 1984), Japan (Romeis & Sussman, 1980), Britain (Stuart-Hamilton & Mahoney, 2003), New Zealand (Pennington et al., 2001), and Australia (Luszcz, 1982).

Although such extensive utilization of FAQ indicates the strong need for a reliable and valid instrument to promote geriatric education in various disciplines including social work, critics argued that original Palmore's FAQ is under-conceptualized or lacks psychometric properties (Klemmack, 1978; Kline & Kline, 1991). In an effort to identify the knowledge level of students by domains, Duthie and Gambert (1983) applied 3 content areas to FAQ questions: Physical-biomedical, mental-psychiatric, and socio-demographic. They found imbalance in the level of knowledge among students, who scored better in physical-biomedical and mental-psychiatric

contents than did in socio-demographic content. In the mean time, Palmore (1998) updated the FAQ designed to measure basic knowledge of physical, mental, and social facts about old age. However, Seufert and Carrozza (2002) contest that this updated version of FAQ questions do not necessarily conceptualize those three domains, but include a disproportionate number of items about the economic and demographic characteristics of the elderly population, suggesting that the problem with differing domains remains to be solved.

Development of biopsychosocial content of Knowledge of Aging for Social Work Quiz

Drawing on this conceptual model used by Duthie and Gambert (1983), Damron-Rodriguez, Funderburk, Lee, and Solomon (2004) selected 25 multiple-choice items from Part I and Part II in the FAQ to produce biopsychosocial knowledge of aging quiz. The authors coded each item into physical-biomedical, psychological-cognitive, or social-demographic content to construct a short-version of FAQ for undergraduates. Accordingly, they identified 8 items in the physiological-biomedical, 8 items in the psychological-cognitive, and 7 items in the socio-demographic content, as well as 2 items as unclassified. This 25-item FAQ was administered to 779 undergraduate students in Southern California. Results indicated that having taken aging courses was significantly associated with higher scores in the 25-item FAQ, thus demonstrating the utility of the instrument in measuring knowledge gained through aging focused education in undergraduate programs.

To promote the use of FAQ in geriatric social work education, Damron-Rodriguez and colleagues selected multiple-choice items from the FAQ, this time including items from Part III of FAQ on mental health. The purpose of reselection was to construct an instrument that was most relevant to geriatric social work at the master's level. Aiming to make the instrument short

enough for practical administration, the authors selected 25 questions for inclusion. The Knowledge of Aging for Social Work Quiz (KASW), the focus of the current study, was designed for social work students in masters-level programs. The purpose of the current study was to validate psychometric properties of KASW with a sample of social work students in the U.S. and demonstrate the use of KASW as an effective tool to advance the quality of geriatric social work education.

Method

Participants

The Hartford Partnership Program for Aging Education (HPPAE)

The Hartford Partnership Program for Aging Education (HPPAE), previously known as Practicum Partnership Program (PPP), is an eight-year initiative implemented and coordinated by the Social Work Leadership Institute (SWLI) at the New York Academy of Medicine (SWLI, 2009). The goal of the HPPAE is to increase the number of competent geriatric social workers, using a specialized field education model for social work students at masters-level programs. As of the end of academic year 2008, there were 478 students who had participated in the HPPAE from 35 schools across the nation. Building partnerships between universities and community agencies, some of the HPPAE sites rotate their students through multiple field placements over the course of one or two years, so that the students can gain wide-ranging hands-on experience in serving older adults. To assess the knowledge and skills in geriatric social work, the HPPAE students take an on-line survey including KASW before and after the field practicum.

Table 1 shows Sociodemographic characteristics of HPPAE students. The average age of HPPAE students was 32 years old ($SD = .5$), ranging from 20 to 70 years old. The majority was

female (90%), Caucasian (83%), full-time student (84%), second year students at masters-level program (71%), and in a 1-year HPPAE (89%). Approximately 59% declared their concentration as micro social work with individuals, families, and groups, whereas 14% were in macro concentration communities, advocacy, and policy. Approximately 80% were specializing in gerontology/aging for their field practicum, followed by mental health (23%), health (14%), and children and families (8%).

