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Résumé

Conception et validation d'un instrument de mesure de la double tâche en matière de prestation des soins

Catherine Ward-Griffin, Janice Keefe, Anne Martin-Matthews, Michael Kerr, Judith Belle Brown et Abram Oudshoorn

Les auteurs ont mis au point un instrument de mesure qui vise à élargir les connaissances sur la double tâche en matière de prestation des soins. Par double tâche, on entend la prestation de soins à des proches âgés par des professionnels de la santé qui exercent activement leur profession. L'étude présentée ici visait à vérifier les propriétés psychométriques de l'instrument en question. Les données ont été recueillies auprès d'un échantillon aléatoire de 187 infirmières autorisées de sexe féminin, qui occupent un emploi et dispensent aussi des soins à un proche âgé. Neuf facteurs contribuant à la double tâche ressortent de l'analyse exploratoire. On a relevé une corrélation moyenne entre les sous-échelles de mesure et les mesures normalisées sur la santé incluses dans l'étude. Également, on a constaté une forte corrélation négative entre l'interface vie privée – vie professionnelle en matière de prestation des soins (soit la mesure dans laquelle la frontière entre sphères professionnelle et personnelle s'efface), et le bien-être et la santé mentale. Ces résultats confirment le point de vue des auteurs sur les mesures nécessaires pour soutenir les personnes amenées à assumer une double tâche en matière de prestation des soins.

Mots clés : prestation des soins, instrument de mesure

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Development and Validation of the Double Duty Caregiving Scale

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In order to gain an understanding of double duty caregiving (DDC), defined here as the provision of care to elderly relatives by practising health professionals, a DDC scale has been developed. This study tests the psychometric properties of the scale. Survey data were collected from a random sample of 187 female registered nurses who were employed and also provided care to elderly relatives. Nine factors contributing to DDC emerged from exploratory factor analysis. The DDC subscales were moderately correlated with the standardized health measures included in the study. The caregiving interface (degree of blurring between the professional and personal caregiving domains) was significantly negatively correlated with well-being and mental health. This result extends our understanding of the supports needed by those providing DDC.

Keywords: caregiving, instrument development, feminist perspective, work-family interface

As the Canadian population continues to age, one of the challenges ahead is the care of our most frail older citizens. In 2002 more than 1.4 million Canadians over 45 years of age combined paid employment with care for elderly relatives (Fast, 2005). Furthermore, as the average age of health professionals continues to rise in Canada (Canadian Institute of Health Information, 2006), there is an increasing likelihood that health professionals will be providing care to elderly relatives. How health professionals balance their personal life, such as caring for aging parents, with their professional responsibilities has become a priority in human resource planning amongst health-care organizations (Shields & Wilkins, 2005). Although the prevalence of double duty caregiving (DDC), defined here as the provision of care to elderly relatives by practising health professionals, is currently unknown, previous research suggests that 30% to 50% of the working population provides care to elderly relatives (Martin-Matthews, 2000). Thus, an understanding of DDC and how it influences the health and well-being of health professionals is particularly important given the aging population, the aging health-care workforce, and the increasingly dire shortage of health-care providers (Keefe, Légaré,

& Carrière, 2007). To assist researchers interested in studying the social support needed by providers of DDC, we have developed a new measurement tool. In this article, we describe the conceptual basis, initial development, and psychometric validation of the Double Duty Caregiving Scale (DDCS), as well as discuss the implications for further research associated with social support for health providers caring for elderly relatives.

Existing Knowledge

Although there are numerous scales measuring role strain, role stress, and caregiver well-being (Lengacher & Sellers, 2003; Tebb, 1995; Tebb, Berg-Weger, & Rubio, 2000), these do not adequately measure the phenomenon of DDC. Caregiving has different meanings for different caregiver groups (Martin-Matthews, 2000), and while role strain and caregiver burden may be common amongst employed family caregivers, the experience of simultaneous paid and unpaid caregiving and its impact on the health and well-being of caregivers may be obscured if a general tool is used. Based on a critical feminist perspective, our goal was to develop a sensitive measure capable of capturing the unique caregiving experiences of health professionals who also care for elderly relatives.

The lack of attention to DDC is due in part to the tendency to treat professional, paid caregiving and personal, unpaid caregiving as separate domains (Ward-Griffin, 2008). A critical feminist approach to caregiving explores the connections of women's domestic labour with other forms of gendered caring work (Baines, 2004; Ungerson, 1990; Ward-Griffin & Marshall, 2003) and examines how the public and private domains are interwoven and interdependent through the idea of reproduction and production (Pascall, 1986). Double duty caregivers may be caught between the public and private domains of caregiving, in an "intermediate domain" (Stacey & Davies, 1983, cited in Mayall, 1993) where complex dimensions of location and social relations are brought together in caring work.

