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Harsh Communication: Characteristics of Caregivers and Persons with Dementia

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Abstract

Objectives: While ways to reduce caregiver burden have dominated dementia care research, there is little understanding of daily communication and its relationship to caregiver burden and depression. In this study we sought to: 1) describe the frequency of harsh communications used by caregivers; 2) examine the relationship between harsh communications, caregiver and person with dementia characteristics; and 3) determine the contributions of caregiver depression and burden on such communications.

Method: Cross-sectional baseline data were drawn from 250 dyads, who participated in the Dementia Behavior Study (NCT01892579). Hierarchical linear regression models were used to examine the relationship between dyad characteristics and harsh communication scores (using the 6-item Negative Communication Scale), controlling for three groups of covariates: sociodemographic, relationship characteristics; and health factors.

Results: More than half of caregivers (mean age=65.4, 81.2% women, 45.6% spouses) reported they felt like screaming/yelling (N=138, 55.2%) or used a harsh tone (N=129, 51.6%) at persons with dementia (MMSE mean=14.3, SD:7.8) at least sometimes. When controlling for all covariates, for each unit increase in caregiver burden, harsh communication increased by .486

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units ($p < .001$); similarly, for each unit increase in caregiver depression, harsh communication increased by .301 units ($p < .001$).

Conclusion: Over half of dementia caregivers reported they felt like or used one or more harsh forms of communication. Caregiver burden and depression were incrementally associated with greater use of negative communications. Providing caregivers with knowledge, support and specific communication skills may lessen the frequency of harsh communications and possibly reduce burden and depression.

Keywords

mistreatment; dementia; caregiving; harsh communication; dyad communication

Introduction

In 2018, more than 16 million caregivers in the US provided nearly 18.5 billion hours of informal care to persons with dementia (Alzheimer's Association, 2019). Being a caregiver for someone with dementia is financially costly (Jutkowitz et al., 2017), and is associated with negative consequences, such as high levels of caregiver burden (Etters, Goodall, & Harrison, 2008), burnout (Takai et al., 2009), depression (Covinsky et al., 2003), and decreased health-related quality of life (Serrano-Aguilar, Lopez-Bastida, & Yanes-Lopez, 2006). Communication is a vital component of caring for an individual with dementia (Small, Gutman, Makela, & Hillhouse, 2003). While ways to reduce caregiver burden have dominated dementia care research, there is little understanding of daily caregiving communication and its relationship to caregiver burden and depression.

There are several possible causal pathways between harsh communication and poor caregiver outcomes. For example, memory impairment exacerbated by increased frequency of neuropsychiatric symptoms in persons with dementia may diminish the quality of dyadic communication (Feast et al., 2016). Caregivers' communications may be inappropriate as a consequence of not understanding that behavioral symptoms are dementia-related and not intentional. Short-term memory loss in persons living with dementia affects communication between individuals and their caregivers. Caregivers of persons with dementia report a breakdown of communication particularly as it concerns assisting with activities of daily living as persons with dementia may lose their ability to follow or understand directions, initiate or carry out basic self-care and/or participate in meaningful conversations (Small, Geldart, & Gutman, 2000). Neuropsychiatric symptoms in persons with dementia further contribute to changes and breakdown in communication between caregivers and persons living with dementia (Feast et al., 2016). For example, persistent and common behaviors in persons with dementia, such as apathy, repetitive questioning, and rejection of care, diminish the quality of conversations between individuals and caregivers (Choi, Budhathoki, & Gitlin, 2017; Feast et al., 2016). Although behavioral symptoms may be a form of communication (Algase et al., 1996), caregivers may withdraw or be frustrated with what they perceive as persistent, difficult and/or intentional behaviors. Ultimately, both short-term memory loss and behavioral symptoms may result in harsh communication and contribute to a cycle of negative outcomes for both parties.