Instruments

Knowledge of Aging for Social Work Quiz. A 25-item Knowledge of Aging for Social Work Quiz (KASW) was designed to assess the knowledge level of aging among social work students. Each item had four multiple choices for response. In addition, as suggested by Miller and Doddger (1980), Courtenay and Weldemann (1985), and then Palmore (1998), each item had an additional category of “I don’t know (DK)” for those who truly had no idea of the correct answer to minimize unfounded guessing about the answer. For scoring, we applied +1 for a correct answer and 0 for an incorrect answer or DK, thus ranging from 0 to 25 for the total scale score. A paired sample t-test between pre and post test was statistically significant, $t(352) = -11.35$, $p < .001$, where the mean was 10.7 ($SD = 2.9$) for pre-test and 12.8 ($SD = 2.7$) for post-test, indicating the students performed significantly better after completing the HPPAE program. Concerning floor and ceiling effect, one student failed all items in the pre-test (floor) and no student obtained a perfect score in the post-test (ceiling) (Table 2).

Knowledge of Services for Older Adults. Originally developed to assess physician knowledge of community-based services available for elderly patients, the Knowledge of Services for Older

Adults is a 12 item requiring respondents to match aging services (e.g., adult day care, home health care, skilled nursing facility) to brief descriptions. The total score ranges from 0 to 12. A paired-sample t-test indicated that the HPPAE students scored significantly better in post test, $t(352) = -2.0, p < .05$. The mean score was 9.9 ($SD = 1.9$) for pre-test and 10.2 ($SD = 1.6$) for post-test (Table 2). See Damron-Rodriguez, Frank, Heck, Liu, Sragow, Cruise, and Osterweil (1998) for the scale development and administration with physicians.

Geriatric Social Work Competency Scale II. The Geriatric Social Work Competency Scale II (GSWC-Scale II) was designed to evaluate geriatric social work competency skills relevant to field education. It is comprised of four domains: I) Values, ethics and theoretical perspectives, II) Assessment, III) Intervention, and IV) Aging services, programs and policies. There are 10 items in each domain, rating on 5-point Likert scale, 0 being “not skilled at all” to 4 “expert skill.” The total score for a domain ranges from 0 to 40, which makes the total range from 0 to 160. A paired-sample t-test was statistically significant for the total score, $t(352) = -35.37, p < .001$. With the current HPPAE students, the mean of the total score was 49.8 ($SD = 24.1$) for pre-test, which became 99.2 ($SD = 25.1$) at post-test. A mean comparison test by paired-sample t-test was also performed for all the four domains. They were all statistically significant at $p < .001$ level: $t(352) = -31.28$ for Domain I, $t(352) = -32.64$ for Domain II, $t(352) = -32.58$ for Domain III, and $t(352) = -29.72$ for Domain IV. The scores by domain also showed an increasing trend from pre-test to post-test (See Table 2). See Damron-Rodriguez (2006) for the description of the scale development and administration.

Aging-related experience. Table 3 summarizes HPPAE students' academic and field experience related to aging. Slightly more than half of the HPPAE students reported that they took one or more aging courses. Among those, 53% took one course, followed by 2 courses (23%), 4 courses or more (12%), and 3 courses (11%). Nearly two-thirds of the respondents indicated that they had volunteered with older adults. Among those, 45% reported that they volunteered for 1 to 3 years, followed by less than a year (42%), and 4 years or more (13%). On the other hand, about 39% reported that they had been employed in service to older adults. Approximately 40% reported that they were employed for 1 to 3 years, followed by 36% for 4 years or more, and 25% for less than a year. Finally, in terms of the frequency of contact with older adults, close to half of the respondents reported having contact with older adults once a week or more, 45% with non-family and 44% with family older adults.