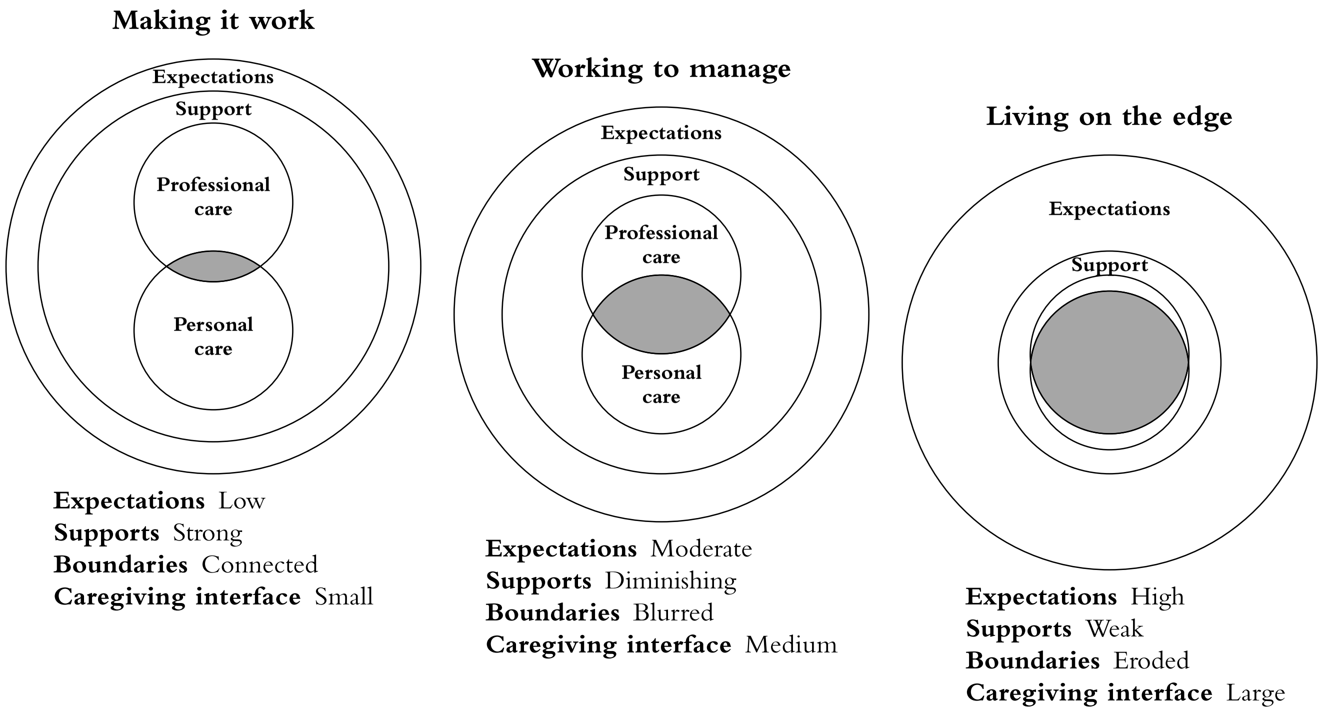
The few studies that have looked at DDC report that most hospital and community nurses experience high levels of stress associated with caring for relatives of all ages (Ross, Rideout, & Carson, 1996); however, caring for an elderly relative is positively correlated ($r = .39$, $p < .05$) with health problems for female nurses only (Walters et al., 1996), likely reflecting a greater sense of obligation to care, due to their professional status within the health-care system (Ward-Griffin, Brown, Vandervoort, McNair, & Dashnay, 2005).

Because women are more likely than men to care for an elderly relative (Armstrong & Armstrong, 2004), they are also at greatest risk for any negative effects of DDC. There is evidence that DDCs experience a sense of powerlessness and distress (Rutman, 1996) and must make continual adjustments to achieve equilibrium in response to the demands placed on them (Chen, Feudtner, Rhodes, & Green, 2001; Guberman & Maheu, 1999), although work-related knowledge can act as a buffer rather than as an additional strain (Phillips, Bernard, & Chittenden, 2002). Ward-Griffin (2004) found that female community nurses caring for elderly family members used a variety of coping strategies, such as setting limits on the specific care they provided. Although women in the health professions are often viewed as needing to develop coping strategies to address the stress of "balancing" or "juggling" two or more roles, attempts at setting limits often prove unsuccessful in dealing with the demands and tensions of family caregiving (Ward-Griffin, 2004; Ward-Griffin et al., 2005).

