

# Ethnic Differences in Stressors, Resources, and Psychological Outcomes of Family Caregiving: A Meta-Analysis

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**Purpose:** We investigated ethnic differences in caregiver background variables, objective stressors, filial obligations beliefs, psychological and social resources, coping processes, and psychological and physical health. **Design and Methods:** We used a meta-analysis to integrate the results of 116 empirical studies. **Results:** Ethnic minority caregivers had a lower socioeconomic status, were younger, were less likely to be a spouse, and more likely to receive informal support. They provided more care than White caregivers and had stronger filial obligations beliefs than White caregivers. Asian-American caregivers, but not African-American and Hispanic caregivers, used less formal support than non-Hispanic White caregivers. Whereas African-American caregivers had lower levels of caregiver burden and depression than White caregivers, we found that Hispanic and Asian-American caregivers were more depressed than their White non-Hispanic peers. However, all groups of ethnic minority caregivers reported worse physical health than Whites. Observed ethnic differences in burden and depression were influenced by study characteristics, such as the type of illness of the care recipient and the representativeness of the sample. **Implications:** The results suggest that more specific theories are needed to explain differential effects of ethnic minority groups of caregivers. Intervention needs vary, in part, between ethnic groups of caregivers.

**Key Words:** *Caregiving, Ethnicity, Race, Caregiver burden*

Demographic shifts in the population of older adults in the United States have led to an increased interest in research on ethnic differences in caregiving and psychological responses to the caregiving experience. In the late 1990s, 87% of America's older adults were non-Hispanic White, 8% Black, 4% Hispanic, and 1% Asian American (we differentiated caregivers of Hispanic or Latino origin from non-Hispanic Whites; throughout the article the term Whites refers to non-Hispanic Whites, and the term Hispanic refers to individuals who identify themselves as either Hispanic or Latino). By the year 2020, the percentage of White older adults will decline by 10%, and the proportion of minority older adults will increase to 23% of senior households (Hinton, Fox, & Levkoff, 1999; Williams & Wilson, 2001). Although most available studies on psychological effects of caregiving have either focused exclusively on Whites or have included a small number of caregivers from other ethnic groups without providing analyses on ethnic similarities and differences, a growing literature on ethnic differences in caregiving has become available. In the present meta-analysis we enlarge the scope of previous narrative reviews (Connell & Gibson, 1997; Javanic & Connell, 2001; Dilworth-Anderson, Williams, & Gibson, 2002) by integrating this literature theoretically, computing weighted average ethnic differences in caregiving variables across studies and testing for statistical significance of these differences, and by estimating for the effects of moderating variables.

Ethnic or ethnocultural groups are distinguished on the basis of a common history, a unique language or communication system, group-held values and beliefs as well as normative expectations and attendant customs and practices, the intergenerational transmission of these shared values, and a common locale or country of origin (Alonso, 1994; Brislin, 1993). In addition, differences in social class, racial labeling and discrimination, and genetic factors (shared gene pool of ethnic groups) may contribute to observed ethnic differences (e.g., Valle, 1994).

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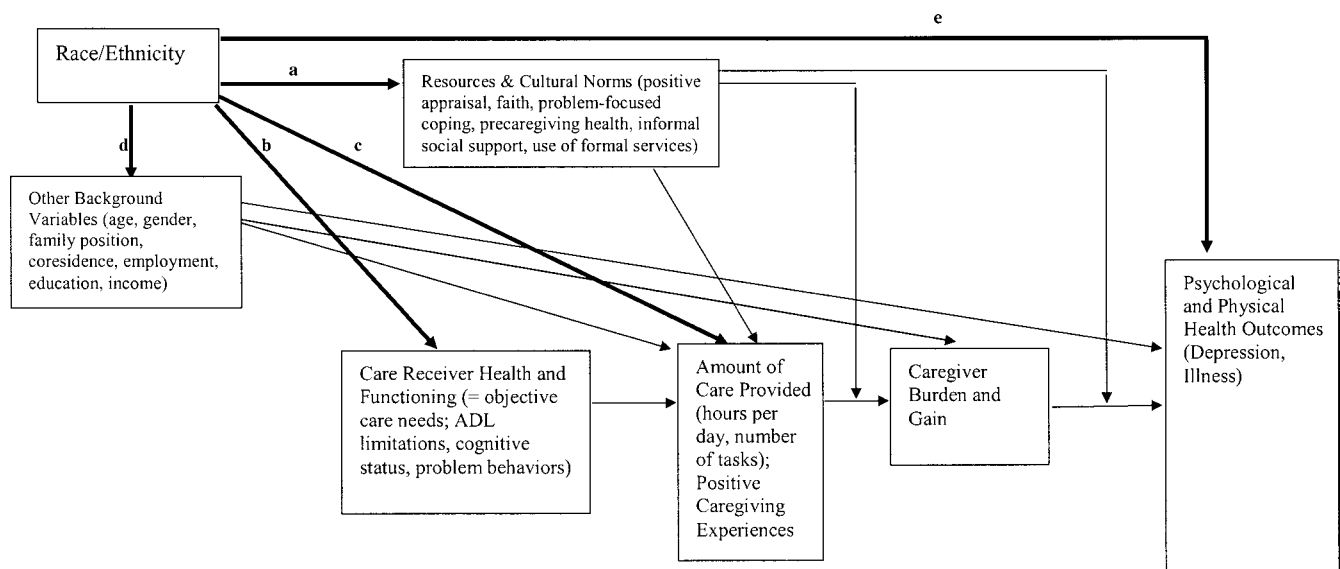


Figure 1. A model of ethnic differences in the mean levels of and associations between caregiving variables (ADL = activity of daily living).

Borrowing from cross-cultural psychology, we can distinguish two types of ethnic differences: “positioning effects” (differences in the mean levels of caregiver variables) and “patterning effects” (differences in the association of caregiver variables; Vijer & Leung, 1997). Our meta-analysis is limited to positioning effects rather than patterning effects, because in the field of caregiving, much more research is available on the former.

Stress and coping theories are the most widely used theoretical background in caregiver research (e.g., Pearlin, Mullan, Semple, & Skaff, 1990; Yates, Tennstedt, & Chang, 1999). They provide a useful tool for identifying individual differences in caregiving variables. In addition, because some ethnic differences are not specific to caregivers, researchers also have to refer to global theories about ethnic differences. Dilworth-Anderson and Anderson (1994) suggest that ethnicity provides a context for caregiving. In combining concepts from stress and coping theories and ecological-contextual theories, they suggested that ethnic groups may differ on several contextual levels, namely at the (a) sociocultural (e.g., employment status, education), (b) interpersonal (e.g., reciprocity, family responsibility), (c) situational (severity of patient impairment), (d) temporal (timing of caregiving in the life cycle), and (e) personal (e.g., coping styles, physical health) levels. Similarly, Knight, Silverstein, McCallum, and Fox (2000) (see also Aranda & Knight, 1997) suggest in their sociocultural stress and coping model that ethnicity and culture play a role in stress and coping processes of caregivers. They propose that the influence of ethnicity on psychological outcomes of caregivers occurs through or is mediated by ethnic differences in (a) background variables, such as the proportion of female and spousal caregivers; (b) the risk for exposure to stressors, including the types and severity of the

care receiver’s illness; (c) social support and coping processes; and (d) and appraisals of caregiving experiences (as gain or burden) and related cultural values.

