

# Reports of Elder Neglect by Older Adults, Their Family Caregivers, and Their Home Care Workers: A Test of Measurement Invariance

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**Objectives.** The present study evaluated the measurement invariance of a 7-item scale designed to assess elder neglect across three groups of informants: Older adults, family members, and home care workers. In addition, differential item functioning (DIF) was evaluated in order to examine whether individuals of certain characteristics have a different probability of endorsing certain items even at equivalent levels of the overall construct of neglect.

**Method.** A cross-sectional sample of 686 family members, 388 older adults, and 523 home care workers was drawn. A series of sequentially nested confirmatory factor models was examined to identify whether configural (the same items are associated with the same factor across groups), metric (factors have a similar meaning across groups), and scalar (group means can be meaningfully compared across groups) invariances can be established. Multi indicators multi causes analysis was conducted to identify DIF across age, gender, and education.

**Results.** Five items were adequate indicators of the overall construct. The findings provide support to configural, metric, and scalar invariances across the 3 groups of informants. None of the items resulted in DIF.

**Discussion.** The findings advocate for the use of the 5-item neglect scale across different groups of informants and call for the evaluation of elder neglect within the constellation of the caregiving unit.

**Key Words:** Abuse—Confirmatory factor analysis—Differential item functioning—Elder neglect—Maltreatment—Measurement invariance—Multi indicators multi causes.

NEGLECT is defined as the “intentional or unintentional withholding of food, medication or other necessities that result in the older person’s failure to thrive” (Levine, 2003, p. 38). An alternative definition of neglect puts the responsibility for neglect on the caregiver. The National Research Council (2003) defines elder neglect as “an omission by responsible caregivers that constitutes “neglect” under applicable federal or state law” (p. 39).

Elder neglect is the most prevalent type of elder mistreatment. In a systematic review concerning the prevalence of elder mistreatment, researchers concluded that about 20% of all dependent older adults suffer from neglect (Cooper, Selwood, & Livingston, 2008). Moreover, neglect constituted about 60%–70% of all elder mistreatment cases brought to the attention of adult protective services (Fulmer et al., 2005; Tataru, 1994).

Given the challenges associated with detecting neglect, it is not surprising that the prevalence rate of neglect varies tremendously by study. A recent U.S. representative study reported a 1-year prevalence of 5.1% for neglect (Acierno et al., 2010), whereas a national study in Israel found the rate of elder neglect to be as high as 25% (Lowenstein, Eisikovits, Band-Winterstein, & Enosh, 2009). In New York, on the other hand, researchers compared the documented rate of neglect per 1,000 individuals, which stood

at 0.32 to the self-reported rate, which was 18.3 (Elderly Crime Victims Resource Center, Lifespan of Greater Rochester, & Weill Cornell Medical Centre, 2011).

Early assessment of neglect is important given its negative consequences and in light of the potential for early intervention and prevention. There is a growing body of research to show that older adults who experienced elder mistreatment in general and neglect in particular are likely to report lower quality of life, poorer self-rated health, and depression (Dong, 2005; Otero, de Yebenes, Rodriguez-Laso, & Zunzunegui, 2003). Moreover, a contemporary study has shown that those older adults who do not get their needs met following hospital discharge have a greater likelihood of hospital readmission (DePalma et al., 2013). Elder mistreatment, including neglect, was also identified as a risk for disability and even mortality (Blazer, Sachs-Ericsson, & Hybels, 2005; Dong et al., 2009; Lachs, Williams, O’Brien, Pillemer, & Charlson, 1998; Schofield, Powers, & Loxton, 2013).

Despite the need for early assessment and intervention, neglect is often unrecognized. Strasser and Fulmer (2007) have argued that compared with elder neglect, the concept of child neglect has a more established tradition and is more recognized in society. Elder neglect represents a discrepancy between the expected fulfillment of perceived

needs and the actual availability of assistance and support by caregivers. Both the perception of unmet needs and the assignment of responsibility for fulfilling these needs are highly subjective, particularly in the case of older adults. Whereas the perception of the child's caregivers as being fully responsible for fulfilling his or her needs is well grounded in our society, such expectations are less clear-cut with regard to older adults. Given the "fuzziness" of the concept (Valentine & Cash, 1986), it is not surprising that in the United States, there is no uniform federal definition of what constitutes elder neglect (Levine, 2003).

In Israel, the entire public, with a particular emphasis on professionals or those responsible for the care of vulnerable individuals, is held responsible by law for the report of suspected neglect. Nonetheless, legal aspects concerning elder neglect still remain somewhat elusive. One such ambiguous aspect is the legal obligation to care for vulnerable individuals. Whereas all minors are automatically considered vulnerable and the responsibility for their well-being is automatically assigned to their parents, this is not the case for older adults. Vulnerable older adults are defined based on their physical, cognitive, or mental state as well as based on their living circumstances (e.g., being dependent on the perpetrator for emotional or physical care). Hence, in the case of older adults, the definition of vulnerability is equivocal and requires a personal judgment. In addition, the assignment of responsibility for the vulnerable older adult depends on the circumstances and is not automatically attributed to his or her adult children (Alon & Doron, 2009).

Several additional obstacles challenge clear corroboration of reports of elder neglect. One such challenge is the fact that signs of aging and disease may resemble clinical signs of neglect. Based on a systematic review of elder mistreatment, researchers concluded that asking older adults and their caregivers about elder mistreatment is probably a more sensitive means to assess elder neglect than using observable measures (Cooper et al., 2008). This is because there are no clinically agreed upon indicators of elder neglect (Strasser & Fulmer, 2007). The deteriorated cognitive functioning of many older adults also hampers the accurate detection of elder neglect (Strasser & Fulmer, 2007). Empirical support to the challenges associated with the detection of elder neglect was derived from a study that compared reports of elder mistreatment among older adults, their family caregivers, and their home care workers. The study found that the lowest agreement between the three parties was with regard to elder neglect, attributing this to the highly subjective nature of the concept (Ayalon, 2011).