The difficulty of demarcating boundaries between professional and personal caregiving domains was particularly evident in our qualitative descriptive study with 37 female nurses, family physicians, physiotherapists, and social workers who provided care to elderly relatives (Ward-Griffin et al., 2005). Four dimensions of DDC were illuminated: Expectations, Supports, Negotiating Strategies, and Caregiving Interface. Despite using a variety of strategies for managing their DDC demands, many of the participants experienced a blurring of boundaries between their professional and personal caring work. This area of overlap was conceptualized as the caregiving interface. The extent of the interface varied for each participant, depending on the degree of expectation of familial care and on the level of support available to manage multiple caregiving demands. From this study with female health professionals caring for elderly relatives, we identified three prototypes of DDC, based on the degree of caregiving interface*: making it work, working to manage,* and *living on the edge* (see Figure 1). The women were able to *make it work* when the interface between the professional and personal caregiving domains was minimal; they *worked to manage* when there was moderate overlap or blurring of their professional and personal caregiving boundaries; and they *lived on the edge* when there was a high degree of overlap or interface between their personal and professional domains of care.

In our study, the women tended over time to oscillate from one prototype to another, depending on their level of expectations, support, negotiating strategies, and caregiving interface (Ward-Griffin et al., 2005). In *living on the edge,* the level of expectations to provide complex, daily care was exceedingly high. Family and workplace supports were weak or non-existent. Some participants, mostly nurses, either took time off work to provide daily family care or provided professional care on their "days off" from family care. Although setting limits and making connections

Figure 1 *Prototypes of Double Duty Caregiving*



Source: Ward-Griffin et al. (2005).

were used to manage increasing caregiving demands with limited supports, many women experienced a dramatic blurring of their professional and family caregiving boundaries, characterized by tension, exhaustion, and a feeling of isolation. Thus, female health professionals who provide care for elderly relatives, especially those with limited tangible supports, may experience ill health as a consequence.

Building on the existing empirical knowledge described above, and in response to the need for further research on DDC, the study had two aims. The first was to develop and validate a tool for measuring DDC with a sample of female registered nurses, capturing the variation within this population. The second was to compare the health of DDCs and non-DDCs.

Development of the DDC Scale

The development of the DDCS (see Table 1) began with an examination of our previous qualitative interview data (Ward-Griffin et al., 2005). Two of the investigators (Ward-Griffin and Brown) reviewed the original transcripts, looking for specific phrases and words that reflected the four dimensions of DDC: Expectations, Supports, Negotiating Strategies, and Caregiving Interface. Item development was refined at team meetings where all investigators generated an initial item pool (57 items) intended to create four subscales to address the four dimensions. One to two negatively worded items were included in each subscale to help decrease response bias.

Expectations

A total of 16 items were developed to address three proposed sources of Expectations to provide care to an elderly relative: expectations of self (9 items), expectations of family (4 items), and expectations from within the profession (3 items). Expectations of care include the expectations of oneself to provide care as part of one's role in the family due to credentials and professional knowledge and skills. Familial expectations may come directly from the elderly recipient of care, with his/her requests for assistance, or may come from other family members. Professional expectations may come from health professionals who are involved directly in the care of the relative or from professional colleagues or friends who are not involved directly; professional expectations include those that may be held by the DDCs themselves based on their credentials.

Supports

Eight items were developed to assess Supports, reflecting sources of support from the personal (4 items) and professional (4 items) caregiving

Table 1 *Development of the Double Duty Caregiving Scale (DDCS)*

Dimensions of DDC	**Initial Item Pool (*n* = 57)**	**Items Deleted Based on CVI**[a]	**Provisional DDCS (*n* = 49)**	**Items Deleted Based on EFA**[b]	**Revised DDCS Tool (*n* = 33)**	**Sample Items**
1. Expectations (expectations to care for elderly relatives)	Self (9) Family (4) Professional (3)	-1 -1 0	(8) (3) (3)	-5	Familial (5) Professional (4)	Because of my health care background – I have high expectations of myself to provide care to my relative
2. Supports (supports used to manage caregiving)	Personal (4) Professional (4)	-1 -1	(3) (3)		Personal (3) Professional (3)	As a caregiver for my elderly relative – My workplace supports me to provide care to my relative
3. Negotiating Strategies (strategies used to negotiate personal/ professional boundaries)	Setting limits (10) Making connections (13)	0 -3	(10) (10)	-4 -5	Awareness of boundaries (3) Active resistance (3) Making connections (5)	Because I am a health care provider who also provides care to my relative – I set a limit of what type of care I will provide my relative
4. Caregiving Interface (CI) (degree of blurring between professional and personal caregiving)	CI (10)	-1	(9)	-2	Perceptions of CI (4) Consequences of CI (3)	Because I am a health care provider who also provides care to my relative – I feel like I am caught between two worlds (professional and family)

[a] Content validity indices [b] Exploratory factor analyses

domains. Double duty caregivers usually receive some degree of emotional, informational, and substantive support from family members and friends. Although there are well-established instruments for measuring social support (Cohen, Underwood, & Gottlieb, 2000), the unique personal and professional supports received within DDC may not be fully captured using a generic standard tool. Often, siblings, spouses, children, or friends are also involved in the caregiving. Additionally, many caregivers receive professional support; this can include information or resources from one's workplace, such as flexible work hours or access to employee assistance programs.