Few studies have examined the relationship between dementia caregivers' wellbeing and communication. For instance, Braun and colleagues (2010) found that in 37 married couples who used positive communication, wives caring for husbands with dementia reported less depression and distress. In another study of 89 family caregivers for persons with dementia, communication problems mediated a relationship between persons' with dementia health status and behavioral symptoms, as well as between behavioral symptoms and caregiver burden (Savundranayagam, Hummert, & Montgomery, 2005). In a study of 256 informal caregivers living with an individual with dementia, Leggett and colleagues found that 15% used harsh communications as a management strategy. Furthermore, greater use of harsh communications was associated with significantly more caregiver burden ($\beta=.26, p<.001$) and frustration with caregiving ($\beta=.66, p<.001$), but not depressive symptoms or a desire to institutionalize the person living with dementia (Leggett, Kales, & Gitlin, 2018). In addition, the use of these forms of communication by caregivers was associated with significantly greater utilization of home services (i.e. home health aide, meal service; $\beta=.14, p<.05$) and social services (i.e. adult day care, support groups, cleaning; $\beta=.15, p<.05$), but not health care services (i.e. use of hospital, rehabilitation facilities, physician visit, etc) (Leggett et al., 2018). Unfortunately, little research has examined the relationship between the use of negative or harsh communications and characteristics of persons with dementia and their caregivers. Understanding these relationships with caregiver communication can help inform targeted interventions to improve communication, which in turn may reduce caregiver distress and improve wellbeing in the person with dementia. The purpose of this study was threefold: 1) to describe the frequency of harsh communication used by caregivers; 2) to examine the relationship between harsh communications, caregiver and person with dementia characteristics; and 3) to determine the contributions of caregiver depression and burden on such communications.

Methods

We used the baseline data from the Dementia Behavior Study (Gitlin et al., 2016), which included 250 dyads, consisting of community-dwelling persons with dementia and their primary caregivers. The purpose of the randomized two-group parallel clinical trial (referred to as the parent study hereafter) was to deliver and assess health outcomes of a Tailored Activity Program (TAP) compared to an attention control group (protocol details are available elsewhere, Gitlin et al., 2016). The current study involved baseline data prior to randomization and hence, caregivers were unaware of their group assignment at the time of the interview. All caregivers provided written informed consent prior to the study; proxy consent was obtained for individuals with dementia unable to fully understand the written consent process or who preferred a proxy to sign.

Measures

Dependent variable.

Harsh Communication.: For the purpose of this analysis, harsh communication is defined as a form of verbal mistreatment in which caregivers report the frequency of negative thoughts or actions towards persons with dementia. We used the Negative Communication Scale consisting of 6 items to gauge the frequency of caregiver self-reported harsh

communication reported in the last month (Gitlin, Kales, Marx, Stanislawski, & Lyketsos, 2017; Gitlin, Winter, Dennis, Hodgson, & Hauck, 2010). Six items were: 1) I felt like screaming or yelling at my relative because of the way he/she behaved; 2) I used a harsh tone of voice with him/her, 3) I criticized or scolded my relative to try to prompt better behavior from him/her, 4) I threatened my relative with undesirable consequences if she/he did not cooperate; 5) I withdrew from my relative; and 6) I yelled or acted enraged; it was often the only way to get my way with him/her. The responses were coded using a Likert scale (1=Never, 2=Rarely, 3=Sometimes, 4=Often, 5=Always). The questions from this scale were drawn from the Dementia Management Strategies Scale (Hinrichsen & Niederehe, 1994) and have been used in previous caregiver trials with adequate internal consistency ($\alpha = 0.80$) (Gitlin et al., 2010). Higher scores represented higher admission of harsh communication (range: 6–30). We examined the number of items endorsed and the mean frequency of occurrence by summing total score from individual items.