Analysis

Using the HPPAE student pre and post test data, the current study assessed convergent validity of the KASW by estimating the inter-correlations with the following variables: The number of aging-related coursework taken, the aging focused field experience such as previous volunteer work and employment in service to older adults, contact with non-family and family elderly, the total score of Knowledge of Services for Older Adults, and both total and domain scores of the GSWC Scale-II. In addition, the study examined inter-item, item-total correlations for the KASW for reliability. Finally, the study assessed Cronbach's alpha for internal consistency for the whole item, as well as each biological, psychological, and social content.

Results

Convergent validity

Using HPPAE students' pre-test data, we first performed Pearson Correlation Coefficient analysis of the KASW, Knowledge of Services for Older Adults, aging coursework, and field experiences such as volunteer, employment, and contact with older adults, as well as GSWC Scale-II. As shown in Table 4, results revealed that there were significant positive associations between the KASW total score and these variables in pre-test except the contact with non-family elderly: Knowledge of Services for Older Adults ($r = .17, p < .001$), Aging-related coursework taken ($r = .11, p < .05$), volunteer experience in the field of aging ($r = .11, p < .05$), employment in aging ($r = .14, p < .01$), contact with non-family elderly ($r = .10, p < .05$). In addition, the KASW total score and GSWC Scale-II was significantly positively correlated, both with the GSWC Scale-II total score ($r = .26, p < .001$) and each domain ($r = .27$ for Domain I, $r = .27$ for Domain II, $r = .21$ for Domain III, and $r = .19$ for Domain IV, $p < .001$ respectively).

Reliability

Next, we examined inter-item correlations of the KASW. The inter-item analysis revealed that the items were not necessarily correlated with other items of the same theoretical domain. For example, there were three biological items (Q13, Q20, Q23) that were not strongly correlated with other biological items, but more correlated with psychological and social items. In addition, one psychological item (Q22) was more correlated with sociological items than other psychological items. Finally, one sociological item (Q14) was correlated with a psychological item, but not with other sociological items. These findings suggest that classification of items by three content areas was difficult to achieve with the current 25 items.

Aiming to obtain more detailed information about the measurement, particularly how the DK category plays out in item-total correlations and internal consistency, we coded the item responses in two different ways. For the first coding pattern, we applied -1 for incorrect answers, 0 for DK, and +1 for correct answers. For the other coding pattern, we applied 0 for both incorrect and DK, and +1 for correct answers. Results revealed that, for the first coding pattern (-1, 0, +1), the Cronbach's alpha was $(\alpha) = .36$, a low coefficient for internal consistency. A close examination of the item-total statistics revealed that there were two items (Q1 and Q6) that would notably increase the Cronbach's alpha if they were deleted. Indeed, the Cronbach's alpha became $(\alpha) = .44$ if both items were dropped, but it was still a low coefficient. The internal consistency of each content was $(\alpha) = .19$ for biological content, $(\alpha) = .05$ for psychological content, and $(\alpha) = .36$ for sociological content. With respect to the other coding pattern (0, 0, +1), the analysis revealed that the Cronbach's alpha was $(\alpha) = .56$. The item-total correlation statistics indicated that there was no specific item that appeared to considerably improve the internal consistency. The internal consistency of each content was $(\alpha) = .25$ for biological, $(\alpha) = .38$ for psychological, and $(\alpha) = .35$ for sociological content.

Finally, we conducted the retest method to estimate the test-retest reliability. We examined Pearson correlation coefficient of each item between pre and post-test. As shown in Table 5, all items were significantly positively correlated at p-value less than .05 level ($M = .28$, Range $r = .10$ to $r = .46$), except Question 21 ($r = .10$ p = .06). We also identified that, overall, all items had substantial growth in the percentage of correct answers over time. While the mean percentage of correct answers increased from 42.8% at pre-test to 51.8% at post-test, the mean percentage of incorrect answers remained the same at pre and post (42.9%). For DK category, the mean percentage was 14.4% at pre-test, which decreased to 5.3% at post-test.