Negotiating Strategies

The third dimension, Negotiating Strategies, addresses two main types of strategies, Setting Limits and Making Connections. These help DDCs to negotiate their professional and personal boundaries, thereby potentially moderating the negative impacts of the caregiving interface. Double duty caregivers set limits with respect to personal and professional expectations concerning the provision of familial care. Setting Limits includes strategies for keeping the personal and professional caregiving domains separate and distinct, while Making Connections examines the multiple interactions that serve to bring the two domains closer together. In Setting Limits (10 items), DDCs refuse to take on professional caregiving tasks for family members or arrange for others to provide this care. As well, DDCs increase their supports by Making Connections (13 items). These include accessing health-care information or care for one's relative, using professional knowledge and connections to obtain care, or navigating the health-care system.

Caregiving Interface

Ten items were developed to measure the caregiving interface (CI), or the degree of blurring between the professional and personal caregiving domains (intermediate domain). This dimension addresses the extent of the connections between elder caregiving and other forms of gendered caring work (e.g., nursing). The CI encompasses both feelings about the blurring of roles and the psychological impact of these feelings. Feelings about the blurring of roles can include being pulled in two different directions, being unable to escape from the caregiving role, and struggling to separate caregiving at home from caregiving at work. The psychological impact of increasing blurring of boundaries can include stress, the feeling that one's caregiving is not being recognized, and confusion regarding one's professional and personal roles.

Content Validation of the DDC Scale

Because of the importance of preserving the inductively derived meaning of DDC in a quantitative instrument (Morris & Field, 1995), judgements about clarity, internal consistency, and initial content validity were made by a panel of four DDCs representing the disciplines of nursing, medicine, physiotherapy, and social work, as used in our previous qualitative study. These content experts independently rated the relevance of the provisional items on the DDCS using a four-point scale ranging from *not relevant* to *very relevant*. This review process facilitated a systematic approach to item revision. Raters also indicated whether the conceptual domain of each subscale was adequately represented by the set of items. Although consensus was reached for each of the four dimensions, the experts recommended clarification of certain items, which were subsequently reworded or deleted.

Content validity indices (CVI) for each item, subscales, and total scale were calculated, setting the criteria for item-level acceptance at .78 or higher for three or more reviewers (Polit, Beck, & Owen, 2007). The CVI ranged from .75 to 1.0 for all retained items (one item fell below .78 but was retained because it measured a key conceptual aspect of the CI subscale: recognition of professional status). Eight items were deleted due to lack of clarity, redundancy, or a relatively low CVI, thus reducing the provisional DDCS from 57 items to 49.

The provisional DDCS was constructed using a five-point Likert scale (1 = *strongly disagree;* 5 = *strongly agree*). Prior to the analysis, negatively worded items were recoded so that, for all items, a higher score reflected a higher degree of Expectations, Supports, Negotiating Strategies, and Caregiving Interface. Within each subscale, the scores were calculated by averaging the relevant individual item scores. Data imputation for missing values was not used, as non-response for the items was very low. The subscales were developed for separate use of each dimension; thus they were not combined into a single overall DDCS score.

Pilot Testing of the DDC Scale

Sampling

Following institutional ethics review board approval, the 49-item provisional DDCS was administered to an age-stratified sample of female nurses randomly selected from the registry list of the College of Nurses of Ontario. Because previous research suggested that approximately one half of the working nurse population is likely to provide care to an elderly relative, 800 female, full-time (more than 30 hours/week) registered nurses 40 years of age or older were asked to complete a mailed survey package. The aim was to have 200 eligible DDC respondents complete and return the package, which consisted of: (1) an information letter; (2) a short demographic questionnaire, which also determined eligibility for the study; (3) the provisional DDCS described above; and (4) established comparative measures, including the Women's Role Strain Inventory (WRSI) (Lengacher & Sellers, 2003), the Caregiver Well-Being Scale (CWBS) (Tebb et al., 2000), and Health Related Outcomes (Medical Outcomes Study Short-Form, SF-12 version 2.0, acute form, 4-week recall). The time needed to complete the survey package was estimated at between 30 and 45 minutes. Each package contained a modest gift certificate as a token of appreciation. Nurses not providing care for an elderly relative or friend were asked to complete all questionnaires except the DDCS, the purpose being to generate data for comparing DDC and non-DDC nurses.