Independent Variables

Depression.: To measure caregiver depression, we used the nine-item Patient Health Questionnaire (PHQ-9) which evaluates depression severity consistent with the DSM-IV diagnostic categories (Kroenke, Spitzer, & Williams, 2001). Caregivers rated each symptom on a 4-point scale (0=Not at all, 1=Several days, 2=More than half the days, 3=Nearly every day) considering the last 2 weeks. We derived a summary score reflecting the frequency of depressive symptomology. Higher scores indicated higher depression severity (range 0–27).

Burden.: We used the Zarit Burden Scale to measure caregiver burden (Zarit, Reever, & Bach-Peterson, 1980). The scale consists of 12 items addressing common burdensome aspects of caregiving, such as feeling stressed, angry or strained. The caregiver responses range from Never to Nearly always (0=Never, 1=Rarely, 2=Sometimes, 3=Quite frequently, 4=Nearly always; range 0–48). We computed the total score by summing the responses to each item with higher scores indicated higher caregiver burden (range: 0–48).

Covariates.: The following caregiver and person with dementia-related covariates were chosen, as these are often associated with harsh communication (Cooney, Howard, & Lawlor, 2006), caregiver depression (Covinsky et al., 2003) and burden (Etters et al., 2008): 1) sociodemographic variables; 2) relationship characteristics; and 3) health factors. Sociodemographic characteristics that were available for both caregivers and persons with dementia included: age (continuous), sex (0 - male or 1 - female), race (0 – White, 1 – Black, 2 – Other) and education (1 - less than high school, 2 - high school, 3 – greater than high school). Characteristics of the relationship between members of each dyad were also available and included months spent caring for person with dementia (continuous) and the nature of the relationship (0 – non-spouse, 1 - spouse).

We included health factors specific to persons with dementia and their caregivers. The person with dementia specific covariates included cognitive function, behavioral symptoms and physical function. To estimate cognitive function of the person with dementia, we used the total score from the Mini Mental Status Examination (range: 0–30) (Folstein, Folstein, & McHugh, 1975). Higher scores indicated better cognitive function. We gauged the presence

of behavioral symptoms by adding the total number of behaviors endorsed by caregivers as occurring using Neuropsychiatric Inventory (range 0–14) (Cummings et al., 1994) with a higher number indicating more behaviors. To estimate physical function of person with dementia, we summed the number of activities of daily living that a person with dementia needed and type of assistance with using the Caregiver Assessment of Function and Upset (CAFU) score (range: 0–7) (Gitlin et al., 2005). Higher scores indicated a greater number of ADLs needing assistance. To estimate the number of comorbid conditions for each member of the dyad, we calculated the sum of self-reported 25 clinically diagnosed conditions (i.e. asthma, high cholesterol, urinary problems, skin allergy, etc).

Analysis

We used descriptive statistics to provide an overall summary of the data. Next, in a bivariate analysis we examined the relationship between harsh communication and characteristics of caregiver and persons with dementia using Pearson correlation coefficients, independent *t* tests, or one-way ANOVA, when appropriate. Next, we ran hierarchical linear regression models to examine the relationship between caregiver characteristics and harsh communication scores (outcome). In Model 1, we examined caregiver and person with dementia sociodemographic characteristics. In Model 2, we added relationship characteristics. In Model 3, we added health factors and in Model 4, we added caregiver burden (and caregiver depression in a separate hierarchical linear regression analysis). We checked all variables for multicollinearity in the regression analysis with tolerance and variance inflation factor (VIF). All analyses were completed in SPSS (IBM Corp. Released 2017. IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY: IBM Corp.).

Results

Persons with dementia were, on average, 81.4 years old (SD: 7.9; range = 56–99), more than a quarter completed high school (N=67, 26.8%), most were female (N=158, 63.2%), White (N=149, 59.6%) and had 7 co-morbid conditions (SD: 3.3 range = 0–16) as reported by their caregivers. The average Mini Mental Status Examination score was 14.3 (SD: 7.8; range = 0–29) corresponding to moderate levels of cognitive impairment (Table 1). Caregivers were, on average, younger (mean 65 years old; SD: 12.6; range = 28–93). Caregivers reported having, on average, 8 co-morbid conditions (SD: 4.8; range = 0–23) and spent close to 5 years (46.8 months; SD: 37.2; range = 6–288) caring for persons with dementia. We provided full sample characteristics in Table 1.