Despite progress in the development of theoretical models on ethnic differences in caregiving, many available studies in that field are atheoretical and explorative and do not test theory-driven hypotheses (c.f., Dilworth-Anderson & Gibson, 2002). Borrowing from the aforementioned theorists, we suggest a conceptual model (Figure 1) to guide our current meta-analysis. In our model we propose that ethnic differences in personal resources (Path a) and stressors (care receiver health, Path b; amount of care provided, Path c) exist, and that race or ethnicity is linked to differences in other caregiver background variables, such as gender, family position, and income (Path d). Furthermore, we hypothesize that there are racial or ethnic differences in caregiving outcomes, which are due to existing baseline differences in physical and mental health (Path e) as well as differences in stressors, resources, and background variables. The paths between background variables, resources, care receiver functioning, care provision, caregiver burden or gain, and psychological or physical health have been elaborated in previous caregiver models (e.g., Kramer, 1997; Pearlin et al., 1990) and are therefore, not further discussed here. Although our model contains mediating effects, we cannot test these directly in the present analysis, as we are limited by the existing literature to positioning rather than patterning effects.

## Ethnic Differences in Caregiving Variables

### General Characteristics of the Caregiver

Ethnic differences in sociodemographic characteristics of caregivers largely reflect similar differences

in the general population (United States Census, 2000), and therefore we do not necessarily need to explain them by means of caregiver-specific hypotheses. For example, because Whites have a higher life expectancy than members of ethnic minorities, White caregivers are hypothesized to be older than other caregivers. Higher divorce rates among African Americans and Native Americans as well as higher birth rates among ethnic minorities makes spouses less available and adult children more available as caregivers in these groups. Furthermore, because a higher percentage of ethnic minority caregivers are adult children, a higher percentage of minority caregivers are employed. Because of stronger gender-role socialization, daughters are more likely than sons to take the caregiver role (e.g., Stoller, 1992), leading to higher rates of female caregivers among minorities. In addition, cultural norms influence the choice of caregivers. For example, among Asian Americans, the oldest son and his wife in particular are expected to take the caregiver role (e.g., Lee & Sung, 1998). Because of ethnic stratification in the labor market, there are a disproportionate number of people with lower education and lower income among African Americans, Hispanics, and Native Americans (e.g., Valle, 1998; Williams & Wilson, 2001), although Asian-American households do not differ as much from White households in income and education (Ruiz, 1995).

Ethnic differences in caregiver burden and depression are, in part, explainable by ethnic differences in general caregiver characteristics. For example, spousal caregivers have higher levels of caregiver burden and depression, lower general subjective well-being, and lower self-efficacy than adult children (Pinquart & Sörensen, 2003b). Consequently, the proportion of spousal caregivers in the samples may partially explain higher levels of caregiver burden and depression in White than in non-White caregivers.

### *Caregiver Stressors*

Physical and cognitive impairments and behavior problems of the care recipients, as well as high levels of support, are important sources of caregiver burden and depression (Pinquart & Sörensen, 2003a). The double-jeopardy hypothesis suggests that there are higher levels of stressors in ethnic minority caregivers because minority elders are at greater risk for poor health as a result of the cumulative effects of economic disadvantage and discrimination (Wykle & Kaskel, 1995). Many studies have found that older adults from ethnic minority groups have elevated levels of disease and impairment in activities of daily living (e.g., Aranda & Knight, 1997; Hayward & Heron, 1999; Williams & Wilson, 2001). In caregiving studies, Miller, Campbell, Farran, Kaufman, and Davis (1995) found

more physical impairments in non-White care recipients, whereas Beach, Schulz, Yee, and Jackson (2000) did not find such an effect. Observed differences between studies may be influenced by sample and measurement characteristics, such as whether impairments are assessed by the researcher or by caregiver's self-report. In a small qualitative study, Levkoff, Levy, and Weitzman (1999) found that Hispanic and Asian-American caregivers often interpret dementia symptoms as a sign of normal aging and may not report them as symptoms. However, Lawrence, Tennstedt, and Almy (1997) did not find much empirical evidence for ethnic differences in the interpretation of older adults' symptoms. Our model suggests that levels of stressors differ among ethnic groups and that this difference in turn leads to ethnic differences in caregiver outcomes.

### *Cultural Norms, Social Support, and Coping Processes*

We expect that cultural norms, social support, and coping processes will moderate and mediate the relationship between stressors and psychological outcomes (e.g., Aranda & Knight, 1997; Yates et al., 1999).

*Cultural Norms Regarding Caregiving.*—On the basis of the concept of collectivism and individualism from cross-cultural psychology (e.g., Segall, Lonner, & Berry, 1998), one can state that Western cultures place higher emphasis on individualism, whereas ethnic minorities from non-Western cultures place greater emphasis on collectivism, such as the welfare of one's family (familism). Similarly, several authors report that, compared with White caregivers, African-American caregivers (Haley et al., 1995; Lawton, Rajagopal, Brody, & Kleban, 1992) and Hispanic caregivers (Cox & Monk, 1993; Luna, de Ardon, Lim, Phillips, & Russell, 1996; but not Barber, 2002) endorse filial responsibility beliefs and a stronger traditional caregiving ideology.

*Informal Support.*—Because of their high values of familism and collectivism, we expected that caregivers from ethnic minorities would receive more support from their relatives, friends, and neighbors, and that they would have a close relationship with the care recipient (Aranda & Knight, 1997; Knight et al., 2002). Several studies support the notion that African-American and Latino caregivers receive more support from family members than White caregivers (Cox, 1993; Mintzer, Rubert, & Herman, 1994; Wood & Parham, 1990); however, the reverse is found by others (Adams, Aranda, Kemp, & Takagi, 2002; Hinrichsen & Ramirez, 1992; Phillips, de Ardon, Kommenich, Killeen, & Rusniak, 2000).

**Formal Support.**—The Andersen and Newman model (1973) of determinants of acute health services use has been applied to ethnic differences in caregivers' use of formal services (e.g., Cox, 1999). The model posits that health services use is determined by societal factors, health services system factors, and individual factors, such as needs, enabling factors, and predisposing factors. Whereas higher levels of ethnic minority care receivers' illness and disability (*need factors*; Hayward & Heron, 1999; Williams & Wilson, 2001) would suggest higher levels of formal service use by minority caregivers, some formal services may be less accessible to ethnic minorities (*enabling factors*). This lack of accessibility may be the result, for example, of language barriers of Hispanic and Asian-American caregivers born outside the United States (e.g., Mindel & Wright, 1982; Hinrichsen & Ramirez, 1992) or of limited financial resources (Aranda & Knight, 1997). In addition, predisposing factors that contribute to less service use by minority caregivers may include cultural unacceptability of nursing home use. This can lead to less knowledge of services (e.g., Angel & Angel, 1992). Although theory suggests lower service use by ethnic minority caregivers, some studies find less formal support use in caregivers from ethnic minorities (e.g., Miner, 1995; Yeatts, Crow, & Folts, 1992) whereas others do not (e.g., Haley et al., 1996). Thus, ethnic differences may vary between samples or subgroups.