Of the 800 questionnaires mailed, 394 were returned; of these, eight respondents did not meet the eligibility criteria (two male and six unemployed), six questionnaires were blank, and three were returned to sender, yielding a sample of 377 respondents (49% response rate). A total of 193 respondents (51%) were caring for an elderly relative (i.e., the DDCs) and 184 (49%) were not (i.e., the non-DDCs). Of the 193 respondents identified as DDCs, six left sections of the DDCS blank, which led to a final usable DDC sample of 187, a total sample size that is considered adequate for instrument development analysis (Gable & Wolf, 1993).

Reliability and Construct Validity Analyses

Contingency table (chi square) analyses were performed on all categorical variables, while independent sample *t* tests were used with all continuous variables when comparing DDCs and non-DDCs. Appropriate measures of association were used to examine the relationship between theoretically relevant demographic variables (e.g., hours of employment per week, hours of caregiving per week) and the CI.

Construct validity of the provisional 49-item tool was assessed at the preliminary stage with a combination of exploratory factor analysis (EFA) using a principal components factor approach and assessment of scale reliability. Even though our previous qualitative work and initial conceptualization of DDC informed the construction of the provisional DDCS items, EFA was selected over confirmatory factor analysis (CFA). For the EFA, initial factor extraction was based on eigenvalues greater than 1.00 (Polit & Beck, 2008, p. 488). Each subscale of the provisional DDCS was then subjected to varimax rotation to select the factor structure that best represented the underlying relationship of the items within the four dimensions (Expectations, Supports, Negotiating Strategies, and Caregiver Interface). Although loadings with an absolute value of 0.40 or higher are often used as factor loading cut-off values (Carruth, 1996), smaller values are acceptable if the item pool is large (Polit & Beck, 2008, p. 491). Cronbach's alpha reliability coefficients were also used to determine internal consistency among the items of the four subscales of the provisional DDCS. Based on these preliminary analyses, a combination of low inter-item correlations (< .20), weak factor loadings (< .35), and/or poor conceptual clarity, 16 of the original 49 items were removed from the provisional DDCS, yielding a tool with a total of 33 items for the remaining construct validity analyses.

We also correlated each of the DDCS subscale scores with those of the WRSI, the CWBS, and the SF-12v2. The WRSI is a previously validated 44-item, five-point Likert scale that measures role strain in female nurses with multiple roles (Lengacher & Sellers, 2003), with high reliability coefficients for the total scale (0.86–0.95) and subscales of distress (0.74–0.91), enhancement (0.79–0.89), and support (0.65–0.87). Developed and validated by Tebb et al. (2000), the CWBS-Short Version is a 16-item, five-point Likert scale that assesses activities and needs of caregivers (eight items for each subscale). Overall and for each subscale (Needs and Activities of Daily Living), the coefficient alpha was 0.94, 0.91, and 0.88, respectively. Finally, the SF-12v2 is a well-established tool that measures the perceptions and activities of acute health and well-being. It is a shortened version of the SF-36, which includes general and physical health index scores as well as eight subscales (bodily pain, general health, vitality, social functioning, physical functioning, role limitations due to physical problems, role limitations due to emotional problems, and mental health). Ware, Kosinski, Turner-Bowker, and Gandek (2002) report internal consistency reliability coefficients ranging from 0.66 to 0.90. In the present study, internal consistency reliability coefficients for each of these established instruments were 0.91 (WRSI), 0.73 (CWBS-needs), 0.78 (CWBS-activities), and 0.80 (SF-12v2).

Results

Sample

The sample comprised 193 DDCs (this figure includes six respondents who failed to complete all items on the DDCS but completed the demographic questionnaire) and 184 non-DDCs (see Table 2 for an overview). The typical DDC was 52.0 years old (*range* = 41–65; *SD* = 4.90), was married (74.2%), held a diploma in nursing (67.9%), had a mean household income of $101,778 (*range* = $12,500–$300,000; *SD* = $44,093.73), was employed part-time or full-time (96.8%) with a mean of 39.0 hours worked per week (range 7–80; *SD* 7.86), had practised nursing for 25 years or more (67.6%), and had at least one child (ranging

Table 2 *Overview of Development and Validation of Double Duty Caregiving Scale (DDCS)*

	Initial Item Pool	**Content Validity**	**Pilot Testing**
Source	**Qualitative Interview Data**	**Expert Panel**	**Mailed Survey (*n* = 800)**
Sample	*37 female DDCs:* 15 registered nurses 9 social workers 7 physiotherapists 6 physicians	*4 female DDCs:* 1 registered nurse 1 social worker 1 physiotherapist 1 physician	*377 female DDCs:* 193 DDCs 184 non-DDCs