Harsh Communication

When looking at the frequency of caregivers reporting harsh communications at least sometimes, more than half of caregivers reported that they felt like screaming, yelling (N=138, 55.2%) or used a harsh tone (N=129, 51.6%) when communicating to the person with dementia. Thirty-seven percent of caregivers admitted they had criticized or scolded the person with dementia (N=93). Twenty-five percent (N=63) reported that they withdrew from the person with dementia. Close to seventeen percent (N=42) reported having yelled or acted enraged sometimes. Ten percent of caregivers (N=25) threatened persons with dementia with

undesirable consequences (Figure 1). The average harsh communication score was 11.8 (SD: 4.1; range = 6–24).

Relationship of Caregiver and Persons with Dementia Characteristics to Harsh Communication

When examining the associations of harsh communication with characteristics of caregivers and persons with dementia in bivariate analyses, higher cognitive functioning of persons with dementia was associated with greater harsh communication ($r = .182$; $p = .004$); whereas, greater physical impairment of persons with dementia was associated with less harsh communication ($r = -.138$; $p = .029$) (Table 2). Additionally, harsh communication scores were higher in caregivers of men with dementia ($F = 10.778$; $p = 0.001$) compared to women with dementia and in between spouses ($F = 6.496$; $p = 0.011$), as compared to others (Table 2).

Relationship of Caregiver Depression and Burden to Harsh Communications

We next examined the individual contribution of caregiver burden and depression on the frequency of harsh communication. In bivariate analyses, greater caregiver burden ($r = .463$; $p < 0.001$) and depression ($r = .348$; $p < 0.001$) were associated with a more frequent use of harsh communication (Table 2). When controlling for sociodemographic and health factors, we found that for each unit increase in caregiver burden, harsh communication increased by .486 units ($p < .001$; $R^2 = .302$) (Table 3 Model 4). When controlling for all covariates, for each unit increase in caregiver depression, harsh communication increased by .301 units ($p < .001$; $R^2 = .224$) (Table 4 Model 4). All covariates that were significant in bivariate analyses were no longer significant with the addition of caregiver burden and caregiver depression.

Discussion

Caregiving for persons with dementia, and particularly at the moderate disease stage, can be challenging for families (Etters et al., 2008). With increased care responsibilities involving interactions for guiding and supporting instrumental and basic activities of daily living, communications by caregivers directed towards persons living with dementia may include maladaptive strategies. This study examined the association of caregiver and person with dementia characteristics with caregiver's harsh communication and the role of caregiver burden and depression.

We found that most caregivers had admitted that they felt like or used one or more harsh forms of communication. In contrast to Leggett and colleagues (2018), who found that 15% of caregivers for persons with dementia used harsh communications as a management strategy, more than half of caregivers in our study reported that they felt like screaming, yelling ($N=138$, 55.2%) or used a harsh tone ($N=129$, 51.6%) when communicating to the person with dementia. The differences between our studies may be due to the fact that we examined responses to two additional questions, not included in the Leggett et al. (2018) study (felt like screaming, yelling or used a harsh tone). In addition, the inclusion criteria between the two studies were different. In the current study, caregivers had to indicate

clinically meaningful levels of agitation/aggression in persons with dementia. In the Leggett et al. (2018) study, caregivers needed to report difficulties managing functional decline or behaviors in older adults with dementia to enroll in the study. The findings from our study provide insight into the daily care experiences at home and highlights the critical need to provide caregivers with the requisite knowledge and communication skills to carrying out daily care.