### *Coping With Caregiving Demands*

Coping processes are a central focus of stress and coping theories (e.g., Pearlin et al., 1990). Caregivers from some socioeconomically disadvantaged groups, such as African Americans, may be better able to cope with caregiving distress than Whites because they have learned to cope with negative circumstances in their lives, and because of their strong religious orientation (Dilworth-Anderson, Burton, & Boulton-Johnson, 1993; Mui, 1992; Spurlock, 1984). Knight and McCallum (1998) report that African-American caregivers use more positive reappraisal than White caregivers, but other studies find no ethnic differences in cognitive coping (e.g., Barber, 2002). Inconsistent results have been reported on instrumental coping (e.g., Adams et al., 2002, Valle, 1994). In our model, coping responses moderate the effect of amount of care on caregiver burden and the amount of burden on caregiver outcomes. They also may mediate the effect of race on outcomes (Knight et al., 2000).

### *Caregiver Burden and Depression*

Stress and coping models suggest that higher levels of stressors and lower levels of resources are associated with higher levels of caregiver burden and depression, and that associations between stressors and psychological outcomes may be mod-

erated by or mediated through coping processes and caregiving resources (e.g., Pearlin et al., 1990). In addition, positive caregiving experiences (e.g., such as feeling useful and appreciating closeness to the care recipient) may improve the mental health of caregivers (Kramer, 1997).

Ethnic differences in the emotional distress of caregivers are explained by differences in the levels of stressors, individual and social resources, coping processes, and cultural norms regarding caregiving and by ethnic differences in the pattern of association between these variables (e.g., Aranda & Knight, 1997). Higher levels of caregiving stressors (and stressors not related to caregiving, such as poverty) and lower availability or use of formal support is expected to cause higher levels of caregiver burden and depressive symptoms in minority caregivers than White caregivers. However, higher levels of informal support, stronger familism values, higher levels of cognitive and religious coping, and a lower probability of being a spouse may also be a source of lower distress in ethnic minority caregivers. Therefore, except for in very specific circumstances, such as stressful care by daughters-in-law in Asian-American families, it is difficult to predict whether African-American, Hispanic, or Asian-American caregivers would show higher levels of burden, depression, and physical health problems. However, because familism and positive appraisal of caregiving may be greater among people of color than among Whites, we expected to find higher levels of perceived uplifts of caregiving and of positive well-being in ethnic minority caregivers than in White caregivers.

Previous studies are inconsistent in their results for caregiving outcomes. With regard to burden, for example, Lawton and colleagues (1992), Haley and colleagues (1996), and Fredman, Daley, and Lazur (1995) report lower levels of caregiver burden in African-American caregivers than in White caregivers, whereas Adams and colleagues (2002) do not find such a difference. Similarly, whereas Barber (2002) shows that Hispanic caregivers have slightly lower levels of caregiver burden than Whites, Garcia (1999) reports higher burden in Hispanic than in non-Hispanic White caregivers. Similar issues appear in findings on caregiver depression (Haley et al., 1995; Miller et al., 1995 vs. Cox, 1993; Knight et al., 2000; Mintzer et al., 1992; Young & Kahana, 1995).

Given the heterogeneity of the results of previous studies for most caregiver variables, a systematic integration of the results is needed to inform future model building. Meta-analysis is an ideal tool to do this.

### **Similarities and Differences in Caregiving Variables Between Ethnic Minority Groups**

In our second research question, we compare individual ethnic groups, namely, African-American,

Hispanic, and Asian-American caregivers with Whites with regard to stressors and outcomes. (Because of the small number of available studies, we were not able to compute separate analyses for Native Americans and for subgroups of Asian-American and Hispanic caregivers, such as Mexican-American, Puerto Rican, and Cuban caregivers. Similarly, because of the small number of studies that compared caregivers from different ethnic minorities, e.g., Cox & Monk, 1996, we were not able to compute a meta-analysis of these differences.)

Although many characteristics of caregivers are expected to show similarities across ethnic minority groups (e.g., age and gender distribution, high percentages of adult children in caregiver role, higher levels of objective stressors, lower levels of average income, high importance of informal support), some meaningful differences are suggested. Because language-related barriers to service use are more likely among Hispanic and Asian-American caregivers rather than among African Americans, African-American caregivers' service use will be more similar to that of Whites, whereas larger differences are expected between Whites and Hispanics and Asian Americans, respectively. In fact, Cox and Monk (1996) found lower levels of support and more negative caregiving outcomes in Hispanics than in African Americans.

## Influences of Moderator Variables

Observed differences between White caregivers and ethnic minority caregivers may vary by study characteristics, such as the mean age of the caregivers, the percentage of spouses, the type of illness of the care recipient, the representativeness of the sample, and publication status. Greater psychological distress in White caregivers than in caregivers from ethnic minorities may be due to the fact that Whites are often older and therefore experiencing age-associated decline in resources and health (Lawton et al., 1992). Thus, if we compare White caregivers with older samples of ethnic minority caregivers (e.g., in studies that exclusively focus on spousal caregivers), we may find more similarities in caregiver outcomes. In addition, because nonsignificant results have a lower probability of being published (the file-drawer problem; Rosenthal, 1991), studies in journals and books may report larger than average ethnic differences in caregiving outcomes. Further, a recent meta-analysis on caregiving has shown that convenience samples usually include highly distressed caregivers (Pinquart & Sörensen, 2003b), which would suppress observed ethnic differences in caregiver outcomes. Finally, contradictory expectations have been stated as to whether caregiving for dementia patients is more or less stressful for ethnic minority caregivers compared with White non-Hispanic caregivers (Gallagher-

Thompson, Talamantes, Ramirez, & Valverde, 1996; John, Hennessy, Roy, & Salvini, 1996). We, therefore, tested whether these moderators would influence the size of observed ethnic differences.

## Hypotheses

In sum, in the first hypotheses we expected that, compared with White caregivers, ethnic minority caregivers would be younger, more likely to be female, adult children, and employed, and more likely to have lower socioeconomic status. In addition, we expected minority caregivers to face higher levels of care receiver impairments; to use more informal and less formal support; and to report higher levels of filial obligation beliefs, cognitive coping, uplifts, and positive well-being than White caregivers. Hypothesis 2 suggests that low levels of service use and stronger impairments of psychological and physical health will be found in Hispanic and Asian-American caregivers than in African Americans. Finally, we expected in our third hypothesis that ethnic differences would be weaker in samples of spousal caregivers, in unpublished studies, and in convenience samples.

## Methods

### Data Sources

We performed computerized literature searches (M. Pinquart) with the use of PSYCINFO, MEDLINE, AGELINE, Current Contents, and PSYINDEX; search terms were *caregiving* or *caregiver*; *ethnicity* or *ethnic*; *race* or *racial*; *African-American* or *Hispanic* or *Asian-American* or *Native American*; and *elderly* or *old age*. We identified further studies by cross-referencing and by manually checking abstracts from gerontological conferences. We included studies that were published or presented before April 2004.

### Study Selection

Our inclusion criteria for this study were as follows: (a) White non-Hispanic informal caregivers of older adults compared with African-American, Hispanic, Asian-American, Native American caregivers, "other" ethnic minority caregivers, or a mix of these ethnic groups, (b) size of ethnic differences reported in standard deviation units or as statistical measures that could be converted to standard deviation units (e.g., means and standard deviations), and (c) studies in English or German, or in a language for which we were able to obtain translations.

