Development of the Family Caregiver Medication Administration Hassles Scale

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Purpose: "Medication administration hassles" are the minor daily irritants that family caregivers experience when they assist a dependent family member with medication regimens. This study was designed to develop and test a multidimensional measure of the hassles in family caregiver medication administration.

Design and Method: The authors employed a multi-phase process (caregiver focus groups, instrument development, pilot testing, and field testing). Approximately 180 family caregivers representing diverse socioeconomic circumstances and racial or ethnic backgrounds participated in the study. The final version of the instrument consists of 24 items and four subscales: Information Seeking/Information Sharing (9 items, $\alpha = .92$), Safety Issues (5 items, $\alpha = .83$), Scheduling Logistics (7 items, $\alpha = .90$), and Polypharmacy (3 items, $\alpha = .80$). Overall scale reliability is .95, and test–retest reliability at 2 weeks is .84.

Implications: Caregiver medication administration hassles represent a complex, multidimensional construct that warrants consideration in studies of contemporary family caregiver stress, strain, and burden.

Key Words: Caregiver strain, Medication safety, Medication complexity

Medication consumption among a new generation of elders who remain in the community while they receive long-term care assistance from family caregivers has created the need to better understand how family caregivers are handling medication administration responsibilities. Designing medication administration procedures, developing and following administration schedules, monitoring for adverse effects, and making a variety of decisions regarding whether to give or withhold a medication have been previously identified as some of the medication administration duties performed by family caregivers (Travis, Bethea, & Winn, 2000). By all indications, the level of complexity involved in medication administration and the associated tasks that informal caregivers must add to their skills inventories to fulfill their long-term caregiving duties will continue to increase in the foreseeable future as the levels of dependency of their care-recipients continue to rise (Mahoney & Shippee-Rice, 1994; Travis et al., 2000; Travis & Piercy, 2002).

There is little doubt that most family caregivers have risen to the challenges associated with their caregiver medication administration duties. Most family caregivers understand that careful medication management can improve a long-term care elder’s chance for uncomplicated courses of acute and chronic illnesses, reduce hospital admissions and visits to the physician for drug therapy problems, and enable the dependent person to remain in less restrictive home- and community-based care settings (Travis & Bethea, 2001; Travis et al., 2000). No one, it seems, has to convince family caregivers that this responsibility is important and something to be taken seriously. What is not clear is how the increasingly complex medication regimens added to the increasingly complex caregiving scenarios are affecting family caregivers (Conn, Taylor, & Messina, 1995).

In the past, when family caregivers were asked to appraise their caregiving duties and responsibilities, medication administration issues were either not assessed or were included as a single assessment item (e.g., Vitaliano, Russo, Young, Becker, & Maiuro, 1991). It is not known what contributions, if any, medication duties have on the caregiver’s ability to manage long-term stress and strain (Ranelli & This project was funded by the National Institutes of Health/National Institute on Aging Grant 1 RO3 AG18776-01. An earlier version of this article was presented at the Annual Meeting of the Southern Gerontological Society, May 2002, Orlando, FL. Tristen Kole is now at the Graduate School of Social Work, University of Texas–Houston.

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Aversa, 1994) or what aspects of the medication responsibility are most problematic.

Recently, a study of family caregivers’ medication administration experiences reported that administration issues and concerns are consistent with the construct of “daily hassles” found in the caregiving literature (Travis et al., 2000). On any given day, hassles, or minor irritants of daily living (Lazarus & Folkman, 1984), represent a relatively weak threat to a caregiver’s health and well-being. Over time, however, the accumulation of hassle-related stress may have a significant effect on both the caregiver and the outcomes of the caregiving situation (DeLongis, Coyne, Dakof, Folkman, & Lazarus, 1982). The investigation by Travis and colleagues (2000) accomplished two things. First, it established a typology that provided evidence of the potential multidimensionality of a medication administration hassles construct and suggested the need to develop a valid and reliable measure of the medication administration hassles construct for family caregiving research. Second, the preliminary medication administration hassles typology offered a foundation from which hypothetical subscales could be derived for instrument development. We designed the current study to use a phased approach to build on the original medication administration hassles taxonomy (Travis et al., 2000) to create a valid and reliable multidimensional measure of the construct.