Because the care of older home care recipients takes place at home, behind closed doors, the main three sources of potential information about this caregiving arrangement are the older adult, his or her family members, and the home care worker. Each of these sources of information is potentially subject to under report neglect. The older adult may not be cognitively, mentally, or physically able

to report neglect. In addition, given the fact that neglect most often takes place in relationships of trust and dependency, the older adult may be hesitant to report neglect as the perpetrator is also the person responsible for providing his or her needs. Under these circumstances, shame, fear, and love might prevent the older adult from reporting neglect. Family members may also refrain from reporting suspected neglect as this may jeopardize their relationships with those responsible for the neglect or require them to take on additional actions by substituting for the inadequate care they have detected. Home care workers may refrain from reporting neglect as they may view any deviation from optimal care as their personal responsibility. In addition, reporting a suspected neglect may put them at a risk for losing their job. Although each of these three potential informants is subject to bias as well as to under report of suspected elder neglect, it is unclear whether one type of informant is more likely to report suspected neglect than another type or whether one type of informant is more reliable than another type.

The report of elder neglect may vary not only across informants, but also across informants' characteristics, such as age, education, or gender. For instance, research has shown that older adults hold a higher threshold for elder abuse and are less likely to report suspected cases as abuse compared with professionals (Stones & Bédard, 2002). Those of higher levels of education, on the other hand, might attribute greater autonomy to older adults (Oyserman, Coon, & Kemmelmeier, 2002) and as a result will be less likely to report neglect, whereas women who are well accustomed to the caregiving role (Doress-Worters, 1994) might be more cognizant of suspected cases of neglect.

In light of ongoing calls for the development and use of easy to use screening instruments for the detection of elder neglect (Fulmer, Guadagno, Bitondo Dyer, & Connolly, 2004; Meeks-Sjostrom, 2004), given the "fuzziness" of the concept, and the need to rely on multiple informants to corroborate cases of neglect, assessing the measurement invariance of a common screening tool of elder neglect is of utmost importance. The present study is designed to evaluate whether a 7-item scale of elder neglect is invariant across different types of potential informants, namely older adults, family caregivers, and home care workers. For measurement invariance to exist, the properties of the indicators (i.e., items) of neglect should be independent of the particular type of informant (Millsap, 2011). In addition, author evaluate whether certain sociodemographic variables, such as age, gender, or education, result in differential item functioning (DIF; i.e., whether individuals of certain sociodemographic characteristics have a different probability of endorsing certain items at equivalent overall levels of reported neglect).

## METHOD

The study was funded by the National Insurance Institute of Israel and approved by the ethics committee of Bar Ilan University. A random stratified sample of older adults aged

more than 70 years who live in the center of Israel was drawn from the national pool of 15,564 older adults who receive financial assistance from the National Insurance Institute of Israel under the long-term care community law in the designated geographical area. Eligibility criteria for inclusion were the following: The care recipient is more than 70 years, lives in the center of Israel, speaks Hebrew or Russian, and meets the eligibility criteria for employing a migrant home care worker (as only the most impaired older adults are eligible to employ a migrant home care worker). Corresponding primary caregivers based on the records of the National Insurance Institute of Israel or based on the reports of the care recipients were invited to participate, provided they spoke Hebrew or Russian. Home care workers who spoke Hebrew, English, or Russian were also eligible to participate in the study. The present study concerns 686 family members, 388 older adults, and 523 home care workers (818 caregiving units, 49.4% response rate per caregiving unit; 336 dyads, 223 triads). See Figure 1 for sample flow and Table 1 for demographic characteristics of the sample.

The majority of older adults, family members, and home care workers were women. The majority of family members and home care workers were married. Approximately, one quarter of the entire sample stated that they cannot make ends meet. The majority of older adults and about 40% of the family members rated their health as poor or mediocre. On average, older adults reported impairments on almost 7 ADL/IADL tasks out of a maximum of 12 tasks.

As expected, there were significant differences across the three groups of informants. Compared with the other two groups, home care workers were significantly more likely

to be women ( $\chi^2[df] = 55.11[2], p < .01$ ). Older adults were significantly less likely to be married ( $\chi^2[df] = 193.80[2], p < .01$ ) and more likely to report that their health was poor or mediocre ( $\chi^2[df] = 584.77[2], p < .01$ ) compared with the other two groups. Older adults were significantly older than the other two groups, whereas home care workers were significantly younger ( $F[df] = 1655.40[1589,2], p < .01$ ). Older adults reported the lowest level of education, whereas family members reported the highest level ( $F[df] = 87.88[1462,2], p < .01$ ).

Table 2 presents the results concerning reports of elder neglect by the three stakeholders. All three parties reported an unmet need for supervision at the highest rate compared with the other types of unmet needs evaluated in this study. The average number of unmet needs reported was less than 1 out of a maximum of 7 types evaluated in this study.

### Measures

Neglect was assessed on a six-item scale used in previous studies in Israel (Ayalon, 2011; Lowenstein et al., 2009). Items on the scale address both unmet needs for services and unmet needs for assistance in ADL or IADL tasks. The original scale was built based on a review of the literature, expert panel discussions, and preliminary piloting of the measure with 10 older adults (Eisikovits, Winterstein, & Lowenstein, 2004). It was subsequently administered to 1,045 community-dwelling older adults as part of a national survey of elder mistreatment. The measure has shown concurrent validity by its association with older adults' reports of loneliness, feelings of safety, and sense of overall neglect (Eisikovits et al., 2004; Lowenstein et al., 2009). In preparation for use with older home care recipients, their family

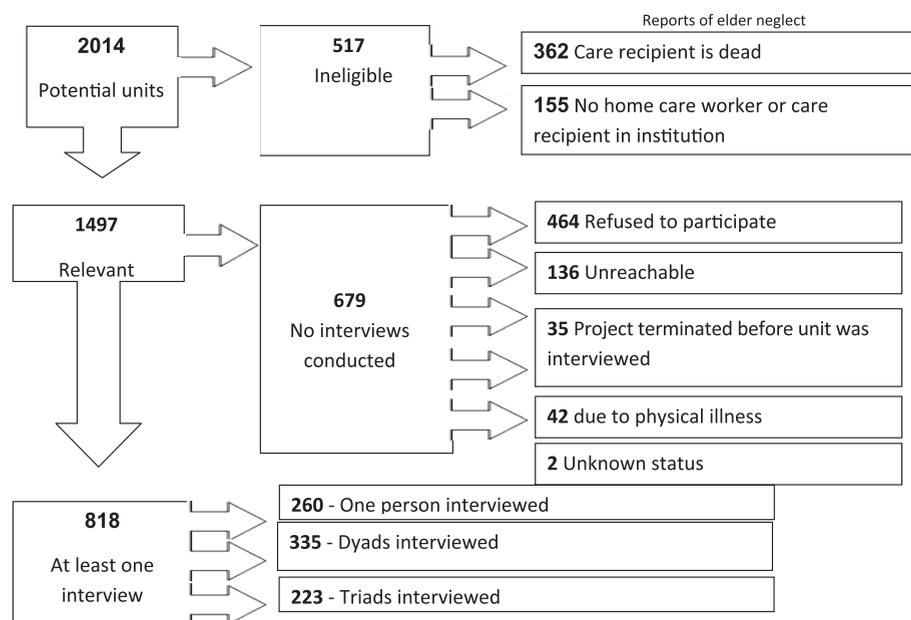


Figure 1. Sample flow.