Note: DDC = double duty caregiver.

in age from 2 to 32 years) living with her (65%). The DDC respondents provided an average of 6 hours per week of care to one (53%) or two (30%) elderly relatives, mostly parents (77%) or parents-in-law (12%) who lived nearby. The typical non-DDC respondent was 51.5 years old (*range* = 41–65; *SD* = 5.85), was married (73.9%), held a diploma in nursing (67.8%), had a mean household income of $105,618 (*range* = $35,000–$770,000; *SD* = 67006.84), was employed part-time or full-time (98.9%) with a mean of 40.8 hours worked per week (*range* = 22–80), had practised nursing for 25 years or more (52.5%), and had at least one child (ranging in age from 1 to 37 years) living with her (62.0%). There were no significant differences between DDCs and non-DDCs with respect to age, household income, and number of hours worked per week.

Preliminary Construct Validity: Step 1

To facilitate a better understanding of the item contents of the new scale, principal components analysis was conducted on each of the four subscales of the Provisional DDCS. Although each dimension was provisionally structured as a single subscale, the results of our subsequent factor analysis suggested that Negotiating Strategies should be split into two subscales: Setting Limits and Making Connections. Nine factors were identified from our analyses (Table 3), which is consistent with our original conceptualization about the dimensionality of DDC. Two factors emerged from Expectations (familial expectations and professional expectations), accounting for 63% of the variance. Five items loaded on familial expectations, with loadings ranging from 0.58 to 0.87. Four items loaded on professional expectations, with loadings ranging from 0.49 to 0.89. As expected, this indicates that, among DDCs, there are both familial and professional expectations to provide care to elderly relatives.

Table 3 ***Revised DDCS* (N = *187*)**

Subscale	**Factors**	**Number of Items**	**Mean**	***SD***	**Item-Total Correlations**	**Cronbach's Alpha**	**Factor Variance**	**Factor Loading**
Expectations			3.78	.712				
	Familial expectations	5			0.40–0.73	0.80		0.58–0.87
	Professional expectations	4			0.30–0.56	0.69		0.49–0.89
	Total	9			0.28–0.66	0.83	62.5	
Supports			3.32	.646				
	Personal supports	3			0.43–0.58	0.68		0.70–0.86
	Professional supports	3			0.24–0.62	0.65		0.35–0.91
	Total	6			0.31–0.52	0.71	61.7	
Setting Limits			3.11	.678				
	Awareness of boundaries	3			0.41–0.59	0.67		0.61–0.87
	Active resistance	3			0.33–0.61	0.65		0.68–0.84
	Total	6			0.34–0.58	0.71	62.9	
Making Connections			3.89	.677				
	Making connections	5			0.42–0.69	0.75	46.5	0.60–0.76
Caregiving Interface			3.01	.826				
	Perceptions of interface	4			0.48–0.71	0.81		0.80–0.84
	Consequences of interface	3			0.53–0.77	0.83		0.80–0.84
	Total	7			0.44–0.74	0.85	70.3	

Two factors emerged from Supports (personal supports and professional supports), accounting for 62% of the variance and indicating the importance of personal and professional supports to DDCs providing care to elderly relatives. Three items loaded on personal supports, with loadings ranging from 0.70 to 0.86. Three items loaded on professional supports, with loadings ranging from 0.35 to 0.91.

Two factors, labelled Awareness of Boundaries and Active Resistance, emerged from Setting Limits, accounting for 63% of the variance. Three items loaded on Awareness of Boundaries, with loadings ranging from 0.61 to 0.87. Three items loaded on Active Resistance, with loadings ranging from 0.68 to 0.84. One factor was extracted from Making Connections, accounting for 47% of the variance. Loadings for the five items on Making Connections ranged from 0.60 to 0.76. This suggests that DDCs are aware of the boundaries between their personal and professional caregiving and that, in an attempt to negotiate these boundaries, they resist providing care to their elderly relative as well as making connections to increase their supports.

Two factors emerged from CI. These were labelled Perceptions of CI and Consequences of CI, accounting for 70% of the variance. Four items loaded on Perceptions of CI, with loadings ranging from 0.54 to 0.85, and three items loaded on Consequences of CI, with loadings ranging from 0.80 to 0.84. These results indicate that DDCs both are aware of and experience consequences of the blurring of boundaries between personal and professional caregiving.

Reliability

Inter-item correlations and internal consistency (reliability) were examined for each of the subscales of the Revised DDCS. Overall, in the final version of the 33-item DDCS, inter-item correlations ranged from 0.24 to 0.77 (Table 3). Cronbach's alpha reliability coefficients of the five DDC subscales ranged from 0.85 (CI) to 0.71 (Supports and Setting Limits). Moreover, Cronbach's alpha reliability coefficients of the subscale factors ranged from 0.83 (CI-Consequences) to 0.65 (for both Supports-Professional and Setting Limits-Active Resistance).