Discussion

We examined validity and reliability of the Knowledge of Aging for Social Work Quiz (KASW) with the longitudinal data that followed 481 HPPAE students. Our analyses provided statistical support for good convergent validity and test-retest reliability of the KASW. The social work students' knowledge of aging was significantly correlated with their self-assessed competence in geriatric social work skills, aging coursework, and field experience in aging such as volunteering, employment, and frequency of contact with non-family elderly. The study also demonstrated statistically significant test-retest correlation of each item even though the interval between pre and post was fairly long for an educational measurement. This is important because it defeats a threat by memory to internal validity and reactivity, suggesting that the instrument measured the same underlying concept over time and demonstrated that the sensitivity of the instrument to changes is of little concern. Accordingly, we concluded that the current KASW covered the content areas that deemed as importance for geriatric social work education and provided a degree of pedagogical usefulness.

Although the study achieved convergent validity and test-retest reliability, we concluded that further refinement of the KASW could improve the instrument. The current KASW may not contain the best panel of items. Even if we nullified the effects of DK response by coding it as zero, the KASW still demonstrated a low internal consistency ($\alpha = .36$). The close examination of inter-item correlations revealed that there were specific items that were not hanging together with other items of the same content. To achieve a better internal consistency, the instrument needs to alternate specific items that mark a decent correlation in the same content area. Furthermore, some items already had an extremely skewed percentage of correct answer in the

pre-test (e.g., more than 90% such as Q14 and Q20). It is best if the alternating items have moderate correct response rate, ideally at around 50%.

By examining inter-item correlations, we also found a significant internal correlation between the KASW and the Knowledge of Services for Older Adults. While the KASW was significantly correlated with other variables such as geriatric social work competency skills, academic and practice experience in the field of aging, the Knowledge of Services for Older Adults was associated with none of them. This is important because it indicates that, although these two instruments shared some commonality as they measured knowledge of aging, they likely measured different content areas in geriatric social work knowledge. As such, we suggest that both KASW and the Knowledge of Services for Older Adults be best administered together if students are assessed with their knowledge of aging.

Although the KASW demonstrated potential usefulness in assessing geriatric social work knowledge, several limitations warrant discussion. First, although the design of instrument under investigation assesses evidence-based “Facts on Aging,” it does not evaluate practice-based knowledge in geriatric social work. With an increasing need of competent geriatric social workers, whom equip both gerontological knowledge and practical skills in serving older adults, there is a demand for tools to assess the outcomes of field education, particularly on practice-based knowledge. The widely accepted competencies in the GSWC-Scale II could provide the bases for developing knowledge items. Such measurement not only enables us to learn the curricular effects on practical competencies of graduating social work students, but also allows us to identify additional or less prioritized curricular components in the current social work graduate programs. Second, even though the instrument was administered by multiple institutions through HPPAE, the findings may reflect the effects of gender and ethnicity because

of the constraint in the sample characteristics of the current participants (i.e., Female Caucasian). It is ideal for the instrument to be examined with diverse social work students at master's programs for comparative purposes. The comparability may include, but not limited to gender, specialization (e.g., those who are not in the field of aging), and ethnicity. Third, we realized that the current KASW, as well as the original FAQ were not as sensitive to learning as each measurement was wished to be for the use of an educational measure. Even though the pre-post KASW scores were statistically significantly different each other, the post score remained low from a practical and pedagogical point of view. The future refinement of the KASW must address in this regard by reflecting the degree of students' learning more observably. Finally, our current findings provided a point of reference for future research to refine the KASW. To obtain a psychometrically sound KASW, it is important to identify alternative items that cover the same content area and yield a higher internal consistency.

A valid and reliable instrument is vital for studying the effectiveness of specific curricular approaches and facilitating the dissemination of successful educational design (Lee, Wilkerson, Reuben, & Ferrell, 2004). Using educational competency measurements such as KASW in gerontological social work education provides opportunities to identify areas with which students have deficiencies, and can be used in developing pedagogical agenda and field education. The subsequent research should confirm a psychometrically sound instrument available that adequately measures the level of knowledge in geriatric social work, and that it serves as a valuable educational instrument to measure students' learning.