In our study, we found that caregivers' increased use of harsh communications was independently associated with higher caregiver burden and caregiver depression. This finding is consistent with previous studies that examined factors associated with verbal mistreatment of persons with dementia. For example, in a cross-sectional survey of 220 caregivers of persons with dementia, 115 (52%, 95% CI: 46% to 59%) caregivers reported some form of mistreatment (Cooper et al., 2009); with verbal mistreatment being the most common type reported (Cooper et al., 2009). Greater verbal mistreatment was associated with worse relationship prior to disease onset and increased social isolation among caregivers for persons with dementia (Cooney & Mortimer, 1995). In addition, poor relationship prior to the onset of the disease, increased verbal or physical abuse by the person with dementia toward the caregiver, increased number of behavioral symptoms in persons with dementia, and a greater perception by the caregiver of not receiving help were all shown to be associated with increased caregiver verbal mistreatment including harsh communication (Compton, Flanagan, & Gregg, 1997). Similar to our study, Leggett and colleagues (2018) found that greater use of harsh communications was associated with significantly more caregiver burden and frustration with caregiving, but not depressive symptoms or a desire to institutionalize the person with dementia (Leggett et al., 2018). The differences in the relationship between caregiver depression and the use of harsh communications between our study and Leggett et al. (2018) findings may be a result of using different measures to gauge caregiver depression.

Prior to controlling for caregiver burden, we found that a greater number of behavioral symptoms in persons with dementia were associated with higher frequency of harsh communication. Once we included caregiver burden, these effects disappeared. Similarly, prior to accounting for caregiver depression in the final model, greater number of behavioral symptoms and higher cognitive function in persons with dementia were associated with higher frequency of harsh communications; however, this effect disappeared once we included caregiver depression in the model. This is in line with two previous studies that reported a positive association between behavioral symptoms (i.e. irritability and aggression), and mistreatment psychologically and physically (Cooper, Manela, Katona, & Livingston, 2008; Wigglesworth et al., 2010). Both studies included caregiver burden and caregiver depression when examining correlates of mistreatment in their analyses (Cooper et al., 2008; Wigglesworth et al., 2010). The interplay between behavioral symptoms and verbal mistreatment may be influenced by other factors, such as the use of (dys)functional coping strategies. For example, Cooper and colleagues (2010) discussed that interventions focused on caregiver coping strategies, rather than treating behavioral symptoms of persons with dementia directly, may be more effective in promoting the rewarding aspects of a caregiving relationship in persons with dementia and their caregivers. Interventions consisting of successful management strategies may be particularly effective, when behavioral symptoms

in persons with dementia persist or get worse over time (Polenick et al., 2018). Furthermore, future studies can include all these variables (coping strategies, caregiver burden, and depression) in their analyses to increase understanding of how these factors play a protective role or increase risk in the caregiver-person with dementia relationship.

Before controlling for caregiver depression in the final model, higher cognitive function in persons with dementia was associated with higher frequency of harsh communications; however, this effect disappeared once we included caregiver depression in the model. Previous studies were mixed with regard to the relationship between cognitive function of person with dementia and caregiver mistreatment, with some reporting a positive association (greater cognitive impairment being associated with a greater risk for mistreatment) (Cooper et al., 2008; Vandeweerd & Paveza, 2005) and others reporting no significant relationship (Compton et al., 1997; Cooper et al., 2010). This may be due to differences in how researchers gauged cognitive impairment in previous studies.

In bivariate analyses, harsh communication scores were higher in caregivers of men with dementia compared to women with dementia and in between spouses, as opposed to nonspouses. Previous studies that examined sex differences and relationship type correlates of harsh communications in persons with dementia and their caregivers reported no associations (Cooney et al., 2006; Cooper et al., 2010). However, due to small sample sizes included in the limited number of studies and the fact that most caregivers in dementia care studies tend to be women, our results should be interpreted with caution.