Table 1. Demographic Characteristics of the Sample

	Older adults			Family members			Home care workers			
	Total (388)	Incomplete- triads (165)	Complete- triads (223)	Total (686)	Incomplete- triads (463)	Complete- triads (223)	Total (523)	Incomplete- triads (300)	Complete- triads (223)	p value
Age	84.3 (6.2)	84.7 (6.0)	84.0 (6.3)	60.6 (11.5)	59.7 (10.6)	62.6 (12.9)	43.9 (11.6)	43.8 (11.4)	44.0 (11.8)	<.01
Woman	267 (68.8%)	117 (70.9%)	150 (67.3%)	468 (69.0%)	326 (71.2%)	142 (64.5%)	450 (86.2%)	255 (85.0%)	195 (87.8%)	.08
Years of education	10.3 (5.1)	11.2 (4.9)	9.7 (5.1)	13.6 (3.5)	13.7 (3.5)	13.5 (3.5)	11.6 (3.3)	11.6 (3.3)	11.7 (3.4)	.48
Married	130 (34.1%)	47 (29.0%)	83 (37.9%)	526 (77.4%)	350 (76.4%)	176 (79.3%)	299 (57.2%)	172 (57.3%)	127 (57.0%)	.40
Cannot make ends meet	106 (27.7%)	46 (28.2%)	60 (27.3%)	141 (21.0%)	97 (21.6%)	44 (20.0%)	121 (23.4%)	71 (23.8%)	50 (22.9%)	.64
Subjective health mediocre or poor	363 (94.0%)	156 (95.1%)	207 (93.2%)	269 (39.6%)	169 (36.9%)	100 (45.0%)	74 (14.2%)	42 (14.0%)	32 (14.4%)	.04
ADL/IADL(0-12)	6.9 (2.8)	6.3 (2.7)	7.3 (2.8)							<.01

Note. <sup>a</sup>For each stakeholder, t-test and chi-square analyses were conducted to compare differences between the characteristics of the particular stakeholder in the complete-triads vs. Incomplete-triads samples.

Table 2. Neglect Reported by Stakeholders

	Older adults			Family members			Home care workers			
	Total (388)	Incomplete- triads (165)	Complete- triads (223)	Total (686)	Incomplete- triads (463)	Complete- triads (223)	Total (523)	Incomplete- triads (300)	Complete- triads (223)	p value
Unmet needs for medical services	58 (15.3%)	23 (14.2%)	35 (16.2%)	110 (16.1%)	73 (15.8%)	37 (16.7%)	38 (7.5%)	18 (6.3%)	20 (9.2%)	.78
Unmet needs for nutrition and meals	25 (6.6%)	9 (5.6%)	16 (7.4%)	31 (4.5%)	16 (3.5%)	15 (6.7%)	20 (3.9%)	8 (2.8%)	12 (5.5%)	.06
Unmet needs for installation, repair, or replacement of assistive device	51 (13.5%)	22 (13.7%)	29 (13.4%)	80 (11.7%)	47 (10.2%)	33 (14.8%)	38 (7.6%)	17 (5.9%)	21 (9.8%)	.08
Unmet needs for personal hygiene	34 (9.0%)	13 (8.0%)	21 (9.4%)	39 (5.7%)	19 (4.1%)	20 (9.0%)	30 (5.9%)	14 (4.8%)	16 (7.3%)	.01
Unmet needs for assistance with household tasks	53 (14.1%)	21 (13.0%)	32 (14.8%)	63 (9.3%)	32 (7.0%)	31 (14.0%)	30 (5.9%)	13 (4.5%)	17 (7.8%)	.003
Unmet needs for assistance with transportation	64 (17.0%)	21 (13.0%)	43 (19.9%)	93 (13.6%)	51 (11.1%)	42 (18.9%)	38 (7.5%)	20 (6.9%)	18 (8.3%)	<.01
Unmet needs for supervision	66 (17.5)	28 (17.3%)	38 (17.6%)	128 (18.7%)	87 (18.9%)	41 (18.4%)	56 (11.1%)	30 (10.3%)	26 (12.0%)	.88
Total unmet needs (0-7)	0.9 (1.8)	0.8 (1.7)	1.0 (1.9)	0.8 (1.6)	0.7 (1.4)	1.0 (2.0)	0.5 (1.4)	0.4 (1.2)	0.6 (1.6)	.05

Note. <sup>a</sup>For each stakeholder, t-test and chi-square analyses were conducted to compare differences between the characteristics of the particular stakeholder in the complete-triads vs. Incomplete-triads samples.

members, and their home care workers, several steps were taken. First, interviews with the involved parties concerning issues of elder abuse and neglect were conducted, and major themes that emerged in the interviews were examined against the existing measure (Ayalon, 2009; Ayalon, Kaniel, & Rosenberg, 2008). An additional item concerning unmet needs for supervision was added based on findings from qualitative research with older adults and their family members (Ayalon, 2011). The revised measure was subsequently administered to a convenience sample of 148 matched family members and home care workers and 75 older adults. The reliability of the measure ranged between .57 and .93, and it demonstrated adequate concurrent validity by its association with older adults' lower financial status and by its association with lower satisfaction with the relationship with the older adults (Ayalon, 2011). Responses to each of the seven items were dichotomized to represent whether or not a particular type of neglect took place over the past year. Dichotomization was driven by statistical and clinical reasons. Items were highly positively skewed with most respondents indicating no unmet need. Given the low percentage of individuals who reported unmet needs, response categories had to be combined prior to analysis. Cronbach's alpha in the present study was .83 for family members, .91 for home care workers, and .89 for older adults. [Supplementary Appendix 1](#) outlines the exact wording of the neglect scale.