Methods

Overview

We used focus groups, telephone interviews, and a mailed questionnaire during various phases of the project. The data collection methods changed with each project phase. Therefore, for reporting clarity, we report each phase separately.

Our general target was caregivers who were providing medication assistance to individuals aged 55 years or older and whose assistance could be termed long-term. A major criterion was that the care-recipients depended on the family caregiver to carry out at least two of the following activities related to prescription drugs or physician-prescribed use of over-the-counter medications: (a) purchase, order, or pick up the care-recipient’s medications; (b) oversee or plan the medication administration schedule; (c) administer the medication; or (d) make decisions to hold, increase, or decrease a dose or discontinue a medication all together. We excluded from the study caregivers that were themselves dependent on others for personal care and/or medication administration.

Because of the lower utilization rates of formal community-based care by minority groups (Skinner, 1995), minority caregivers are generally underrepresented in our targeted client groups. We took several extra steps to address this issue in all phases of the project. First, we developed collaborative relationships with centers that were specifically selected to help us recruit minority caregivers in both Oklahoma and North Carolina. One of the collaborating adult day services centers in Oklahoma serves a predominately (99%) Black group of clients, and a second center director in Oklahoma estimated that approximately 25% of her clients come from minority families. We also selected one of the North Carolina centers for the high percentage of minority clients in care. Second, the state case management program in Oklahoma serves a disproportionate number of poor minority families. With the help of our collaborating agencies, we were able to achieve our minority recruitment goals for all three phases of the project.

Phase 1: Developing the Instrument

We began our work with focus group methodology. Focus groups are particularly useful when the researcher seeks to create an environment in which respondents feel comfortable expressing different perceptions and points of view without feeling pressure to reach consensus about a plan or course of action to be taken (Krueger & Casey, 2000). One key to successful focus group participation is the need for appropriate probes and attention to moderating the discussion so that all participants have a chance to be heard (Krueger, 1997).

The Sample.—Very deliberate effort was made during Phase 1 to assure diversity in the focus groups because the previous hassles typology (Travis et al., 2000) was developed with data from primarily White family caregivers. With the help of two collaborating adult day care programs in Oklahoma City, we assembled two focus groups, consisting of 10 caregivers in each (total of 20 family caregivers). Across both groups there were 5 male and 15 female participants: 1 Hispanic, 13 White, and 6 Black participants. The family caregivers ranged in age from 47 to 80 years (M = 61.3). They had been in their caregiving roles between 1 and 240 months (M = 58 months). A third focus group consisted of professional health care providers including 3 physicians, 2 registered nurses, 2 social workers, and 2 physician’s assistants. The professional group included 2 male and 7 female participants: 1 Hispanic, 4 Black, and 4 White participants. We took several steps to avoid any power and/or status issues in this group. First, we ensured all members were known to each other through programs and activities of the interdisciplinary Oklahoma Geriatric Education Center and were known to be comfortable and skilled in interdisciplinary discussions. Second, we recruited the members because of their geriatric training and recognized expertise. Third,
we told the members that the composition of their group was intended to provide diverse perspectives on family caregiving and medication administration issues. Finally, the second author (M. Bernard) was a co-leader of this session. The focus group participants knew both leaders. As part of the set of rules read at the beginning of the session, the group leaders told the participants that everyone was to be given an equal chance to participate and that one of the tasks of the leaders would be to make sure that this opportunity was available and was offered to individual members, as needed.

Data Collection and Analysis of the Focus Group Transcripts.—The first author (S. Travis) led all focus groups (or was a co-leader with the second author [M. Bernard] as noted above). The groups met for approximately 1.5 hr. The leader offered a set of rules for participation at the beginning of every session to encourage full participation of those in attendance, and we developed a discussion guide to help the group focus on medication administration issues in the context of family caregiving (Krueger, 1997).