## Data Extraction

Our major categories of variables codes included (a) study characteristics (publication status, year of publication, sampling procedure), (b) sample characteristics (ethnicity, mean age, percentage of women, percentage of spouses, type of illness of the care recipient), (c) characteristics of the measures used, and (d) the size of ethnic differences in sociodemographic characteristics of the caregivers (age, gender, the percentages of spouses and adult children, education, income, marital status, coresidence with care recipient), caregiving stressors, filial obligations beliefs, caregiver social resources (use of informal and of formal support, quality of the relationship with the care recipient), coping styles, caregiver burden, depression, subjective well-being, perceived uplifts of caregiving, and caregiver's physical health. On the basis of 20% of the studies, two coders of the study characteristics achieved an average interrater agreement of Cohen's  $\kappa = .89$ . Disagreements were resolved by consensus.

If insufficient information on the size of the effects were provided in the publications, authors were asked for additional information. This enabled us to include two additional studies. We had to eliminate about 20% of the total number of publications surveyed, for the most part because insufficient information about the magnitude of ethnic differences had been reported.

## Statistical Analysis

We included both correlational and intervention studies. However, because caregivers from different ethnic groups may differ in their responses to the intervention, we analyzed only pretest data from interventions. In order to make sure that results from dissertations had not been published elsewhere, we used cross-referencing techniques. If we found more than one study by the same authors, we compared the sample descriptions and eliminated duplicate results if data for the same variable on one sample had been reported in more than one article.

On the basis of the literature review, we expected that the size of ethnic differences would vary between studies, and that not all sources of this heterogeneity could be identified in the present meta-analysis. Therefore, we computed random-effects models. We based the computations on procedures outlined by and Hedges and Vevea (1998).

First, we computed effect sizes,  $d$ , for each study by transforming correlation coefficients,  $t$  values,  $F$  values, and exact  $p$  values (Rosenthal, 1991). If in a study effect sizes were reported for more than one subsample (e.g., ethnic differences in women and men), we computed separate effect sizes for these subsamples. Second, we tested the homogeneity of effect sizes by using the homogeneity statistic,  $Q$ . We also computed the percentage of total variation across

studies that was due to heterogeneity,  $I^2$ , according to the research of Higgins, Thompson, Deeks, and Altman (2003). Third, we weighted studies by the inverse of their variances, and we computed weighted mean effect sizes,  $d$ . For example, a mean effect size of  $d = 0.5$  indicates that non-White caregivers were 0.5  $SD$  higher than White caregivers. According to Cohen (1992), effect sizes of  $d = 0.20$ – $0.49$  should be interpreted as small, of  $d = 0.50$ – $0.79$  as medium, and of  $d \geq 0.8$  as large. Fourth, we tested the significance of the mean by dividing the weighted mean effect size by the estimated standard deviation. Fifth, we computed confidence intervals that include 95% of the effects for each effect size. We interpreted differences between two conditions as significant when the 95% intervals did not overlap. Sixth, we tested whether the size of the effects would be influenced by a publication bias by using a linear regression test, as suggested by Egger, Smith, Schneider, and Minder (1997). Seventh, in order to test the influence of continuous moderators, we used weighted multiple ordinary least squares regression analyses, following the random-effects approach and the method of moments outlined by Raudenbush (1994).

## Results

### Sample Description

The final sample consists of 116 articles from English-language sources. The majority of articles were from the *The Gerontologist* (14); others were from the *Journals of Gerontology* (9), *Psychology and Aging* (7), the *Journal of Gerontological Social Work* (5), and other journals (46). An additional 2 studies were taken from books, 22 from presentations at conventions, 9 from dissertations, and 2 from an electronic raw-data file. The studies we included were published or presented between 1983 and the spring of 2004. A list of studies used in the meta-analysis is provided in the References.

Sixty-three studies compared African-American and White caregivers, 23 studies contrasted Hispanic caregivers and non-Hispanic White caregivers, 10 focused on comparisons of Asian-American and White caregivers, and 1 was a comparison of Native-American and White caregivers. The remaining 21 studies compared a combination of ethnic minority caregivers with non-Hispanic White caregivers. About 50% of the studies focused on dementia caregiving, 6% focused on caregiving for physically frail older adults, and 44% included both dementia caregivers and other caregivers. The caregivers had a mean age of 57.9 years ( $SD = 6.6$  years). About 71% were women, 46% were adult children, and 38% spouses. Seventy percent of the caregivers had completed high school, and 50% were working outside the home for at least 20 hr. Sixty-four percent of the caregivers shared their home with the

care recipient. On average, they had been providing care for 56 months ( $SD = 17$  months), and they provided care for 36 hr per week ( $SD = 26$  hr). The care recipients were, on average, 75.5 years old ( $SD = 4.0$ ) and about 64% of them were women.

Physical deficits of the care recipient were measured with indicators of activities of daily living and instrumental activities of daily living (45 studies), cognitive deficits were assessed with the Mini-Mental State Examination (Folstein, Folstein, & McHugh, 1975; 14 studies) and similar scales (10 studies), and behavior problems were measured with the revised Memory and Behavior Problem Scale (Teri, Truax, Logsdon, & Uomoto, 1992; 12 studies) and other scales (23 studies). The number of hours of care provision per week, the number of months in the caregiving role, and sociodemographic information were assessed with single-item indicators. The quality of the relationship with the care recipient was measured by the emotional quality of the present relationship (9 studies) or the remembered past relationship before the onset of illness (2 studies). The availability and use of informal support was most often assessed by the number of secondary caregivers (12 studies), the frequency of contact with relatives and friends or support received from them (11 studies), and by perceived emotional or instrumental support (10 studies). Formal support use was assessed by the frequency of receipt of support from other sources than family, friends, and neighbors (e.g., use respite care; 25 studies). Different coping scales were used in 13 studies, such as the Coping Response Inventory (Moos, 1988). Caregiver burden was most often assessed with the Caregiver Burden Interview (Zarit, Reever, & Bach-Peterson, 1980; 14 studies) and related scales (41 studies); and depression was most often assessed with the Center for Epidemiologic Studies Depression scale (Radloff, 1977; 32 studies) and related measures (7 studies). Subjective well-being was most often measured with life-satisfaction scales (6 studies), scales measuring positive affect (3 studies), and other scales (3 studies). Perceived uplifts of caregiving were assessed by perceived rewards of caregiving (10 studies) and satisfaction derived from caregiving (7 studies). Finally, caregiver health was assessed with single-item indicators of perceived health (29 studies), symptom checklists (10 studies), and a combination of both measures (1 study).

### *Ethnic Differences in Caregiving Variables*

Our first research hypothesis focused on whether White caregivers would differ from others in demographic characteristics, caregiving-related stressors, filial obligations beliefs, social support, coping processes, and psychological and physical health. With regard to sociodemographic characteristics, we found that caregivers from ethnic minorities were

younger than White caregivers (Table 1). In addition, they were less likely to be a spouse, to be married, and to report high levels of education and income. The size of the observed difference in income was medium, and differences in age, education, marital status, and percentage of spousal caregivers were small. The other statistically significant sociodemographic differences were too small to be interpreted. We also found that non-White caregivers provided care for more hours per week and reported a larger number of caregiving tasks. According to Cohen (1992), both differences should be interpreted as small. Despite being statistically significant, ethnic differences in physical and cognitive deficits were too small to be meaningful because ethnicity explained less than 1% of the variance of these variables.