Although the exact scale has not been used in other countries, its content overlaps with many of the scales currently in use to assess neglect worldwide. Consistent with the present scale, most scales currently in use address ADL and IADL unmet needs (Choi & McDougall, 2009; DeLiema, Gassoumis, Homeier, & Wilber, 2012; DePalma et al., 2013; Desai, Lentzner, & Weeks, 2001; Elderly Crime Victims Resource Center, Lifespan of Greater Rochester, & Weill Cornell Medical Centre, 2011; Gaugler, Kane, Kane, & Newcomer, 2005; LaPlante, Kaye, Kang, & Harrington, 2004; Lowenstein et al., 2009; Quail, Wolfson, & Lippman, 2011), whereas several scales also address needs for services (Casado, van Vulpen, & Davis, 2011; Giraldo-Rodríguez & Rosas-Carrasco, 2013) and safety or housing needs (Blazer et al., 2005; Blazer, Sachs-Ericsson, & Hybels, 2007; Post et al., 2010). Several studies have taken the frequency or the severity of the reported neglect into account (Cohen, 2008; Elderly Crime Victims Resource Center, Lifespan of Greater Rochester, & Weill Cornell Medical Centre, 2011; Lowenstein et al., 2009), but consistent with the present study, most studies have evaluated only whether or not neglect occurred, unrelated to its severity or frequency (Blazer et al., 2005, 2007; Casado et al., 2011; Choi & McDougall, 2009; DeLiema et al., 2012; DePalma et al., 2013; Desai et al., 2001; Giraldo-Rodríguez & Rosas-Carrasco, 2013; LaPlante et al., 2004; Post et al., 2010; Quail et al., 2011; Vlachantoni et al., 2011). The time frame over which neglect has been assessed also varies, with some studies assessing current neglect (Blazer et al., 2005, 2007; Choi

& McDougall, 2009), others assessing neglect over a period of 1 month (Desai et al., 2001; Post et al., 2010), 3 months (Lowenstein et al., 2009), 6 months (Lowenstein et al., 2009), or a year (Elderly Crime Victims Resource Center, Lifespan of Greater Rochester, & Weill Cornell Medical Centre, 2011; Giraldo-Rodríguez & Rosas-Carrasco, 2013).

### Analysis

Triadic analysis using structural equation modeling was conducted. The triad served as the unit of analysis. Each variable was placed three times on a single row in the data set, once for each group of informants (Kenny, Kashy, & Cook, 2006).

*Configural invariance: Are the same items associated with the same factor across groups?*—The first step of the analysis concerned the establishment of configural invariance across the three groups of informants. A unidimensional construct was assessed based on past research (Ayalon, 2011; Lowenstein et al., 2009). This analysis established that the pattern of loadings was invariant across informants (e.g., same pattern of fixed and free loadings across the three groups; i.e., weak factorial invariance, Horn & McArdle, 1992), but no parameters were constrained to be equal across informants (Vandenberg & Lance, 2000).

*Are responses to the same items and factor related across groups?*—To account for dependency across informants, the three latent factors of neglect (neglect reported by each group of informants) were allowed to correlate, and the residual errors of respective indicators across the three groups of informants were also allowed to correlate (e.g., The residual errors of unmet hygiene needs rated by older adults, family caregivers, and home care workers were allowed to correlate; Kenny et al., 2006). A significant improvement in model fit suggested dependency across informants.

*Metric invariance: Are the same factors interpreted in a similar fashion across groups?*—Next, metric invariance was examined (Horn & McArdle, 1992). Loadings of like indicators were set to be equivalent across the three groups of informants. Equivalence implies that the indicators are related similarly to the latent factor (e.g., overall neglect) across all three groups of informants and that the construct has the same meaning for all three groups.

*Scalar invariance: Can means be compared in a meaningful way across groups?*—Thresholds (given the categorical nature of indicators) of like indicators across the three groups were set to be equivalent. Threshold equivalence implies that the proportions of endorsement of like indicators are equivalent across informants.

Analyses were nested and sequential, with each comparison being contingent upon invariance established in previous less stringent steps of the analysis. The difference between a more restricted (a model which imposes invariance) and

a less restricted model was determined by comparing the fit indices. If the difference between the two models was nonsignificant, the more parsimonious model that employed invariance constraints was accepted (Vandenberg & Lance, 2000).

*DIF: Do individuals of certain characteristics have a different probability of endorsing certain items, unrelated to the overall construct of neglect?*—To determine whether other sociodemographic characteristics, such as age, gender, or education, contributed to measurement variance by having a direct effect on certain observed indicators even after controlling for the overall level of neglect (i.e., latent factor), multiple indicators multiple causes (MIMIC) method was used (Joreskog & Goldberger, 1975). The advantage of this method is that it allows for the evaluation of several covariates simultaneously. The MIMIC model contained latent factors (i.e., overall neglect factors for each of the three informants) identified by endogenous item indicators (i.e., neglect items) and sociodemographic variables that are exogenous. The model examined the effect of the exogenous sociodemographic variables on the latent factors and the remaining direct associations between the exogenous variables and the observed indicators. MIMIC was evaluated sequentially. First, the associations between the sociodemographic variables and the latent factors of neglect were evaluated. No direct effects from the sociodemographic variables to the observed indicators were allowed. Next, direct effects from the sociodemographic variables to the observed indicators were allowed based on the modification indices. Whereas significant associations between the sociodemographic variables and the latent factors were expected as they simply represent population heterogeneity in overall group means, direct associations of the sociodemographic variables with the observed indicators were considered to be due to DIF (i.e., at similar levels of the latent factor, certain demographic groups have a different probability of endorsing a certain item). A significant improvement in model fit between these two models suggested the presence of DIF. For a thorough discussion of the application of the MIMIC models, see Gallo, Anthony, & Muthén (1994).

Mplus (Muthén & Muthén, 1998–2012) was used for data analyses. This program has the advantage of working with categorical indicators. Weighted least square mean variance estimation (WLSMV) was used due to the categorical nature of the indicators. The following goodness of fit statistics are reported: Chi-square statistic, comparative fit index (CFI), and root mean squared error (RMSEA; Hu & Bentler, 1999; Raykov, Tomer, & Nesselroade, 1991). If the chi square is small relative to the degrees of freedom, resulting in a ratio between two to five then the observed data do not differ significantly from the hypothesized model (Kelm, 2000). In addition, CFI that exceeds 0.95 (Hu & Bentler, 1995) and RMSEA below 0.08 (MacCallum, Browne, & Sugawara, 1996; Musil, Jones, & Warner, 1998) are indicative of an acceptable model fit. Because WLSMV was used, DIFFTEST command and SAVADATA function in Mplus

were employed to compare differences in  $\chi^2$  across nested models (Muthén & Muthén, 1998–2012).