There are several limitations to our study. This was a cross-sectional study; therefore, we cannot comment on the direction of causality. Increased use of harsh communication by caregivers may have contributed to increased feelings of burden or depression in caregivers. Alternatively, caregivers with increased feelings of burden or depression may have been more likely to report harsh communication. To be enrolled in the parent study, persons with dementia needed to demonstrate agitated/aggressive behaviors. Since agitation in persons with dementia has been found to be associated with caregiver verbal and physical mistreatment (Yan, 2014), the sample inclusion criteria in our study may have disproportionately selected caregivers with higher rates of harsh communication. Caregivers in our sample were not asked about the history of treatment for mental health disorders or sources of social support, which has previously shown to be a protective factor against verbal mistreatment (Serra et al., 2018). Additionally, caregivers were not asked to rate the quality of their premorbid relationship. Poor premorbid relationship quality between the caregiver and person with dementia is shown to be associated with higher risk for verbal mistreatment in caregivers for persons with dementia (Cooney & Mortimer, 1995).

Taken as a whole, the results of the current study suggest that harsh communication style is associated with burden and depression in family caregivers. Most caregivers of persons with dementia in our study reported using at least one form of harsh communication. This emphasizes the critical need to provide caregivers with essential support and communication skills to lessen the frequency of using harsh communicating during interactions. We found that increased caregiver burden and depression are independently associated with increased frequency of harsh communication. Interventions aimed at improving coping techniques,

problem solving skills, and communication management skills of caregivers with dementia may be particularly helpful at reducing the frequency of harsh communication in this population. Assessing caregivers for their communication style and for the presence of depression and burden may provide a way to risk stratify those in need of intervention. For example, caregivers who do not engage in open channels of communication may engage in a more frequent use of harsh communications. In addition, intervening around caregiver depression or caregiver burden could potentially improve caregiver communication. Of importance is that harsh communication styles can be mitigated through intervention involving caregiver education, hands-on skill training in more effective forms of communication (Gitlin et al., 2010). There are over 200 proven support programs for caregivers with most including communication skills training; yet, access to any of these programs are extremely limited (Gitlin & Hodgson, 2015). Thus, the pressing challenge is integrating these proven caregiver supportive approaches into existing health and human services (Fortinsky et al., 2016).

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Figure 1:
Proportion of Caregivers Reporting Each Communication Behavior Occurring at least Sometimes (N=250)

Table 1:

Participant Characteristics (N=250)

	Person with dementia	Range/Scale range	Caregiver	Range/Scale range
	N, %		N, %	
Age (mean, SD)	81.4 (7.9)	56–99	65.4 (12.6)	28–93
Education				
less than high school	48 (19.2)		10 (4.0)	
high school	67 (26.8)		36 (14.4)	
greater than high school	134 (53.6)		203 (81.2)	
Sex				
Male	92 (36.8)		47 (18.8)	
Female	158 (63.2)		203 (81.2)	
Race				
White	149 (59.6)		145 (58)	
Black	91 (36.4)		90 (36)	
Other	7 (2.8)		15 (6)	
Number of medical conditions (mean, SD)	6.5 (3.3)	0–16 / 0–25	8.1 (4.8)	0–23 / 0–40
Number of behavioral symptoms (mean, SD)	6.4 (2.8)	0–13 / 0–14		
Physical function – assistance with ADLs (mean, SD)	3.6 (2.7)	0–7 / 0–7		
Cognitive function (MMSE) (mean, SD)	14.3 (7.8)	0–29 / 0–30		
Relationship type				
Spouse			114 (45.6)	
Non-spouse			136 (54.4)	
Months caring (mean, SD)			46.8 (37.2)	6–288
Burden (mean, SD)			18.8 (9.0)	0–44 / 0–48
Depression (mean, SD)			5.72 (4.7)	0–22 / 0–27
Harsh communication (mean, SD)			11.8 (4.1)	6–24 / 5–30