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Table 1. *HPPAE Student Sociodemographic Characteristics (N = 478)*

<i>Variables</i>	<i>% (n)</i>
Age	<i>M</i> = 32.2 yrs old, <i>SD</i> = .5
Female	90.0 (431)
Race/Ethnicity	
Caucasian	83.1 (384)
Non-Caucasian ¹	26.9 (78)
Full-time student	83.5 (399)
2nd year MSW student	71.1 (332)
HPPAE 1 year program	88.5 (423)
Concentration	
Micro SW with individuals, families, & groups	59.4 (284)
Macro SW with communities, advocacy, & policy	14.0 (67)
No specific concentration	12.6 (60)
Other	14.0 (67)
Field Practice Specialization ²	
Gerontology/Aging	79.9 (382)
Children & families	7.7 (37)
Health	13.8 (66)
Mental health	22.8 (109)
No specialization	8.2 (39)

Notes. 1) African American (8.2%), Asian American/Pacific Islander (3.0%), Hispanic/Latino (3.9%), Native American (1.5%). 2) Check all that apply. 3) Non-paid, excluding field placements.

Table 2. *HPPAE Student Outcomes for Knowledge of Aging for Social Work Quiz & Geriatric Social Work Competency Scale-II*

<i>Variables (Score range)</i>	<i>M(SD)</i>		<i>p</i>
	<i>Range</i>		
	<i>PRE</i> (n = 478)	<i>POST</i> (n = 403)	
KASW (0-25)	10.7(2.9)	12.8 (2.7)	***
	0-22	6-24	
Knowledge of Services for Older Adults (0-12)	9.9 (1.9)	10.2 (1.6)	*
	2-12	4-12	
GSWC Scale-II Total (40-160)	49.8(24.1)	99.2 (25.1)	***
	3-130	30-160	
I. Values, Ethics and Theoretical Perspectives (0-40)	16.7(6.3)	27.6 (5.5)	***
	2-33	10-40	
II. Assessment (0-40)	12.2(7.5)	25.7 (7.1)	***
	0-38	2-40	
III. Intervention (0-40)	12.0(6.9)	24.8 (6.9)	***
	0-33	4-40	
IV. Aging Services, Programs and Policies (0-40)	8.9(6.2)	21.1 (8.0)	***
	0-31	0-40	

Note. * $p < .05$, *** $p < .001$.

Table 3. *HPPAE Students Academic & Field Experience Related to Aging (n = 478)*

Variables	%(n)
Completed any courses on aging	52.1 (249)
1 course	53.2 (132)
2 courses	23.4 (58)
3 courses	11.3 (28)
4 courses or more	12.1 (30)
Volunteered with older adults ³	65.9 (315)
Less than a year	42.0 (134)
1-3 years	45.1 (144)
4 years or more	12.9 (41)
Employed in service to older adults	38.5 (184)
Less than a year	24.7 (47)
1-3 years	39.5 (75)
4 years or more	35.8 (68)
Contact with non-family elderly	
Once a week or more	45.0 (215)
A few times a month	28.9 (138)
About a few times per year	16.1 (77)
Once a year or less	4.0 (19)
Never	6.1 (29)
Contact with elderly family	
Once a week or more	44.4 (212)
A few times a month	29.3 (140)
About a few times per year	19.0 (91)
Once a year or less	5.0 (24)
Never	2.3 (11)