*Missing data.*—The NIII has no data concerning the characteristics of family caregivers or home care workers. Hence, we were only able to compare the care recipients' characteristics of those who participated in the study versus those who did not participate. Among older adults who agreed to participate, there were more men (123; 31.6%) than among those who did not agree to participate (76; 22.6%,  $\chi^2 = 7.33$ ,  $p < .01$ ). Consistently, the percentage of family members who were the relatives of older men was higher among those who agreed to participate (229; 33.2%) than among those who did not participate (104; 24.7%,  $\chi^2 = 9.06$ ,  $p < .01$ ).

Differences between the characteristics of stakeholders in units in which only one or two stakeholders completed the survey (i.e., incomplete-triads) and stakeholders in units in which all three stakeholders from the same caregiving unit completed the measures (i.e., complete-triads) are listed in Tables 1 and 2.

When data are not missing completely at random (as is most often the case), ignoring available information by limiting the analysis to complete units (complete-triads sample) results in biased estimates that cannot be generalizable to the entire population from which families were sampled (Acock, 2005; Blozis et al., 2013; Schafer & Graham, 2002). Analysis was conducted using the complete-triads only (the most conservative approach that was employed following the large percentage of missing data at the caregiving unit level.). Additional sensitivity analyses consisted of complete-triads and -dyads and of the entire sample (complete and incomplete-triads), using multiple imputation (Asparouhov & Muthén, 2010) to account for missing data. Multiple imputation analysis creates multiple data sets, in which the missing observations are imputed based on information from observed variables. This allows for the inclusion of auxiliary variables (i.e., variables not included in the analysis, but potentially correlated with the variables of interest or with the reasons for missing data) in the imputation process. Analysis is performed on each imputed data set separately and pooled together at the final stage. Results are reported for the complete-triads, complete-triads and -dyads, and multiple imputation samples and differences are noted when evident. The DIFFTEST cannot be used on multiple imputation data. Hence, differences between competing models are not reported for the entire sample using multiple imputation.

## RESULTS

### *Configural Invariance: Are the Same Items Associated With the Same Factor Across Groups?*

Table 3 summarizes the fit indices of the various models examined in this study. The unidimensional construct of the neglect scale was established separately for each

Table 3. Fit Indices of the Various Models Examined

Model development stage	Complete-triads (223 caregiving units)			Complete-triads and -dyads (558 units)			Entire sample, using multiple imputation (818 units)		
	$\chi^2$ [df]	CFI	RMSEA [SD]	$\chi^2$ [df]	CFI	RMSEA [90% CI]	$\chi^2$ [df]	CFI	RMSEA [SD]
Configural invariance: Are the same items associated with the same factor across groups?									
1. Unidimensional construct of family members	12.73 [9]	.99	0.04 [0.00–0.09]	12.43 [9]	.99	0.03 [0.00–0.06]	21.38 [9]	.99	0.04 [0.005]
2. Unidimensional construct of older adults	4.39 [9]	1.00	0.00 [0.00–0.04]	4.21 [9]	1.00	0.00 [0.00–0.03]	11.20 [9]	.99	0.02 [0.02]
3. Unidimensional construct of home care workers	11.29 [9]	1.00	0.03 [0.00–0.09]	13.19 [9]	.99	0.03 [0.00–0.07]	35.37 [9]	.99	0.06 [0.009]
Are responses to the same items and factor related across groups?									
4. Uncorrelated unidimensional constructs of all three informants	158.83 [132]	.99	0.03 [0.00–0.05]	183.67 [132]	.99	0.03 [0.02–0.04]	433.41 [132]	.97	0.05 [0.003]
5. Correlated unidimensional constructs of all three informants	45.19 [124]	.99	0.03 [0.00–0.05]	152.90 [120]	.99	0.02 [0.01–0.03]	231.43 [114]	.99	0.04 [0.003]
6. DIFFTEST, $p$ value of model 4 vs. 5	15.92 [8], $p = .04$			34.96 [12], $p < .01$					
Metric invariance: Are the same factors interpreted in a similar fashion across groups?									
7. Correlated unidimensional constructs of all three informants—invariant loadings	151.72 [134]	.99	0.02 [0.00–0.04]	166.91 [132]	.99	0.02 [0.01–0.03]	253.12 [124]	.99	0.04 [0.004]
8. DIFFTEST, $p$ value of model 5 vs. 7	9.63 [10], $p = .47$			16.82 [12], $p = .16$					
Scalar invariance: Can means be compared in a meaningful way across groups?									
9. Correlated unidimensional constructs of all three informants—invariant loadings and intercepts	162.07 [144]	.99	0.02 [0.00–0.04]	180.31 [142]	.99	0.02 [0.01–0.03]	281.84 [134]	.98	0.04 [0.004]
10. DIFFTEST, $p$ value of model 7 vs. 9	11.33 [10], $p = .33$			16.86 [10], $p = .08$					
DIF: Do individuals of certain characteristics have a different probability of endorsing certain items, unrelated to the overall construct of neglect?									
11. Unidimensional construct of family members regressed on latent constructs	34.34 [24]	.99	0.05 [0.00–0.08]	35.13 [24]	.99	0.03 [0.00–0.05]	40.68 [24]	.99	0.03 [0.005]
12. Unidimensional construct of older adults regressed on latent constructs	27.45 [24]	.99	0.03 [0.00–0.07]	29.27 [24]	.99	0.02 [0.00–0.05]	68.59 [24]	.99	0.05 [0.005]
13. Unidimensional construct of home care workers regressed on latent constructs	24.38 [24]	1.00	0.01 [0.00–0.06]	53.32 [24]	.99	0.05 [0.03–0.07]	69.59 [24]	.99	0.05 [0.005]

Note. CFI = comparative fit index; RMSEA = root mean squared error.

<sup>a</sup>DIFFTEST is unavailable for multiple imputation samples.