We found medium-sized differences in filial obligation beliefs, indicating stronger beliefs among ethnic minority caregivers. With regard to social resources, ethnic minority caregivers reported higher levels of informal social support. No ethnic differences emerged with regard to either the use of formal support or the relational quality with the care recipient. We did observe ethnic differences for two out of three coping styles: Caregivers from ethnic minorities were more likely to use cognitive coping, such as seeking positive aspects of the caregiving experience, and emotion-focused coping (e.g., distraction, avoidance, and venting of emotions). Both differences were small. Minority caregivers did not differ from Whites in their use of instrumental coping.

Furthermore, caregivers from ethnic minorities had higher levels of subjective well-being and perceived uplifts of caregiving than White caregivers. Both differences were small. In addition, we found slightly lower levels of reported burden and slightly worse physical health in minority caregivers, but both differences were very small.

In sum, with the exception of the lack of ethnic differences in formal support use, Hypothesis 1 is supported by the present data. However, most ethnic differences were small.

For 24 of 26 analyzed differences, we found significant and, in most cases, large heterogeneity of the effect sizes (Higgins et al., 2003). This indicates that moderating variables should be taken into account, such as the focus of the study on different ethnic groups. Our second hypothesis addressed whether the magnitude of the observed ethnic differences would vary for African Americans, Hispanics, and Asian-Pacific Islanders. Because only a small number of studies were available on the latter group, these results must be interpreted with caution. Nonetheless, we found no evidence for publication bias (Table 1).

As shown in Table 2, we found similarities as well as differences for the three groups of caregivers. Ethnic differences in caregiver age, percentage of spousal caregivers, educational attainment, income,

Table 1. Differences Between Ethnic Minority Caregivers and non-Hispanic White Caregivers

Parameter	<i>k</i>	<i>N</i>	<i>d</i>	CI		<i>Z</i>	<i>Q</i>	<i>I</i> <sup>2</sup>	Publ. Bias
General characteristics of caregiver									
Caregiver age	61	20,512	−.40	−.49	−.31	−8.45***	426.78***	86	0.02
Caregiver: women	71	35,585	.10	.04	.15	3.64***	234.33***	70	−0.02
Caregiver: spouse	54	25,455	−.38	−.47	−.29	−8.44***	389.14***	86	0.13
Caregiver: child	44	22,087	.17	.10	.24	4.86***	160.64***	73	0.07
Being married	18	8,425	−.38	−.49	.27	6.81***	84.31***	78	0.56
Coresidence	33	12,001	.11	−.01	.22	1.85	175.84***	81	0.03
Caregiver employed	28	15,332	.15	.08	.23	3.83***	90.69***	69	0.06
Education	54	17,473	−.44	−.54	−.33	−8.08***	434.19***	88	−0.75
Income	33	12,963	−.56	−.67	−.46	−10.49***	175.55***	81	0.56
Caregiving stressors									
Physical deficits	48	22,605	.12	.07	.18	4.40***	119.08***	60	−0.12
Cognitive deficits	28	10,479	.16	.06	.26	3.20**	113.08***	75	0.62
Behavioral problems	37	12,847	−.01	−.08	.06	−0.32	78.60***	53	0.30
Hours of care	21	9,655	.22	.11	.33	3.93***	88.14***	76	0.55
No. of caregiving tasks	17	8,598	.21	.15	.26	6.24***	19.36	12	0.15
Years caregiving	39	12,567	.03	−.05	.11	0.82	116.61***	67	0.69
Filial obligation beliefs	10	1,967	.52	.14	.88	2.71**	100.36***	90	−0.01
Social support									
Relational quality	11	5,917	−.03	−.16	.11	−0.40	25.33***	56	−0.39
Informal	41	13,673	.24	.14	.34	4.60***	220.09***	81	0.03
Formal	28	9,434	−.09	−.21	.03	−1.40	142.31***	80	−0.01
Coping									
Instrumental	14	1,415	−.05	−.29	.19	−0.43	60.93***	77	−1.21
Cognitive	4	491	.38	.16	.56	3.46***	3.41	0	0.14
Emotion focused	11	1,053	.30	.09	.52	2.73**	27.24**	60	−0.05
Psychological and physical health									
Burden	55	19,568	−.18	−.25	−.10	−4.64***	187.09***	71	−0.10
Depression	44	11,824	−.08	−.19	.04	−1.33	265.43***	83	0.45
Well-being	13	4,077	.24	.02	.46	2.14*	67.40***	81	1.09
Uplifts	20	6,315	.35	.19	.51	4.21***	125.09***	84	−0.14
Physical health	44	15,456	−.19	−.27	−.11	−4.71***	141.85***	69	0.23

Notes: Values of *d* larger than zero indicate more of this variable in non-white caregivers. In the table, *k* = number of studies; *N* = summed-up sample size; *d* = effect size; CI = 95% confidence interval; *Z* = test for significance of the mean; *Q* = homogeneity statistics (significant values indicate heterogeneity of effect size); *I*<sup>2</sup> = percentage of total variance that is due to heterogeneity; Publ. bias = significant values indicate publication bias.

\* *p* < .05; \*\* *p* < .01; \*\*\* *p* < .001.

informal support, and filial obligation beliefs that are reported for the whole sample were replicated for all three subgroups of ethnic minority caregivers. However, whereas African-American and Hispanic caregivers were somewhat more likely to be adult children than were Whites, we found no such effect for Asian-American caregivers.

According to the caregiver reports, African-American care recipients were more physically and cognitively impaired than White care recipients, but they did not have more behavior problems. Hispanic care receivers had more physical impairments and behavior problems, but both differences were very small (Cohen, 1992). The number of caregiving tasks was significantly higher for African-American and Asian as compared with White caregivers. Hispanic caregivers had provided care for a longer period compared with non-Hispanic White caregivers, and Asian caregivers provided care for a shorter period than Whites.

With regard to the use of formal support, Asian caregivers reported lower levels of use than White non-Hispanics, but no such differences emerged for African-American and Hispanic caregivers. In addition, Hispanics and Asian Americans reported a lower relationship quality with the care recipient than Whites, whereas no such differences appeared for African Americans. Further, we found that African Americans were more likely to use cognitive coping than Whites, whereas Asian Americans were more likely than White caregivers to use emotion-focused coping.