The sessions were audiotaped. Immediately following each focus group, the group leader reviewed the tape to identify any areas that needed to be clarified or followed up in the next group session. Two members of the research team completed independent reviews and content analysis of the focus group transcripts to enhance reliability (HUBERMAN & MILes, 1994). The content analysis identified 16 new medication hassle items that were added to the 17 items in the original hassles typology (Travis et al., 2000).

During the focus group sessions, we asked the family caregivers to discuss the methods they would use for describing the intensity of medication administration hassles to others. We also asked the professional group to describe the statements that they heard in their respective practice roles to describe these hassles. These discussions included numeric ranges (1 to 10 or 1 to 5); verbal descriptions of the ranges (“not a hassle,” “the worst of all hassles”); and preferences for numbers, faces, verbal descriptions, or all three to describe the intensity of a hassle.

Based on the focus group data in Phase 1, the team produced a 33-item preliminary Family Caregiver Medication Administration Hassles Scale that included response categories from 0 (not at all a hassle) to 5 (one of the worst of all hassles). Because we designed part of the recruitment strategy for the instrument testing to enroll respondents with diverse socioeconomic circumstances (and associated ranges in literacy skills), we included a set of expressive faces in the response categories to facilitate responses from individuals with low literacy skills. The faces ranged from a smiling face for the no hassles response category to a frowning face with a tear for the worst of all hassles response.

Phase 2: Pilot Testing

The Sample.—We recruited family caregivers from participating adult day programs in Oklahoma, Alzheimer’s support groups in Oklahoma City, five focus group members from Phase 1, and two personal contacts in North Carolina. The group consisted of 1 male and 19 female caregivers: 15 White, 4 Black, and 1 Asian caregiver.

Data Collection and Analyses of Feedback Data.—About two thirds of the respondents agreed to face-to-face interviews. The other one third asked to have the material sent to them and then to have a telephone interview scheduled at a time that would fit into their busy caregiver schedules. We accommodated the requests of all the caregivers.

Each respondent received a full set of data collection tools that were to be used in the last phase of the project. We took extensive notes during their interview sessions regarding the caregivers’ levels of difficulty answering the questions, their ease in understanding the directions, and any confusing or distracting language encountered by the caregivers. We were particularly interested in how the respondents reacted to the wording of the Likert-type response categories in the Hassles Scale.

During this pilot phase, an unexpected problem arose with the Caregiver Strain Index (CSI; Robinson, 1983) to be used in the study. The CSI is a 13-item questionnaire that is scored by summing the yes (1) and no (0) responses to items reflecting stressors that family caregivers experience while caring for an older person. Items address caregiver inconvenience, confinement, family adjustments, changes in personal plans, competing demands on time, emotional adjustments, upsetting behavior, changes in the personality of the care-recipient, work adjustments, feeling overwhelmed, financial strain, physical strain, and sleep disturbances.

We reviewed numerous other caregiver stress, strain, and burden measures before we selected the CSI for the study. The CSI was originally developed in the 1980s to measure caregiver strain following hospital discharge of an elderly family member. We chose it for the present study because it (a) closely resembled the caregiving experiences of contemporary caregivers reported in the current literature and (b) did not emphasize dementia care over other types of caregiving situations. Furthermore, the CSI had an acceptable reliability (α = .86) and demonstrated construct validity with a number of other measures reflecting caregiver strain (Robinson, 1983), which many theorists describe as the outcome of stress (Stagner, 1981).

During the pilot phase of this project, we discovered that the caregivers did not feel comfortable using the dichotomous response choices in the CSI. They wanted a middle response category that most respondents described as “sometimes.” The
respondents also asked for clarification of the wording of several items. Based on this feedback, we modified the CSI to include three response categories and to add clarifying phrases for the problematic statements on the Index. To be sure the changes had not altered the psychometric properties of the CSI, we included reliability procedures for the modified instrument in Phase 3 field testing to be described in the next section.