Table 4. Confirmatory Factor Analysis: Configural, Metric, and Scalar Invariance

	Complete-triads (223 units)	Complete-triads and -dyads (558 units)	Entire sample using multiple imputation (818 units)
Unmet needs for medical services	2.02** (0.34)	1.54** (0.18)	1.33** (0.15)
Unmet needs for installation, repair, or replacement of assistive device	3.47** (0.86)	2.13** (0.31)	1.92** (0.30)
Unmet needs for personal hygiene	6.73 (5.20)	2.78** (0.62)	1.89** (0.37)
Unmet needs for assistance with household tasks	5.35** (1.85)	3.22** (0.59)	2.78** (0.54)
Unmet needs for assistance with transportation	2.32** (0.47)	2.09** (0.32)	2.05** (0.28)
Unmet needs for supervision	1.74** (0.30)	1.43** (0.17)	1.22** (0.13)

Note. \*\* $p < .01$ .

group. This resulted in adequate model fit indicators for all three groups (stages 1–3, Table 3). Across all three samples examined, item 2 (unmet needs for meals and groceries) was a poor indicator of the latent factor, and therefore, it was excluded from further analyses.

#### *Are Responses to the Same Items and Factor Related Across Groups?*

When all three latent factors were assessed together and no correlations between factors and residual errors were allowed, model fit indices were adequate (stage 4, Table 3). In order to model interdependence, latent factors were allowed to correlate as well as residual errors across respective indicators (stage 5, Table 3). A significant improvement in fit indices suggests that the three latent factors of neglect are correlated. Because the residual covariance matrix was not positive definite, 10 potential correlations between residual errors of respective indicators were not estimated using the complete-triads sample, and six correlations were not estimated, using the complete-triads and -dyads sample. All latent factors were significantly correlated (range of correlations between older adults and family members = .74–.88,  $p < .01$ ; range of correlations between older adults and home care workers = .68–.82,  $p < .01$ ; range of correlations between family members and home care workers = .56–.74,  $p < .01$ , depending on the sample used). The correlated model resulted in adequate fit indices. A significant improvement in model fit was obtained suggesting that the correlated model provides a better fit to the data (stage 6, Table 3).

#### *Metric Invariance: Are the Same Factors Interpreted in a Similar Fashion Across Groups?*

In order to test for model invariance across informants, a series of hierarchically nested models was examined. First all respective loadings across the three groups of informants were set to be equal (stage 7, Table 3). This model resulted in an adequate fit that was not significantly worse than the unrestricted model (stage 8, Table 3).

#### *Scalar Invariance: Can Means be Compared in a Meaningful Way Across Groups?*

All respective thresholds were set to be equal across the three groups of informants (stage 9, Table 3). This model

resulted in an adequate fit and was not significantly different from the less restricted model that assumed only loading invariance (stage 10, Table 3).

See Table 4 for a summary of unstandardized factor loadings and standard errors of the items on the neglect scale. All six items were adequate indicators of the latent factor, with the exception of item 4 (unmet needs for hygiene), which was a poor indicator, based on the complete-triads sample, but not based on the other two samples used. Given the high percentage of missing data at the caregiving level, the most conservative approach was employed, and this item is now addressed as a poor indicator of the overall construct.

#### *DIF: Do Individuals of Certain Characteristics have a Different Probability of Endorsing Certain Items, Unrelated to the Overall Construct of Neglect?*

In order to test for DIF due to age, gender, and education, MIMIC analysis was conducted. In the first step, age, gender, and education of informants in the three groups were regressed on the three latent factors of neglect (stages 11–13, Table 3). No direct effects of these sociodemographic variables on the observed indicators were allowed. This analysis resulted in adequate fits of the overall models. The modification indices did not indicate any direct effects from age, gender, or education on any of the items.

## DISCUSSION

The present study evaluated the measurement invariance of a seven-item scale designed to assess elder neglect across three different types of informants: Older adults, their family members, and their home care workers. In addition, the study examined whether informants of different sociodemographic characteristics (e.g., age, gender, and education) endorse certain items more or less strongly unrelated to the overall level of neglect. Given the nonuniform definition of the concept of neglect (Strasser & Fulmer, 2007) and the need to rely on multiple informants for the assessment of neglect (Ayalon, 2011), this study provides an important first step.

One of the seven items was identified as a poor indicator of the overall construct of unmet needs examined in this study. This particular item concerned a very basic unmet need in the form of meals and nutrition, whereas the other

items addressed somewhat less basic needs, such as a need for repairs or transportation. An additional item addressing unmet hygiene needs also deemed as an inadequate indicator, when the complete-triads sample was analyzed, but not when the complete-triads and -dyads or the entire sample were analyzed. This item as well is probably a better indicator of unmet basic needs than unmet instrumental needs as are the remaining five items. The remaining five items appear as adequate indicators of the overall construct of unmet needs and should be used in further research and practice.

As in past research (Ayalon, 2011; Eisikovits et al., 2004; Lowenstein et al., 2009), response options were dichotomized to reflect whether or not unmet needs occurred, rather than the exact frequency at which they occurred. This was largely driven by statistical reasons, given the low percentage of individuals reporting unmet needs, but also by clinical reasons. Given a tendency to under report elder neglect (Dong, 2005), it is important to use a highly sensitive scale. Clinically, the measure should be used as a screening tool. The acknowledgement of unmet needs should be used as a red flag, indicating a need for further inquiry by a clinician, unrelated to the stated frequency at which unmet needs occur. Because this is a preliminary screening tool, its sensitivity (fewer false negatives) is more important than its specificity (many false positives).

Results suggest that the three groups of informants interpret the items used to assess neglect in a similar fashion (i.e., equivalent factor loadings). Therefore, comparing factor variances and covariances (overall neglect in the present study) across groups is allowed (Gregorich, 2006). Moreover, the average informant has the same probability of endorsing an item, given an equivalent overall factor score unrelated to the particular group one belongs to (i.e., equivalent thresholds). This allows for the comparison of group differences on factor and observed means (Gregorich, 2006). The invariance of loadings and thresholds suggests that observed differences on selected items between the three groups are due to true differences on the factor mean, rather than due to bias. This is particularly notable given the fact that each of the three stakeholders is potentially prone to bias or to under report of elder neglect for different reasons (Ayalon, 2011). Moreover, invariance is particularly meaningful given the very different characteristics of the three different groups of stakeholders. None of the items examined showed DIF in relation to age, gender, or education. This provides further support to the use of this measure with heterogeneous samples, as the particular characteristics of the stakeholder do not appear to have differential associations with certain items, given equivalent overall levels of reported neglect.