Construct Validity: Step 2

Pearson correlations were conducted to assess construct validity between each of the subscales within the DDCS and WRSI, CWBS, and SF-12v2 (physical) and SF-12v2 (mental) (Table 3). In line with the underlying theory driving the scale, there were weak to moderate correlations in the expected direction between the Revised DDCS subscales of Expectations, Supports, Setting Limits, Making Connections, and CI and the established measures. The strongest significant correlations were

Table 4 *Correlation Between Revised DDC Subscales and Established Measures*

Scale		Expectations	Supports	Setting Limits	Making Connections	Caregiving Interface
WRSI[a]	*r*	-.34	.41**	.09	.04	-.49**
	p	.000	.000	.240	.625	.000
Caregiver Well-Being Scale: *Activities*[b]	*r*	-.16*	.34**	-.05	-.01	-.29**
	p	.03	.00	.48	.89	.00
Caregiver Well-Being Scale: *Needs*[c]	*r*	-.16*	.34**	.03	-.03	-.36**
	p	.04	.00	.71	.69	.00
SF12 Physical Index[d]	*r*	.06	.14	-.14	-.03	-.02
	p	.42	.06	.06	.69	.78
SF12 Mental Index[d]	*r*	-.26**	.26**	.09	.01	-.39**
	p	.00	.22	.22	.60	.00
Expectations[a]	*r*	1	-.12	-.07	.38**	.55**
	p		.095	.344	.000	.000
Supports[a]	*r*	-.12	1	.04	.10	-.26**
	p	.095		.552	.174	.000
Strategies – Setting Limits[a]	*r*			1	.01	-.23**
	p				.851	.002
Strategies – Making Connections[a]	*r*				1	.18*
	p					.013
Caregiving Interface[a]	*r*					1
	p					

[a] $N = 187$ [b] $N = 174$ [c] $N = 180$ [d] $N = 176$ * $p < .05$ (2-tailed) ** $p < .01$ (2-tailed)

between CI and WRSI ($r = -.49, p < .001$), between Supports and WRSI ($r = 0.41, p <.001$), and between CI and SF-12v2 (mental) ($r = -.39, p < .001$). Finally, the CI of the DDCS was also negatively correlated with caregiver well-being ($r = -.29, p < .001$ [activities] and $r = -.36, p < .001$[needs]).

The strongest subscale inter-correlations (i.e., within the Revised DDCS itself) were between Expectations and CI ($r = 0.55, p < .001$) and between Expectations and Making Connections ($r = 0.38, p < .001$). In addition, there was a weak positive association between Making Connections and CI ($r = 0.18, p < .05$) and negative associations between Supports and CI ($r = -0.26, p < .001$) and between Setting Limits and CI ($r = -.23, p < 001$). None of the other DDCS subscale inter-correlations were statistically significant (Table 4).

Contrasted Groups Approach

Although there were no significant differences between DDCs and non-DDCs in their overall scores for the WRSI, CWBS, and SF-12v2 (physical and mental scores), there were significant differences between non-DDCs ($n = 67$) and the DDC subgroup ($n = 84$) defined as *living on the edge* (i.e., those scoring above the mean on the CI subscale). Poorer health was observed for the *living on the edge* DDCs on their overall SF-12v2 mental health index score ($t = -2.76, p < .05$) and on four of the eight SF-12v2 subscales: vitality ($t = -2.37, p < .05$), social functioning ($t = -2.91, p < .01$), role emotional ($t = -3.06, p < .05$), and mental health ($t = -2.27, p < .05$). Moreover, there were significant differences within the DDC group between those who were *living on the edge* and those with lower CI scores for the following SF-12 subscales: vitality ($t = -.20, p < .05$), social functioning ($t = -3.56, p < .01$), role emotional ($t = -4.83, p < .01$), and mental health ($t = -3.98, p < .05$). The *living on the edge* group also had significantly lower well-being scores for the activities ($t = -3.63, p < .05$) and needs ($t = -4.47, p < .05$) subscales than the other DDC respondents. While not all results were statistically significant, overall there was an observed tendency for the *living on the edge* group of DDCs to have the lowest health and well-being scores, whereas the other DDCs (e.g., *making it work*) with low CI scores tended to have slightly better health scores than the non-DDC group.

Discussion

The main purpose of this study was to develop and test a tool intended to advance our understanding of DDC using a random sample of registered nurses providing care to elderly relatives.