Phase 3: Field Testing and Instrument Evaluation

The Sample.—Caregivers for this phase came from four primary recruitment sources. First, we collaborated with three adult day programs in North Carolina and six adult day programs in Oklahoma to recruit family caregivers. On behalf of the research team, center staff members mailed or hand delivered to family caregivers approximately 500 invitations to participate. Second, we collaborated with a statewide case management program in Oklahoma and a private case management firm in North Carolina to recruit family caregivers from their case loads. These two organizations mailed or hand delivered to family caregivers more than 300 invitations to participate. In addition to providing family caregivers with information about the project, almost all of the agencies included at least one article about the study in their agency and/or organizational newsletters. Most of these formal providers also took time to issue face-to-face encouragement to their family caregivers to consider participating in the study. Third, an unexpected recruitment opportunity occurred during the project period when the U.S. Administration on Aging launched its National Family Caregiver Support Program (Administration on Aging, 1999) and made funds available to State Units on Aging for family caregiver conferences and other educational programs targeting family caregivers. Some of the members of the research team were invited to attend several of these state and regional conferences and were given an opportunity to announce the research project and distribute recruitment packets to approximately 40 family caregivers who expressed interest in the study. Fourth, the research team personally contacted approximately 20 family caregivers known to them and invited the caregivers to participate in the study. Ultimately, the Phase 3 caregivers came from Florida, Georgia, New Jersey, North Carolina, Ohio, Oklahoma, and Virginia.

The recruitment packets included a cover letter from the project team describing the project and a contact form (providing name, address, phone number, and convenient times to contact the caregiver by phone) for caregivers who were interested in participating in the study. Interested caregivers were asked to mail the completed contact form directly to the research office at the University of North Carolina at Charlotte in a pre-addressed, postage-paid envelope provided in the packet.

Eventually, we enrolled 93 caregivers in the study from adult day programs, 33 from case management agencies, and 32 from announcements and personal contacts on our part, resulting in a total of 158 caregiver participants. We compared select characteristics of our sample with the National Caregiver Study, a nationwide telephone survey employing a random sample of households in the United States and a sampling strategy that assured inclusion of minorities and caregivers for persons aged older than 50 years with a variety of disabling conditions (National Alliance for Caregiving & AARP, 1997). Respondents included 129 females (81.6%) and 29 males (18.4%), compared with the national survey estimate that 72.5% of caregivers are female. The study caregivers ranged in age from 18 to 86 years ($M = 61.09$), compared with an average age of 46.15 years in the national survey. Their care-recipients were between the ages of 53 and 98 ($M = 77.7$). The 158 family caregivers in Phase 3 had been providing care for as few as 3 months and as long as 372 months, or more than 30 years ($M = 62.5$ months), compared with an average of 54 months for the national survey. Therefore, our sample had more women, older caregivers, and caregivers of longer duration than those identified in the National Caregiver Survey (National Alliance for Caregiving & AARP, 1997). We enrolled 119 White respondents (75.3%), 5 Native American respondents (3%), 22 Black respondents (13.9%), 5 Hispanic respondents (3%), and 7 respondents (4.5%) who identified themselves with “mixed race” combinations (Black and American Indian and White and American Indian).

Data Collection Procedures.—As soon as we received the caregiver information sheet in the research office, a member of the project team contacted the caregiver by telephone to offer a more detailed description of the project and to answer any questions the caregiver might have. In previous projects, this personal contact resulted in 100% response rates among caregivers who indicated an interest in the study. Unfortunately, the enrollment rate was lower for this project. We believe that part of the problem may have been in the overzealous distribution of recruitment packets by some agency staff to family caregivers who did not meet the eligibility criteria or did not fully understand the purpose of the project when they were asked to participate. Of approximately 860 invitations to participate that were distributed, we received 197 contact forms in the research office. We deemed eighteen contacts ineligible, leaving 179 contact forms.

The final sample consisted of 158 individuals. This number represented an enrollment rate of approximately 18% of the 860 distributed invitations and 88.2% of those individuals who sent eligible
contact forms to the research office. All but two of
the respondents who were enrolled in the study
completed all parts of data collection for a comple-
tion rate of 98%.