A notable finding is the fact that more than 20% of the entire sample reported that they cannot make ends meet. This finding is expected given the fact that financial status is one of the eligibility requirements for governmental

assistance in home care services (Asiskovitch, 2013) and that the home care sector has a low status in the country (Ayalon & Baum, 2010; Heller, 2003). The prevalence rates of unmet needs reported in the present study should be viewed in light of a relationship between greater unmet needs and worse financial status (Allen & Mor, 1997).

The present study has several limitations that should be addressed. First, although it consists of a relatively large representative sample of older adults, their family caregivers, and home care workers, the overall response rate per caregiving unit was about 50%, with older adults and home care workers being underrepresented relative to family members. It is highly likely that complete-triads are more agreeable with one another than incomplete-triads. In order to avoid this potential bias, we analyzed available data in three different ways: (a) Only complete-triads; (b) complete-triads and -dyads; and (c) the entire sample using multiple imputation. With a single exception (unmet needs for hygiene as a poor indicator of the overall construct, using the complete-triads sample, but not when the other two samples were used), results were consistent across these various samples. In addition, the utility of the neglect scale was examined only within the context of older home care recipients of high levels of functional impairment. Results may not generalize to other populations, such as older adults in long-term care institutions. Finally, the items used to assess unmet needs address very broad categories of need. Because this scale should be used as a screening tool, this may not be a problem. However, if a detailed account of unmet needs is desired, a different scale might be more appropriate.

Nevertheless, the findings provide an important first step in the assessment of elder neglect. Results suggest that five of the seven items examined to assess elder neglect are adequate indicators of the overall construct. These items have a similar meaning across the three groups of informants and at similar levels of neglect; the three groups of informants have similar probabilities of endorsing like items. None of the items demonstrated DIF associated with age, gender, or education. The findings advocate for the use of the five-item neglect scale across different groups of informants and call for the evaluation of elder neglect within the caregiving unit.

#### SUPPLEMENTARY MATERIAL

Supplementary material can be found at: <http://psychogerontology.oxfordjournals.org/>.

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## REFERENCES

- Acierno, R., Hernandez, M. A., Amstadter, A. B., Resnick, H. S., Steve, K., Muzzy, W., & Kilpatrick, D. G. (2010). Prevalence and correlates of emotional, physical, sexual, and financial abuse and potential neglect in the United States: The National Elder Mistreatment Study. *American Journal of Public Health, 100*, 292–297. doi:10.2105/ajph.2009.163089
- Acock, A. C. (2005). Working with missing values. *Journal of Marriage and Family, 67*, 1012–1028. doi:10.1111/j.1741-3737.2005.00191.x
- Allen, S. M., & Mor, V. (1997). The prevalence and consequences of unmet need. Contrasts between older and younger adults with disability. *Medical Care, 35*, 1132–1148.
- Alon, S., & Doron, I. (2009). Elder neglect: Theoretical, legal and practical aspects. *Gerontologia, 36*, 69–91. [in Hebrew]
- Asiskovitch, S. (2013). The Long-Term Care Insurance Program in Israel: Solidarity with the elderly in a changing society. *Israel Journal of Health Policy Research, 2*, 3.
- Asparouhov, T., & Muthén, B. (2010). Multiple imputation with Mplus. Mplus technical report version 2. Retrieved from <https://www.statmodel.com/download/Imputations7.pdf>
- Ayalon, L. (2009). Fears come true: The experiences of older care recipients and their family members of live-in foreign home care workers. *International Psychogeriatrics, 21*, 779–786. doi:10.1017/s1041610209990421
- Ayalon, L. (2011). Abuse is in the eyes of the beholder: Using multiple perspectives to evaluate elder mistreatment under round-the-clock foreign home carers in Israel. *Ageing & Society, 31*, 499–520. doi:10.1017/s0144686x1000108x
- Ayalon, L., & Baum, N. (2010). Social workers in home care: The Israeli case. *Educational Gerontology, 36*, 858–871. doi:10.1080/03601271003608944
- Ayalon, L., Kaniel, M., & Rosenberg, L. (2008). Social workers' perspectives on care arrangements between vulnerable elders and foreign home care workers: Lessons from Israeli/Filipino caregiving arrangements. *Home Health Care Services Quarterly, 27*, 121–142. doi:10.1080/01621420802022563
- Blazer, D. G., Sachs-Ericsson, N., & Hybels, C. F. (2005). Perception of unmet basic needs as a predictor of mortality among community-dwelling older adults. *American Journal of Public Health, 95*, 299–304. doi:10.2105/ajph.2003.035576
- Blazer, D. G., Sachs-Ericsson, N., & Hybels, C. F. (2007). Perception of unmet basic needs as a predictor of depressive symptoms among community-dwelling older adults. *Journals of Gerontology A: Medical Sciences, 62*, 191–195.
- Blozis, S. A., Ge, X., Xu, S., Natsuaki, M. N., Shaw, D. S., Neiderhiser, J. M., ... Reiss, D. (2013). Sensitivity analysis of multiple informant models when data are not missing at random. *Structural Equation Modeling: A Multidisciplinary Journal, 20*, 283–298. doi:10.1080/0705511.2013.769393
- Casado, B. L., van Vulpen, K. S., & Davis, S. L. (2011). Unmet needs for home and community-based services among frail older Americans and their caregivers. *Journal of Aging and Health, 23*, 529–553. doi:10.1177/0898264310387132
- Choi, N. G., & McDougall, G. (2009). Unmet needs and depressive symptoms among low-income older adults. *Journal of Gerontological Social Work, 52*, 567–583. doi:10.1080/01634370802609270
- Cohen, M. (2008). Research assessment of elder neglect and its risk factors in a hospital setting. *Internal Medicine Journal, 38*, 704–707. doi:10.1111/j.1445-5994.2008.01630.x
- Cooper, C., Selwood, A., & Livingston, G. (2008). The prevalence of elder abuse and neglect: A systematic review. *Age and Ageing, 37*, 151–160. doi:10.1093/ageing/afm194
- DeLiema, M., Gassoumis, Z. D., Homeier, D. C., & Wilber, K. H. (2012). Determining prevalence and correlates of elder abuse using promoters: Low-income immigrant Latinos report high rates of abuse and neglect. *Journal of the American Geriatrics Society, 60*, 1333–1339. doi:10.1111/j.1532-5415.2012.04025.x
- DePalma, G., Xu, H., Covinsky, K. E., Craig, B. A., Stallard, E., Thomas, J., & Sands, L. P. (2013). Hospital readmission among older adults who return home with unmet need for ADL disability. *The Gerontologist, 53*, 454–461. doi:10.1093/geront/gns103
- Desai, M. M., Lentzner, H. R., & Weeks, J. D. (2001). Unmet need for personal assistance with activities of daily living among older adults. *The Gerontologist, 41*, 82–88. doi:10.1093/geront/41.1.82
- Dong, X. (2005). Medical implications of elder abuse and neglect. *Clinics in Geriatric Medicine, 21*, 293–313. Retrieved from <http://dx.doi.org/10.1016/j.cger.2004.10.006>
- Dong, X., Simon, M., Mendes de Leon, C., Fulmer, T., Beck, T., Hebert, J., ... Evans, D. (2009). Elder self-neglect and abuse and mortality risk in a community-dwelling population. *Journal of the American Medical Association, 302*, 517–526.
- Doress-Worters, P. (1994). Adding elder care to women's multiple roles: A critical review of the caregiver stress and multiple roles literatures. *Sex Roles, 31*, 597–616. doi:10.1007/bf01544282
- Eisikovits, Z., Winterstein, T., & Lowenstein, A. (2004). *A survey of abuse and neglect of older adults in Israel*. Haifa, Israel: The University of Haifa. [in Hebrew]. Retrieved from <http://www.eshelnet.org.il/files/img/dynpdf/f423033903318b.pdf>
- Elderly Crime Victims Resource Center, Lifespan of Greater Rochester, & Weill Cornell Medical Centre 2011 (2011). Under the radar: New York State elder abuse prevalence study. Retrieved from <http://www.ocfs.state.ny.us/main/reports/Under%20the%20Radar%2005%2012%2011%20final%20report.pdf>
- Fulmer, T., Guadagno, L., Bitondo Dyer, C., & Connolly, M. T. (2004). Progress in elder abuse screening and assessment instruments. *Journal of the American Geriatrics Society, 52*, 297–304. doi:52074 [pii]
- Fulmer, T., Paveza, G., VandeWeerd, C., Fairchild, S., Guadagno, L., Bolton-Blatt, M., & Norman, R. (2005). Dyadic vulnerability and risk profiling for elder neglect. *The Gerontologist, 45*, 525–534.
- Gallo, J. J., Anthony, J. C., & Muthén, B. O. (1994). Age differences in the symptoms of depression: A latent trait analysis. *Journal of Gerontology, 49*, P251–P264. doi:10.1093/geronj/49.6.P251
- Gaugler, J. E., Kane, R. L., Kane, R. A., & Newcomer, R. (2005). Unmet care needs and key outcomes in dementia. *Journal of the American Geriatrics Society, 53*, 2098–2105. doi:10.1111/j.1532-5415.2005.00495.x
- Giraldo-Rodríguez, L., & Rosas-Carrasco, O. (2013). Development and psychometric properties of the Geriatric Mistreatment Scale. *Geriatrics & Gerontology International, 13*, 466–474. doi:10.1111/j.1447-0594.2012.00894.x
- Gregorich, S. E. (2006). Do self-report instruments allow meaningful comparisons across diverse population groups? Testing measurement invariance using the confirmatory factor analysis framework. *Medical Care, 44*(11 Suppl 3), S78–S94. doi:10.1097/01.mlr.0000245454.12228.8f00005650-200611001-00014 [pii]
- Heller, E. (2003). *The treatment of older adults in Israel. The topic of foreign home care workers in Israel and Israeli nursing care workers—Needs and available solutions*. Jerusalem, Israel: Haknesset: Research and Information Center. [in Hebrew]
- Horn, J. L., & McArdle, J. J. (1992). A practical and theoretical guide to measurement invariance in aging research. *Experimental Aging Research, 18*, 117–144. doi:10.1080/03610739208253916
- Hu, L. T., & Bentler, P. M. (1995). Evaluating model fit. In R. H. Hoyle (Ed.), *Structural equation modeling. Concepts, issues, and applications* (pp. 76–99). London: Sage.
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1–55.