The nine factors we identified were consistent with the theorized core DDC dimensions of Expectations (Familial and Professional), Supports (Personal and Professional), Setting Limits (Awareness of Boundaries, Active Resistance), Making Connections, and Caregiving Interface (Perceptions and Consequences), which can yield important information regarding how much variance is accounted for by the factors. However, additional analyses are required to establish the psychometric properties of the DDCS, including test-retest reliability to assess construct stability. Based on the EFA results, a measurement model of DDC will be proposed and analyzed in a future study using CFA to enhance the psychometric validation of the DDCS. For researchers looking for a shorter version of the DDCS, it is worth noting that, based on the strength and consistency of the overall findings, the seven-item CI subscale could be used to determine the extent of DDC when survey respondent burden is a key factor in instrument selection (i.e., when use of the full 33 DDCS items is not possible), adding to the potential value of the DDCS.

The positive correlation between Expectations and CI and the negative correlation between Supports and CI and between Setting Limits and CI are theoretically consistent with the conceptual model of DDC. That is, if expectations are high, both personally and professionally, with respect to caring for one's relatives, there will be greater CI, or blurring of boundaries. Conversely, if one has strong personal and professional supports, it follows that a lower degree of CI will result. Similarly, when one sets limits on caregiving, then less blurring, or a lower degree of CI, should result. However, the positive association between Making Connections and Expectations was unexpected. Perhaps high expectations lead one to increase supports by making connections, both personally and professionally, to help meet these expectations.

Comparison of the SF-12 v2 scores for *living on the edge* DDCs and non-DDCs revealed significant differences for SF-12v2 mental health and specific SF-12v2 subscales of vitality, social functioning, role emotional, and mental health. These findings suggest that DDCs who experience a high degree of blurring of their professional and personal boundaries are at greater risk for poor health than those health professionals who do not care for elderly relatives or who do not experience this blurring. In addition, those DDCs who could be characterized as *living on the edge* scored significantly higher on the same four SF-12 subscales than DDCs with lower CI scores. This observed pattern suggests two possibilities: there exists a threshold effect for the negative health effects of DDC; or manageable exposure to DDC has a beneficial effect. Further exploration of these interesting findings is warranted.

Although we conducted a systematic and comprehensive analysis to assess the psychometric properties of a new scale, further reliability and validity studies are needed. Confirmatory validation studies with other health-care provider populations such as family physicians, social workers, and physiotherapists are particularly important as these professionals have the potential to be DDCs and their experiences, as documented in our original qualitative study of DDC, helped to formulate the theoretical underpinnings of the DDCS. In addition, research with these groups will advance our understanding of how occupational health groups may differ in terms of expectations, supports, negotiating strategies, and degree of CI. As the identification of health-advantage and health-risk factors is influenced by health and social environments, the negotiating strategies could also be examined through the use of qualitative methodologies such as in-depth interviews or focus groups.

Finally, research that draws linkages between professional and personal caregiving has the added value of furthering knowledge about employed caregiving, specifically as it relates to the relationship between health outcomes and provision of familial care by health-care providers. Although the convergence (and avoidance) of professional and personal caregiving boundaries is not a new issue in nursing and other health professions, the notion that it is the individual's responsibility to negotiate this boundary tends to predominate (Ward-Griffin, 2008). To that end, further testing and refinement of the DDCS will be helpful in identifying areas where DDCs may need specific or different types of support. It is also important to understand how specific social supports shape the health experiences of DDCs, as well as to investigate different types of social support interventions with DDCs. This information is particularly meaningful today, with the intersection of three challenges: an aging population, an aging health-care workforce, and a shortage of health professionals. Such knowledge could contribute to workplace and other health initiatives spearheaded by professional groups, policy-makers, and other key stakeholders interested in assessing and addressing the health effects of DDC.

In summary, the DDCS is a valid tool for the assessment of double duty caregiving. Such assessment is a crucial step in understanding the experience of the blurring of personal and professional boundaries of caregiving among health professionals. A quantitative study of both male and female DDCs could help us to understand the relationship between certain factors (i.e., gender, health-care occupation) and the potential health effects of DDC. Moreover, our finding that respondents with high CI scores (*living on the edge*) had significantly lower health and well-being scores than DDC respondents with lower CI scores warrants further investigation, to determine if one group of DDCs is at particular risk for developing negative health effects. Given the current climate of health-care reform in Canada, developing a better understanding of DDC and its health effects is particularly relevant for policy-makers and others who are committed to developing health-promoting programs and policies for familial caregivers of the elderly. Clearly, now is the time to monitor the effects of changing demographics both in the general population and within the health professions, in order to develop appropriate and targeted strategies, thereby creating and sustaining healthy work environments and health-care workforces. With further refinement, the DDCS may assist with these endeavours.

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