If the caregiver agreed to participate in the study,
we tape-recorded an informed consent and a brief
telephone interview to obtain caregiver and care-
recipient background information and medication
administration information for the Medication
Complexity Index (MCI) during the initial telephone
contact. During the initial telephone interview, we
also provided a description of the mailed question-
naires that were to follow.

We used the MCI (as reported by Conn, Taylor, &
Kelley, 1991) to record (a) the number of
medications managed by the caregiver, (b) the
number of doses given per day, (c) any additional
directions that must be followed (take prn, take
with meals, etc.), and (d) the mechanical actions
necessary to administer the medications (e.g.,
take one half of a pill, etc.). The total MCI score is
calculated as the sum of points awarded for each action and decision
required for administering medications over a 24-hr
period. The benefit of using this approach rather
than simply counting the number and frequency of
medications is that MCI scores are able to discrim-
ninate between regimen complexity when the number
of medications is the same (Conn et al., 1991).
Because accurate information about all medications
being administered is essential to developing a reli-
able MCI score, we decided to obtain these data at
the time of the telephone interview when clarifica-
tion about information and completeness could be
more easily managed.

After completion of the telephone interview, we
told the caregivers that they would receive a packet
of questionnaires within the week. In addition, we
told one third of the caregivers in the study that they
would receive another packet of questionnaires 2
weeks after the first packet was returned to the
research team to provide test–retest reliability of the
questionnaire packet, we sent a reminder post card
to nonrespondents. Ten working days after we
mailed the postcard, we mailed a second packet to
nonrespondents. We contacted those caregivers that
failed to respond within 1 week of the second
mailing by telephone to complete the questionnaires
or to schedule a face-to-face interview for data col-
lection. Respondents that we initially identified for
retesting and that required a telephone interview to
complete the first packet of questionnaires were
automatically telephoned for the retest in 2 weeks.

Instrument Evaluation: Principal Components
Analysis.—The original medication hassles typology
(Travis et al., 2000) suggested three subscales. After
the work in Phase 1 of the project and the addition of
16 new hassle items to the original 17 items in the
typology, it became clear that at least one additional
subscale might be appropriate.

We employed the following steps for instrument
evaluation. First, we tested the adequacy of the
sample correlation matrix for the 33 items by using
the Kaiser-Meyer Olin measure of sampling adequacy
(.899) and the Bartlett’s Test of Sphericity,
($\chi^2 = 528, N = 3) = 3728.722, p = .000$. Both results
suggested it was acceptable to proceed. Next, we
analyzed the preliminary 33 items of the hassles
scale by means of principal-components analysis.
Six components emerged with eigenvalues of 1 or
above. The eigenvalue, the percentage of explained
variance, and the cumulative percentage for each
component are reported in Table 1.

In addition to the eigenvalue-one criterion (Kaiser,
1960), we considered two other criteria to decide
how many components to retain. First, we examined
the scree plot (Catell, 1966) and observed the break
between components with large eigenvalues and
those with small eigenvalues, which seemed to occur
at 4 components. Next, we looked for total
explained variance of the components, seeking
a percentage of explained variance close to 70%
(Stevens, 1986). We made the decision to retain the
six components with eigenvalues above 1 because
this number was needed to approach the desired
explained variance. We then used varimax rotation

<table>
<thead>
<tr>
<th>Component</th>
<th>Eigenvalue</th>
<th>% Explained Variance</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>13.403</td>
<td>40.614</td>
<td>40.614</td>
</tr>
<tr>
<td>2</td>
<td>3.227</td>
<td>9.780</td>
<td>50.394</td>
</tr>
<tr>
<td>3</td>
<td>1.628</td>
<td>4.932</td>
<td>55.327</td>
</tr>
<tr>
<td>4</td>
<td>1.382</td>
<td>4.188</td>
<td>59.514</td>
</tr>
<tr>
<td>5</td>
<td>1.218</td>
<td>3.689</td>
<td>63.204</td>
</tr>
<tr>
<td>6</td>
<td>1.089</td>
<td>3.299</td>
<td>66.503</td>
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</tbody>
</table>
to load each component high on a smaller number of variables and low or very low on the other variables to facilitate the interpretation of the components (Stevens, 1986).