When comparing psychological and mental health, we found that African-American caregivers recounted lower caregiver burden than White caregivers, but ethnic differences were not significant for this variable in the other groups. Whereas African-American caregivers reported lower levels of depression than White caregivers, Hispanic caregivers and Asian-American caregivers were more depressed



Table 2. Differences of African-American, Hispanic, and Asian-American Caregivers From White non-Hispanic Caregivers

Parameter	African-American Caregivers						Hispanic Caregivers						Asian-American Caregivers						
	<i>k</i>	<i>N</i>	<i>d</i>	CI	<i>Q</i>	<i>I</i> <sup>2</sup>	<i>k</i>	<i>N</i>	<i>d</i>	CI	<i>Q</i>	<i>I</i> <sup>2</sup>	<i>k</i>	<i>N</i>	<i>d</i>	CI	<i>Q</i>	<i>I</i> <sup>2</sup>	
Caregiver age	33	13,116	-.35***	-.46	-.25	187.02***	82	15	3,099	-.52***	-.60	-.44	22.05	32	8	1,780	-.62***	-.96	51.59***
Caregiver																			
Women	33	15,901	.13***	.05	.20	109.44***	70	12	5,084	.10	-.03	.22	35.00***	66	9	1,982	.09	-.11	.30
Spouse	33	13,583	-.42***	-.52	-.32	157.68***	79	9	4,721	-.44***	-.50	-.38	7.03	0	4	1,209	-.60***	-.96	26.02***
Child	26	11,377	.16***	.07	.25	83.69***	69	8	4,403	.35**	.20	.51	28.78***	72	4	1,104	.07	-.11	26
Being married	13	6,659	-.46***	-.57	-.35	44.60**	71	4	1,195	-.09	-.22	.04	3.59	0	1	733	.21*	.11	.31
Coresidence	17	7,994	.08	-.07	.23	103.22***	84	8	1,114	.08	-.23	.40	35.61***	78	5	1,229	.18	-.19	.55
Caregiver employed	13	8,075	.09	-.01	.20	37.37***	65	6	3,708	.27**	.09	.44	21.97***	73	4	1,196	.34	-.05	.73
Education	29	10,562	-.37***	-.48	-.26	146.99***	80	11	2,405	-.74**	-.107	-.41	121.25***	92	9	1,982	-.43**	-.79	80.42***
Income	23	11,182	-.59***	-.71	-.48	127.91***	82	5	1,052	-.67**	-.100	-.35	19.27***	74	4	594	-.18*	-.35	-.01
Physical deficits	30	14,884	.12***	.05	.18	67.84***	56	9	3,933	.18*	.03	.33	26.53***	66	5	1,327	.02	-.13	.18
Cognitive deficits	19	8,300	.17**	.06	.28	72.39***	74	7	1,782	.20	-.04	.44	25.91***	73	2	397	-.16	-.36	.05
Behavioral problems	23	9,152	-.03	-.10	.04	37.48*	39	8	1,279	.18**	.06	.29	10.99	27	5	1,215	-.11	-.40	.18
Hours of care	13	6,362	.23***	.12	.34	42.66***	70	4	1,103	.32*	.04	.60	13.17**	69	2	1,038	-.04	-.75	.66
No. of caregiving tasks	11	6,111	.23***	.17	.30	9.84	0	3	1,044	.13	-.24	.49	13.32**	77	1	733	.21*	.11	.31
Years caregiving	23	7,723	-.02	-.10	.07	47.67***	52	7	2,154	.21***	.12	.31	6.78	0	5	1,215	-.22*	-.38	-.05
Filial obligation beliefs	4	1,360	.51***	.39	.62	2.35	0	3	186	.42**	.13	.72	4.93	39	3	421	.46**	.25	.66
Relational quality	6	3,178	.06	-.10	.23	12.15*	51	1	60	-.45**	-.71	-.19		2	840	-.38**	-.67	-.09	
Informal support	24	9,316	.22***	.09	.36	154.04***	84	10	1,764	.28*	.00	.54	59.22***	83	6	1,434	.27***	.13	.42
Formal support	16	5,339	-.02	-.19	.14	95.61***	83	7	1,472	-.21	-.48	.06	27.53***	75	3	1,119	-.22*	-.40	5.02
Coping																			
Instrumental	6	513	-.01	-.19	.17	2.72	0	5	515	-.02	-.40	.38	17.82**	72	3	387	-.14	-.109	.81
Cognitive	3	391	.44***	.22	.67	1.74	0	1	100	.04	-.16	.24		0					
Emotion focused	5	428	.23	-.17	.62	14.02***	64	3	325	.28	-.18	.74	8.38*	64	2	280	.34**	.10	.58
Burden	34	11,043	-.26***	-.33	-.18	75.02***	55	8	1,436	.05	-.24	.33	38.02***	79	5	1,731	-.06	-.37	.25
Depression	27	6,741	-.26***	-.38	-.13	112.10***	76	7	1,782	.26***	.16	.36	9.47	26	3	422	.21*	.01	.40
Well-being	8	2,447	.16*	.00	.32	11.19	29	0						2	920	-.17	-.43	.08	
Uplifts	12	3,785	.41***	.20	.62	80.34***	85	5	1,156	.49***	.36	.61	9.19	46	2	215	-.21	-.41	.99
Physical health	24	9,282	-.18***	-.28	-.08	80.91***	70	10	1,597	-.29**	-.48	-.11	21.02*	52	4	1,154	-.29**	-.58	-.01

Notes: Values of *d* larger than zero indicate higher levels of the variable in non-White caregivers. In the table *k* = number of studies, *N* = summed-up sample size, *d* = effect size, CI = 95% confidence interval, *Z* = test for significance of the mean, *Q* = homogeneity statistics (significant values indicate heterogeneity of effect size), *I*<sup>2</sup> = Percentage of total variance that is due to heterogeneity.  
 \* *p* < .05, \*\* *p* < .01, \*\*\* *p* < .001.

**Table 3. Impact of Study Variables on the Size of Differences Between Ethnic Minority Caregivers and White non-Hispanic Caregivers (Weighted Multivariate Regression Analysis)**

	Caregiver Burden				Caregiver Depression			
	<i>B</i>	<i>SE(B)</i>	$\beta$	<i>t</i>	<i>B</i>	<i>SE(B)</i>	$\beta$	<i>t</i>
Age ( <i>M</i> )	-.007	0.009	-.13	-0.71	.009	0.009	.15	0.96
Female caregivers (%)	-.006	0.003	-.25	-2.30*	-.003	0.005	-.09	-0.61
Spouses (%)	.002	0.002	.15	0.83	-.005	0.003	-.32	-1.99*
Dementia caregivers (1 = yes, 0 = no)	-.045	0.078	-.06	-0.57	-.317	0.122	-.38	-2.60**
Representative sample (1 = yes, 0 = no)	-.064	0.091	-.09	-0.71	-.328	0.136	-.29	-2.40*
Published study (1 = published, 0 = unpublished)	-.002	0.036	-.01	-0.07	-.006	0.052	-.01	-0.11
Year of publication	.003	0.009	.00	0.04	.009	0.013	.08	0.71
Caregiver								
African-American	-.097	0.093	-.14	-1.04	-.460	0.156	-.56	-2.93**
Hispanic	.122	0.124	.12	0.99	.027	0.186	.03	0.14
Asian	.031	0.134	.03	0.23	.252	0.245	.13	1.03
Constant	.031	17.20		0.28	-17.38	25.09		-0.69
<i>R</i> <sup>2</sup>	.13				.59			

*Notes:* Dependent variable is the difference between ethnic minority caregivers' and White caregivers' burden and depression, respectively. Positive regression coefficients indicate that high values of the independent variance are associated with higher burden/depression in minority caregivers than white caregivers. *B* ( $\beta$ ) = unstandardized (standardized) regression coefficient, *SE(B)* = standard error of *B*, *t* = test for significance of the regression coefficient, *R*<sup>2</sup> = explained variance.

\* *p* < .05; \*\* *p* < .01.

than White Non-Hispanic caregivers. African Americans and Hispanics exhibited more perceived uplifts of caregiving than Whites, whereas no such differences appeared for Asian Americans. Finally, all ethnic minority caregivers had lower levels of physical health than White caregivers.