Notes: ADLs – Activities of Daily Living; MMSE – Mini Mental Status Examination

Table 2:

Associations between Harsh Communication with Characteristics and Factors of Caregivers and Persons with Dementia

	Harsh Communication	P value (t, F)
Caregiver characteristics	Mean, SD	
Age	$r = .038$	.553
Sex		.452
Male	11.43 (4.1)	
Female	11.93 (4.1)	
Race		.083
White	12.24 (4.2)	
Black	11.07 (3.8)	
Other	12.52 (4.4)	
Education		.301
less than high school	13.6 (2.9)	
high school	11.86 (4.7)	
some college/associate's degree	12.35 (4.0)	
college degree	11.49 (3.7)	
post-graduate degree	11.26 (4.2)	
Months caring	$r = .008$	.896
Medical Conditions	$r = .111$	.081
Person with dementia characteristics		
Age	$r = -.038$	.548
Sex		.001
Male	12.93 (4.1)	
Female	11.19 (4.0)	
Race		.181
White	12.22 (4.2)	
Black	11.2 (4.0)	
Other	12 (3.6)	
Education		.660
less than high school	12.19 (3.4)	
high school	11.71 (4.72)	
some college/associate's degree	11.34 (3.8)	
college degree	11.39 (3.5)	
post-graduate degree	12.39 (4.5)	
Cognitive function	$r = .182$	.004
Medical Conditions	$r = .085$	.180
Total number of behaviors	$r = .111$	.082
Physical Function	$r = -.138$	.029

	Harsh Communication	P value (t, F)
Caregiver factors		
Relationship type		.011
Spouse	12.6 (4.1)	
Non-spouse	11.2 (4.0)	
Burden	$r = .463$	<0.001
Depression	$r = .348$	<0.001

Table 3:
Hierarchical Regression Analysis of Harsh Communication and Caregiver Burden (N=250)

Predictor Variable	Model 1			Model 2			Model 3			Model 4		
	B	SE B	β	B	SE B	β	B	SE B	β	B	SE B	β
Caregiver characteristics												
Age	-.017	.026	-.050	-.061	.036	-.185	-.064	.036	-.194	-.013	.033	-.039
Sex (0, male; 1, female)	-.195	.868	-.018	.726	1.006	.068	.651	.997	.061	.469	.898	.044
Race (Ref: Other)												
White	-.631	1.920	-.076	-.551	1.917	-.066	-2.013	1.927	-.241	-.786	1.744	-.094
Black	-3.371	1.941	-.392	-3.319	1.939	-.386	-2.728	1.941	-.318	-2.425	1.749	-.282
Education (ref: greater than high school)												
less than high school	.913	1.713	.038	.703	1.716	.029	.965	1.708	.040	1.076	1.539	.045
High school	-.350	.790	-.030	-.335	.788	-.029	-.455	.780	-.039	.645	.720	.055
Person with dementia characteristics												
Age	.002	.039	.003	.035	.044	.068	.046	.044	.088	.029	.039	.057
Sex (0, male; 1, female)	-1.824	.756	-.215 *	-.659	.989	-.078	-.509	.973	-.060	-.310	.877	-.036
Race (Ref: White)												
White	.727	2.140	.087	.638	2.135	.076	2.260	2.167	.270	-.607	1.994	-.072
Black	2.626	2.160	.307	2.840	2.157	.332	2.771	2.130	.323	1.512	1.928	.176
Education (ref: greater than high school)												
less than high school	.719	.806	.070	.843	.806	.082	.728	.815	.071	.419	.735	.041
High school	.152	.689	.017	.283	.696	.031	.446	.698	.048	.150	.631	.016
Relationship characteristics												
Months caring				.002	.007	.019	.005	.007	.045	.004	.007	.037
Relationship (Ref: non-spouse)												
Spouse				2.375	1.317	.288	2.609	1.303	.316	2.271	1.175	.275
Person with Dementia health factors												
Medical conditions							.011	.095	.009	.050	.086	.040
Cognitive function							.074	.039	.140	.041	.036	.077