Twenty-nine items loaded on the 6 components. We used the loading criteria suggested by Stevens (1986), which takes sample size into account, and established .40 as the loading cutoff. On the basis of component loadings, we discarded one subscale immediately because it contained only two items. We named this discarded subscale “Financial Considerations” and note that it was probably an underdeveloped aspect of medication administration hassles that was not adequately addressed in the item development stages.

Next, we examined reliability for the remaining subscales. Calculated reliability (Cronbach’s $\alpha$) estimates for all but one of these subscales, “Administration Procedures,” met our predetermined standard for measurement reliability of .70. Although alpha is dependent on the number of variables, an alpha above .70 is generally considered to be an acceptable lower bound estimate (Nunnally, 1978). The Administration Procedures subscale, which did not meet this criterion, was eliminated from further consideration leaving four subscales and 24 items in the final hassles scale. The two discarded subscales (Financial Considerations and Administration Procedures) were also the two components with the lowest eigenvalues (Components 5 & 6) described in Table 1. Table 2 provides a list of the subscales and the individual items in each. Table 3 provides descriptive statistics and reliability estimates of the retained scales.

Before we made a final decision to discard two subscales and retain four of the six components in the analysis, we performed both three- and four-component analyses on the full set of items. Neither procedure provided more interpretable results. Therefore, the four hassles subscales reported in Table 2, and listed here with their reliability estimates, included “Information Seeking/Information Sharing” ($\alpha = .92$), “Scheduling Logistics” ($\alpha = .90$), “Safety Issues” ($\alpha = .83$), and “Polypharmacy Concerns” ($\alpha = .80$). Nine items loaded on the Information Seeking/Information Sharing subscale relating to a variety of education and communication issues. Seven items loaded on Scheduling Logistics including giving medications and coordinating and remembering medication schedules. Five

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**Table 2. Subscales and Subscale Items**

(Caregivers were instructed to rate each of the following tasks associated with managing medications for a care-recipient on a scale from 0 = “not a hassle” to 5 = “one of the worst of all hassles”)

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Subscale 1: Information Seeking/Information Sharing (9 items)</strong></td>
<td>Knowing what to do if an emergency occurs</td>
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<td></td>
<td>Finding clear information about the medication</td>
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<td></td>
<td>Knowing why a medication is being given and if it is having the desired effect</td>
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<td></td>
<td>Being comfortable talking to the doctor about medications</td>
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<td></td>
<td>Having someone available to answer questions</td>
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<td></td>
<td>Getting information within a reasonable time frame</td>
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<td></td>
<td>Feeling comfortable about making medication decisions</td>
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<td></td>
<td>Knowing what questions to ask the physician</td>
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<td></td>
<td>Understanding the directions and information I am given</td>
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<td></td>
<td>Giving medications on time</td>
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<td></td>
<td>Scheduling multiple medications throughout the day</td>
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<td></td>
<td>Arguing with the care-recipient about when to take medications</td>
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<tr>
<td></td>
<td>Working medication schedules into my daily routine</td>
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<td></td>
<td>Coordinating my medication schedules with those of the care-recipient</td>
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<td></td>
<td>Sharing the responsibility with the care-recipient for keeping medication schedules</td>
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<td></td>
<td>Remembering to give medications according to schedule</td>
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<tr>
<td><strong>Subscale 2: Scheduling Logistics (7 items)</strong></td>
<td>Admitting to the physician or others that I made a mistake</td>
</tr>
<tr>
<td></td>
<td>Knowing when to hold, increase, decrease a dose or discontinue the medication</td>
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<tr>
<td></td>
<td>Understanding when medications can be crushed, mixed, dissolved, etc.</td>
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<tr>
<td></td>
<td>Recognizing adverse (bad) side effects</td>
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<tr>
<td></td>
<td>Knowing how to give medication safely</td>
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<tr>
<td><strong>Subscale 3: Safety Issues (5 items)</strong></td>
<td>Keeping medication prescriptions filled</td>
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<td></td>
<td>Planning ahead to keep prescriptions filled over weekends and holidays</td>
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<td></td>
<td>Managing medication prescriptions written by multiple physicians</td>
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<tr>
<td><strong>Subscale 4: Polypharmacy (3 items)</strong></td>
<td>Keeping medication prescriptions filled</td>
</tr>
<tr>
<td></td>
<td>Planning ahead to keep prescriptions filled over weekends and holidays</td>
</tr>
</tbody>
</table>