In sum, Hypothesis 2 is partially supported: Asian-Americans but not Hispanic and African-American caregivers used formal services less than Whites and Hispanic and Asian-American caregivers showed higher levels of depression, whereas the reverse was true for African-American caregivers.

In Hypothesis 3, we tested whether ethnic differences in caregiver burden and depression would be moderated by sample characteristics. We limited our focus to burden and depression because the largest number of studies was available for these variables for multivariate analysis. In order to control for the ethnic composition of the samples, we included three contrast functions. The first contrast function compared the difference between African Americans and Whites with the difference between samples involving a mix of ethnic minorities and Whites. The second and third contrast functions did the same for Hispanic and Asian-American caregivers. (Note that we did not expect strong effects of these three variables because the inclusion of African-American, Hispanic, and Asian-American caregivers in the mixed category suppresses observed ethnic differences.)

As shown in Table 3, women of color were less burdened by caregiving, because the more women were in a sample, the more likely it was that ethnic minority caregivers reported lower burden than Whites. Caregivers of color were also less likely to

report symptoms of depression than were Whites when samples consisted of spouses rather than other caregivers, and when the care receivers had dementia rather than other frailties. Furthermore, when the caregivers were from probability samples rather than convenience samples, minority caregivers were also less likely to be depressed. Finally, differences in depression levels were larger for comparisons of African-American with White caregivers than for samples comparing a mix of ethnic minorities with Whites. Thus, Hypothesis 3 on moderating effects of spousal status and probability sampling is supported by our data, but we found no support for the suggested impact of publication status.

We would have liked to test whether observed ethnic differences in caregiver psychological health and physical health could be explained by differences in filial obligations beliefs, social resources, and coping behaviors. However, because only a small number of studies included these variables, and none of them reported a full correlation matrix of all variables, we were unable to address these questions.

## Discussion

In the present meta-analysis we investigated ethnic differences in sociodemographic variables, caregiver stressors, filial obligation beliefs, social support, coping styles, and caregiver outcomes. Ethnic minority caregivers reported providing more hours of care; they also indicated having fewer financial resources and less educational attainment, but they used more informal support and cognitive and

emotion-focused coping than whites. For caregiving outcomes, we found that ethnic minority caregivers were at an advantage with regard to psychological health, but at a disadvantage regarding physical health. The psychological health advantage was observed primarily for African-American caregivers, whereas inconsistent results emerged for Hispanic caregivers, and Asian-American caregivers exhibited poorer psychological health than White caregivers. Finally, several study characteristics moderated the ethnic differences. As most ethnic differences were small, they should not be overinterpreted.

The present meta-analysis supports theoretical propositions put forth by Aranda and Knight (1997) and Dilworth-Anderson and Anderson (1994). Caregivers from different ethnic groups varied with regard to background variables, stressors, social resources, coping processes, appraisal, and health outcomes, although most differences were small. Our results show that ethnic differences in caregiving outcomes cannot exclusively be explained by differences in the levels of stressors. We found elevated levels of stressors for three minority groups, but African-American caregivers were less burdened and depressed in response to these stressors, and Hispanic and Asian-Americans caregivers were more depressed than White caregivers. Thus, although many ethnic differences in resources, coping processes, and background variables are small, our results support theoretical models suggesting that these differences should be considered in understanding ethnic differences in caregiver outcomes (Aranda & Knight, 1997; Dilworth-Anderson & Anderson, 1994). Our results also show that the effect of ethnicity is more than the effect of disadvantaged minority status, as suggested by the double-jeopardy hypothesis (e.g., Wykle & Kaskel, 1995). Minority status appears to confer both advantages and disadvantages on caregivers, and these are not identical across ethnic groups. Nonetheless, available theoretical models are still too global for deriving specific hypotheses about the direction of differences in all relevant variables in a particular ethnic group.

### *Ethnic Differences in Caregiver Variables*

Observed ethnic differences in use of informal support, caregiver age, education, income, and the percentage of spousal caregivers were in line with our hypotheses and consistent across ethnic minority groups. In the following paragraphs we focus on variables for which our hypotheses were not supported and on variables in which the patterns of results vary among the three ethnic minority groups under investigation.

We had hypothesized that caregivers from ethnic minorities receive more informal and less formal support. The present meta-analysis supports this suggestion for informal support, but not for formal

support. That is, only Asian caregivers used significantly less formal support than Whites. These results may be due, in part, to sampling bias, because convenience samples are usually recruited with the help of providers of formal support (e.g., hospitals, support groups), and thus they probably include caregivers with fewer barriers to formal support use. The fact that Asian caregivers did use less formal support may be related to language barriers, because many of them were born outside the United States (Angel & Angel, 1992).

Despite the often cited close family ties of ethnic minority caregivers (Williams & Wilson, 2001), we found that Hispanic and Asian caregivers reported lower levels of relational quality with the care recipient than White caregivers. Because both results were based on very few studies, additional research is necessary to replicate these findings. Possible explanations for these results include that Asian-American caregivers are often daughters-in-law who are expected to take on the caregiver role regardless of the quality of their relationship to their in-laws (Lee & Sung, 1998). For Hispanic caregivers, poorer relationship quality with the care recipient may be the result of slightly more care receiver behavior problems. In addition, strong norms of parental authority and hierarchy in Hispanic families (Chilman, 1993) and associated intergenerational conflicts may be another reason for below-average relational quality between caregivers and care recipients, especially when an adult child is the primary caregiver.

Most available studies on ethnic differences in caregiving have focused on psychological and physical health of caregivers. In our meta-analysis we found worse physical health but better psychological health among ethnic minority caregivers than among White caregivers. This apparent contradiction may be due to the fact that caregiving generally has only a very small impact on physical health (Pinquart & Sörensen, 2003b). Thus, ethnic minority caregivers' poorer physical health may be influenced primarily by factors that are independent of caregiving, such as restricted access to quality health care (Williams & Wilson, 2001), lower levels of insurance coverage (Sotomayor & Randolph, 1988), and a lifetime of racial discrimination (Finch, Hummer, Kolody, & Vega, 2001).

With regard to psychological health, we found that Asian-American caregivers were more depressed than White caregivers. As already mentioned, the high percentage of Asian-American daughter-in-law caregivers may experience higher levels of stress because (a) decisions based on cultural norms may be inconsistent with their own preferences (Lee & Sung, 1998), (b) their relationship quality with the care recipient may not be as good, and (c) they are more likely to use emotion-focused coping. This style of coping does not improve the objective situation (as does instrumental coping), nor does it

adjust caregiver's evaluation of caregiving-related stressors (as does cognitive coping; see Lazarus & Folkman, 1984).

Hispanic caregivers were more depressed than White caregivers, but they also reported more uplifts of caregiving. Their higher levels of depressive symptoms may be due to more care-related stressors (e.g., greater behavior problems of the care recipient), poorer relationship quality with the care recipient, and lower levels of use of formal support. They may report uplifts, in part, because they have less access to other valued roles (e.g., high-status jobs; see Aranda & Knight, 1997). Thus, although caregiving may cause them a lot of stress, they may also use caregiving as a source of self-esteem. In addition, it cannot completely be ruled out that factors not specific to caregiving may have caused higher levels of depression in Hispanic caregivers. Unfortunately, no studies were available that included Hispanic and White caregivers and non-caregivers.