Table 4. *Pearson Correlation Coefficient Matrix*

	1	2	3	4	5	6	7	8	9	10	11	12
1. KASW	--											
2. Service score	.17***	--										
3. Coursework	.11*	-.06	--									
4. Volunteer	.11*	-.06	.14**	--								
5. Employment	.14**	.03	.20***	.11*	--							
6. Non-family	.10*	.05	.08	.22***	.30***	--						
7. Family	.02	-.06	.04	.15***	.13**	.25***	--					
8. GSWC Scale-II	.26***	-.01	.15***	.20***	.39***	.21**	.07	--				
9. Domain I	.27***	.01	.18***	.24***	.34***	.19***	.10*	.88***	--			
10. Domain II	.27***	.05	.15***	.15***	.41***	.21***	.03	.92***	.78***	--		
11. Domain III	.21***	-.03	.10*	.16***	.37***	.21***	.07	.95***	.76***	.85***	--	
12. Domain IV	.19***	-.09	.12**	.16***	.29***	.13**	.05	.83***	.60***	.62***	.79***	--

Note. 2) Knowledge of Services for Older Adults total score, 3) Number of aging-related coursework taken, 4) Number of years for volunteer experience in the field of aging, 5) Number of years being employed in services for older adults, 6) Frequency of contact with non-family elderly, 7) Frequency of contact with family elderly, 8) total score of GSWC Scale-II, 9-12) Domain scores of GSWC Scale-II.

Table 5. *Percentage of Responses and Pearson Correlation Coefficients: Knowledge of Aging for Social Work Quiz*

Q#	Content	Pre-test			Post-test			r	p
		Correct	Incorrect	Don't know	Correct	Incorrect	Don't know		
1	Psy	49.7	33.7	16.6	56.8	37.2	6.0	0.24	***
2	Bio	55.9	41.2	2.9	65.5	33.5	1.0	0.31	***
3	Soc	27.7	56.3	16.0	42.7	50.6	6.7	0.39	***
4	Soc	28.5	56.3	15.2	43.2	49.4	7.4	0.37	***
5	Bio	84.4	8.3	7.3	94.5	3.0	2.5	0.32	***
6	Psy	56.8	26.6	16.6	65.8	26.6	7.7	0.30	***
7	Psy	26.4	44.9	28.7	40.7	45.7	13.6	0.46	***
8	Psy	21.6	57.0	21.4	31.3	61.0	7.7	0.14	**
9	Psy	7.5	70.5	22.0	11.7	80.1	8.2	0.11	*
10	Soc	9.8	70.9	19.3	15.4	78.4	6.2	0.40	***
11	Soc	28.7	54.3	17.0	35.2	57.1	7.7	0.22	***
12	Psy	60.5	28.5	11.0	79.4	18.9	1.7	0.35	***
13	Bio	72.3	18.7	8.9	84.4	14.4	1.2	0.33	***
14	Soc	94.6	2.5	2.9	97.5	1.5	1.0	0.27	***
15	Psy	73.4	12.9	13.7	87.8	8.2	4.0	0.28	***
16	Psy	50.9	27.7	21.4	64.8	25.3	9.9	0.34	***
17	Soc	16.6	66.7	16.6	43.7	50.4	6.0	0.40	***
18	Soc	4.0	81.3	14.8	7.7	84.1	8.2	0.20	***
19	Soc	5.0	72.8	22.2	7.7	82.4	9.9	0.21	***
20	Bio	95.4	2.1	2.5	94.5	4.0	1.5	0.17	***
21	Psy	3.3	89.8	6.9	4.5	94.3	1.2	0.10	
22	Psy	69.9	9.6	20.6	83.6	10.9	5.5	0.32	***
23	Bio	87.1	8.1	4.8	89.6	9.9	0.5	0.16	**
24	Soc	29.1	56.5	14.3	30.3	64.8	5.0	0.28	***
25	Soc	10.2	74.2	15.6	15.6	81.4	3.0	0.28	***
<i>M</i>		42.8	42.9	14.4	51.8	42.9	5.3	0.28	
<i>Range</i>		3.3-95.4	2.1-89.8	2.5-28.7	4.5-97.5	1.5-94.3	0.5-13.6	0.10-0.46	

Note. Content: (Bio) Biological, (Psy) Psychological, and (Soc) Sociological.