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items loaded on Safety Issues comprising concerns about adverse effects, making mistakes, and changing doses of medications. The three items that loaded on the Polypharmacy subscale addressed concerns about dealing with multiple prescribing physicians, keeping numerous prescriptions refilled, and managing polypharmacy-related tasks during holidays and weekends. Overall reliability for the instrument is .95. Two-week test–retest reliability for the subscales ranges from .78 to .85, and reliability for the complete instrument is .84.

We computed respondents’ scores for each of the subscales by averaging the participants’ responses to the items that comprise the subscale (Brod, Stewart, Sands, & Walton, 1999). For example, the respondent’s score on the Polypharmacy subscale is the nonweighted average of the participant’s response to the three items in the subscale. The variability of most scores was satisfactory across the four subscales. The mean of the subscale scores fell below the midpoint of each scale, but all were within one and one half standard deviation of the midpoint, with the exception of Safety Issues.

Next we computed correlations among the subscales to determine discriminant validity. If the new instrument was able to measure conceptually distinct facets of medication hassles, we expected small to moderate correlations among the subscales. As indicated in Table 4, intercorrelations among the subscales ranged from .50 to .74, with the highest being between Safety Issues and Information Seeking/Information Sharing. At this point we performed another principle components analysis using an oblique solution because of the somewhat high correlations between some of the subscales. This procedure did not provide an interpretable solution. Therefore, with four highly reliable (internally consistent) subscales that are reasonably independent of one another, we accepted this group of subscales as the best solution to our analyses of family caregiver medication administration hassles.

**Construct Validity of the New Instrument.**—To assess construct validity of the new instrument, we examined the correlations of the total scale score and individual subscales with the MCI scores and the modified CSI. Medication complexity is logically linked to hassles (or minor irritants) associated with medication administration duties. The more complex a regimen, the greater the potential for caregivers to encounter daily hassles in carrying out this responsibility. Similarly, hassles have long been theoretically linked to long-term stress and strain (DeLongis et al., 1982; Kinney & Stephens, 1989; Lazarus & Folkman, 1984; Stagner, 1981).

The original CSI had a reported reliability of .86 when it was developed in the 1980s for caregivers of posthospitalized elders (Robinson, 1983). In our sample of long-term caregivers, the original version of the CSI yielded a reliability of .88 and a 2-week test–retest reliability of .60. By comparison, when we...
analyzed the data using the modified scoring version of the CSI for our long-term care sample, we obtained a reliability of .90 and a test–retest reliability of .88. These results suggest that the original version appears to be a reliable measure of contemporary caregiver strain, but with limited retest reliability, while the modified version has both good internal consistency and test–retest reliability, for this sample. Therefore, we decided that the modified version of the CSI was the superior measure for our purposes.

Table 5 provides the correlations between the four hassles subscales and the total scale scores with the MCI score and the Modified CSI (MCSI) scores. The medication complexity and caregiver strain scores were not significantly correlated (r = .06).

The significant subscale correlations with the MCI ranged from .19 to .29. Significant scale correlations with the MCSI ranged from .34 to .40. Overall scale scores were positively and significantly correlated with the two measures. Therefore, the correlation of these variables provided a modest measure of concurrent validity for the medication hassles scale with two measures that are conceptually and theoretically linked to caregiver stress and strain.

**Discussion**

Medication administration hassles is a complex, multidimensional construct and an important new variable in family caregiving research. Much of the original conceptual groundwork on this variable came from an earlier study (Travis et al., 2000) that produced the family caregiver medication administration hassles typology. The current study expanded this work to include domains for information seeking/information sharing, polypharmacy, and financial considerations. Although not all of these domains resulted in viable measurement scales, they do continue to shed light on myriad medication hassles that are important to family caregivers.