Compared with other ethnic groups under investigation, African-American caregivers fared best psychologically, as indicated by lower levels of burden and depression, and higher levels of uplifts and subjective well-being. Several factors may contribute to this finding, such as high levels of intrinsic motivation to provide care, based on familism, the use of cognitive coping strategies that help caregivers to find personal and spiritual meaning in the caregiving experience, and greater availability of informal support. These factors are probably caregiver specific because Haley and associates (1995) found lower levels of depression in African-American than in White caregivers, whereas no such differences appeared in noncaregivers. It is also possible, however, that those African Americans who take on the care of frail older relatives have above-average psychological health to begin with. Other factors that may contribute to this finding, such as higher levels of religious commitment, could not be included in the present meta-analysis because of the lack of a sufficient number of studies, but they may be important areas of future research.

### *Influences of Moderating Variables*

For depression, our hypothesis that ethnic differences would be smaller in representative samples and samples with a high percentage of spouses was supported. Minority caregivers were also more likely to report fewer depressive symptoms than White caregivers in studies of dementia caregivers. Ethnic minority caregivers may be less likely than their White peers to view disturbed behavior as cause of embarrassment or social unease, because of the high respect for elders (Dilworth-Anderson & Gibson, 2002; John et al., 1996). Finally, the more women

were in a sample, the greater the difference between minority and White caregivers with regard to burden. Samples of White non-Hispanic caregivers often included a higher percentage of male (spousal) carers, who tend to report lower levels of caregiver burden in general (Lutzky & Knight, 1994).

### *Limitations and Conclusions*

The present study has several limitations. First, not all variables related to ethnic differences in caregiving could be included in the present meta-analysis, because not enough empirical studies were available. Variables that should be assessed in future studies include the motivation to provide care, "emotional strength", level of acculturation, and non-caregiving-related stressors that may interfere with caregiving. Second, because of the lack of a sufficient number of studies, we were not able to compute multivariate analyses that relate ethnic differences in caregiving outcomes to differences in filial obligation beliefs, receipt of informal and formal support, quality of the relationship with the care recipient, coping processes, and other variables. If authors of individual studies were to present full correlation matrices of all variables, subsequent meta-analyses would be much improved. Third, we could not test for ethnic differences in the interrelationship of variables (patterning effects; see Vijer & Leung, 1997). Fourth, we were not able to include comparisons of Native-American caregivers and White caregivers in our meta-analysis because only one quantitative study was available on that topic. Future research on Native-American and Asian-American caregivers is vital for researchers to understand the unique caregiving challenges they face. Finally, when African-American, Hispanic, Asian-American, and White non-Hispanic caregivers are compared, there may also be differences within ethnic groups, for example, between Mexican-American, Cuban-American, and Puerto-Rican caregivers (e.g., Aranda & Knight, 1997). Too few studies were available for us to compute such comparisons.

Despite these limitations, the present meta-analysis included a much larger number of studies than previous narrative reviews in the field (Connell & Gibson, 1997; Dilworth-Anderson et al., 2002; Javanic & Connell, 2001). Because we tested pooled ethnic differences for significance, several more reliable conclusions can be drawn from our meta-analysis that suggest a variety of recommendations both for future research and for practice interventions.

First, because of a lack of a comprehensive theory on ethnic differences in caregiving, we had to derive our hypotheses from several related theoretical models and concepts. More theorizing is necessary in order to build a model from which specific hypotheses can be derived. Specifically, more theory

is needed that focuses on similarities and differences between ethnic groups and that explains sources of heterogeneity within ethnic groups, such as language-related barriers of service use, different levels of acculturation, and differences between ethnic subgroups (e.g., between Mexican Americans and Cuban Americans). In addition, approaches that take into account ethnic differences in both the mean levels of variables and in the interrelation between them (positioning effects and patterning effects) would help us to better understand why high levels of stress have varying effects on the caregiver outcomes among different ethnicities, such as why African-American caregivers' mental health is better than that of White caregivers despite higher stress levels. More comparative research on how ethnic differences in caregiving resources relate to differences in outcome variables would also help explain this phenomenon. Thus, rather than conducting research exclusively on ethnic differences in stressors, psychological outcomes, and sociodemographic variables, future studies might compare motivation for care provision, coping processes, and emotional strengths of different ethnic groups.

It is important to note that, although a number of statistically significant ethnic differences emerged in the present meta-analysis, many differences were quite small and should not, therefore, be overinterpreted. For example, ethnicity explained only 1.5% to 5% of the observed variance of caregiver burden and depression. This underscores the point that the protective effect of being African American on the psychological health of caregivers should *not* lead to the conclusion that these caregivers need no services.

Although most of our results are consistent with available theoretical work on ethnic differences in caregiving, some common assumptions must be modified. Specifically, there is no evidence that ethnic minority caregivers in general rely less on formal support than do Whites as a result of differences in value systems. Language barriers or differences in acculturation may explain whether Asian caregivers use these services less than Whites, but African Americans do not differ from Whites in this respect. Thus, future research should test directly for possible explanations of ethnic differences rather than provide untested ad hoc explanations.

The results of this study also suggest that, although caregivers from the three ethnic minority groups studied here were more similar to each other than to White caregivers with regard to some of the tested variables (such as education, income, and use of informal support), it is not particularly useful to compare White caregivers to heterogeneous samples of ethnic minority caregivers. Rather, we can gain better insight into ethnic differences in caregiving by comparing more homogeneous ethnic groups to Whites or to each other.

The existing research on ethnic differences in caregiving stressors, resources, coping processes, and outcomes may help service providers better meet the needs of caregivers of color as well as Whites. First, given existing health disparities and the increase in physical health problems in response to stress among ethnic minorities, caregiver interventions with this population not only have to focus on psychological well-being and depression as outcomes but also create programs to improve the physical health of caregivers and care receivers. These would reduce the objective levels of caregiver stressors and improve caregivers' physical abilities to provide care (Levkoff & Sanchez, 2003). Second, interventions focusing on the improvement of the quality of the relationship between caregiver and care receiver, such as counseling and family therapy, may be especially useful for Asian-American and Hispanic caregivers, given their lower quality of relationship with the care recipient. Third, because of differences in coping style, Asian-American caregivers may be more likely than other caregivers to benefit from interventions that reduce emotion-focused coping and help to build other coping strategies. Fourth, our results suggest that overcoming barriers to using formal support is especially important for Asian caregivers. This may involve overcoming language-related barriers by employing multilingual staff or using active outreach techniques to access first-generation immigrants who may be reluctant to be identified as needing assistance.

Finally, interventions with White caregivers may also benefit from the knowledge gained from studies of ethnic minorities. Many interventions developed with Whites focus on reducing negative effects of caregiving, but they do not address increasing positive emotion and incorporating or focusing on aspects of caregiving that increase subjective well-being. Positive and negative affect emerge as two relatively independent dimensions of emotions when measured over longer periods (e.g., Bradburn, 1969; Watson & Tellegen, 1985). Thus, with regard to caregiving, many individuals may report burden and symptoms of depression while also experiencing adequate levels of psychological well-being such as positive affect and life satisfaction (Pinquart & Sörensen, 2004). The benefits that African Americans have in using positive appraisal to cope with very high stress levels may well be useful additions to all caregiver interventions. Thus, we recommend incorporating elements into an intervention that systematically assist in developing positive appraisal, finding meaning, and recognizing enjoyable aspects of caregiving.

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