Predictor Variable	Model 1			Model 2			Model 3			Model 4		
	B	SE B	β	B	SE B	β	B	SE B	β	B	SE B	β
Number of behavioral symptoms							.263	.104	.182 *	.037	.099	.026
Physical function							-.151	.116	-.099	-.115	.105	-.075
Caregiver health factors												
Medical conditions							.042	.062	.048	-.063	.058	-.073
Burden										.221	.031	.486 ***
R	.263			.288			.369			.549		
R ²	.069			.083			.136			.302		
▲R ²	.069			.014			.053			.166		
F	1.37			1.418			1.779 *			4.623 ***		

SE: Standard Error

* p < 0.05

** p < 0.01

*** p < 0.001

Table 4: Hierarchical Regression Analysis of Harsh Communication and Caregiver Depression (N= 250)

Predictor Variable	Model 1			Model 2			Model 3			Model 4		
	B	SE B	β	B	SE B	β	B	SE B	β	B	SE B	β
Caregiver characteristics												
Age	-.019	.026	-.057	-.052	.035	-.158	-.057	.035	-.175	-.029	.034	-.089
Sex (0, male; 1, female)	-.393	.855	-.037	.252	.976	.024	.109	.958	.010	.068	.918	.006
Race (Ref: Other)												
White	-.292	1.822	-.035	-.191	1.824	-.023	-1.644	1.821	-.197	-1.049	1.750	-.126
Black	-3.345	1.824	-.390	-3.335	1.830	-.389	-2.919	1.823	-.340	-2.952	1.747	-.344
Education (ref: greater than high school)												
less than high school	1.906	1.497	.088	1.722	1.505	.079	2.010	1.481	.092	1.995	1.420	.092
High school	-.296	.768	-.026	-.260	.768	-.022	-.402	.755	-.035	-.238	.725	-.021
Person with dementia characteristics												
Age	.018	.038	.036	.045	.043	.087	.056	.042	.108	.034	.041	.066
Sex (0, male; 1, female)	-2.062	.742	-.242**	-1.233	.954	-.144	-.942	.935	-.111	-1.021	.896	-.120
Race (Ref: White)												
Black	.584	2.045	.070	.498	2.047	.059	2.055	2.068	.245	.997	1.995	.119
Other	2.716	2.066	.316	2.919	2.072	.340	3.051	2.033	.356	2.571	1.951	.300
Education (ref: greater than high school)												
less than high school	.599	.781	.058	.685	.784	.066	.496	.789	.048	.291	.757	.028
High school	.173	.674	.019	.286	.684	.031	.374	.683	.040	.294	.655	.032
Relationship characteristics												
Months caring				.001	.007	.012	.005	.007	.044	.004	.007	.033
Relationship (Ref: non-spouse)												
Spouse				1.760	1.266	.213	2.071	1.248	.250	1.554	1.201	.188
Person with Dementia health factors												
Medical conditions							.042	.094	.034	.036	.090	.029
Cognitive function							.085	.038	.159*	.064	.037	.120

Predictor Variable	Model 1			Model 2			Model 3			Model 4		
	B	SE B	β	B	SE B	β	B	SE B	β	B	SE B	β
Number of behavioral symptoms							.246	.101	.170*	.150	.099	.104
Physical function							-.169	.113	-.110	-.133	.109	-.086
Caregiver health factors												
Medical conditions							.057	.060	.066	-.027	.060	-.031
Depression										.264	.058	.301***
R	.285			.299			.389			.473		
R ²	.081			.089			.152			.224		
▲R ²	.081			.008			.062			.072		
F	1.689			1.484			1.984**			3.037***		

SE: Standard Error

* p < 0.05
** p < 0.01
*** p < 0.001