The Family Caregiver Medication Administration Hassles Scale is a convenient, transportable, and reasonably short measurement tool that can be self-administered. It is easily scored and provides both subscale scores and an overall score for medication administration hassles. The instrument permits a reasonable assessment of areas in which family caregivers are experiencing minor irritants that could lead to long-term stress and has applications for both research and practice.

**Implications for Practice.**—Empirically driven caregiver educational programs for medication administration have been scarce. Historically, the family education programs that were available tended to focus on the basic aspects of managing and giving medication to a dependent family member (Conn et al., 1995; Mahoney & Shippee-Rice, 1994; Ranelli & Aversa, 1994). As the present work has shown, caregivers are dealing with many more issues and subsequent hassles than such basic skills as being able to calculate a medication dose.

It is also possible that medication administration hassles change over time as the care-recipients’ conditions change and medication regimens expand and contract. The new instrument offers a mechanism for periodic assessment of the family members’ ability to handle long-term medication responsibility that heretofore was not available. The various subscales offer important information for use by multidisciplinary teams in such settings as senior health clinics, geriatric assessment clinics, and community-based long-term care settings.

**Implications for Research.**—The ability to predict a caregiver’s negative appraisal of the caregiving situation has been an ongoing challenge in family caregiving research (John, Hennessy, Dyeson, & Garrett, 2001). In fact, prediction equations are so perplexing as to lead some researchers to conclude that the phenomenon (variously labeled stress, strain, and burden) is best understood as highly variable across different caregiver subgroups (John et al., 2001; Luborsky & Sankar, 1993; Shanas & Van Nostrand, 1988). Adding to the problem is the possibility that the variables most often attributed to negative appraisals of caregiving have been limited to social care issues, such as the care recipients’ needs for assistance to perform basic activities of daily living (ADLs) and instrumental ADLs (IADLs). These dependency measures reveal only part of the responsibility being carried out by contemporary family caregivers. Today and well into the foreseeable future, family caregivers are expected to provide both social and health aspects of their care recipients’ long-term care.

A medication administration hassles variable is not likely to be the only missing link in family caregiving research on stress, strain, and burden. But measurement of this new multidimensional construct, which has been essentially invisible in the past, may be worth exploring in future research.

**Additional Research to Refine the Instrument.**—The variability of scores on the subscales of the hassles instrument warrants additional investigation.
Family caregivers that experience the highest levels of medication administration hassles are not well represented in our sample. It may be that family caregivers affiliated with adult day programs and case management services, or those who attend caregiver conferences, have access to support services that reduce their daily medication administration hassles. It may also be the case that hassle intensity is related to decisions to move the care-recipient out of family care and into institutional care settings. Caregivers who were in these transitional situations may not have been inclined to participate in our study.

There is also still substantial underrepresentation of certain culturally diverse groups in this study, and there are insufficient numbers in any minority group to permit separate analyses of these groups. Although we overrepresented the minority populations who actually use formal long-term care services, we did not locate and recruit the many caregiving families who do not. Testing the new instrument with diverse populations and translating the instrument into Spanish, Vietnamese, and other languages represented by the growing immigrant populations in the various regions of the United States is work that remains to be done.

The contributions that financial considerations and administration procedures make to caregiver medication administration hassles should be studied in greater detail. Although we followed a practice recommended by Stevens (1986) of writing at least five items for each a priori component of medication administration hassles, some of the items were not adequate to survive the analysis. Both of these subscales are likely to be important in understanding medication management by family caregivers and the hassles associated with the caregiver’s ability to manage increasingly complex and expensive medication regimens over time. The Polypharmacy subscale, which has only three items, also needs further development. In addition, all items may need additional refinement to clearly distinguish elements within each hassles domain.

Finally, the principal components analysis on which this discussion is based is exploratory analysis. The subscales can and should be cross-validated with confirmatory factor analysis. Although the Family Caregiver Medication Administration Hassles Scale has current utility, additional work on the instrument is clearly called for.

References

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