- Joreskog, K. G., & Goldberger, A. S. (1975). Estimation of a model with multiple indicators and multiple causes of a single latent variable. *Journal of the American Statistical Association*, *70*, 631–639. doi:10.2307/2285946
- Kelm, L. (2000). Structural equation modeling. In L. G. Grimm & P. R. Yarnold (Eds.), *Reading and understanding more multivariate statistics* (pp. 227–260). Washington, DC: American Psychological Association.
- Kenny, D. A., Kashy, D. A., & Cook, W. L. (2006). *Dyadic data analysis*. New York, NY: The Guilford Press.
- Lachs, M. S., Williams, C. S., O'Brien, S., Pillemer, K. A., & Charlson, M. E. (1998). The mortality of elder mistreatment. *Journal of the American Medical Association*, *280*, 428–432. doi:10.1001/jama.280.5.428
- LaPlante, M. P., Kaye, H. S., Kang, T., & Harrington, C. (2004). Unmet need for personal assistance services: Estimating the shortfall in hours of help and adverse consequences. *Journals of Gerontology: Social Sciences*, *59*, 98–108. doi:10.1093/geronb/59.2.S98
- Levine, J. M. (2003). Elder neglect and abuse. A primer for primary care physicians. *Geriatrics*, *58*, 37–40, 42–34.
- Lowenstein, A., Eisikovits, Z., Band-Winterstein, T., & Enosh, G. (2009). Is elder abuse and neglect a social phenomenon? Data from the first national prevalence survey in Israel. *Journal of Elder Abuse and Neglect*, *21*, 253–277. doi:10.1080/08946560902997629
- MacCallum, R. C., Browne, M. W., & Sugawara, H. M. (1996). Power analysis and determination of sample size for covariance structure modeling. *Psychological Methods*, *1*, 130–149. doi:10.1037/1082-989x.1.2.130
- Meeks-Sjostrom, D. (2004). A comparison of three measures of elder abuse. *Journal of Nursing Scholarship*, *36*, 247–250. doi:10.1111/j.1547-5069.2004.04045.x
- Millsap, R. E. (2011). *Statistical approaches to measurement invariance*. New York, NY: Routledge.
- Musil, C. M., Jones, S. L., & Warner, C. D. (1998). Structural equation modeling and its relationship to multiple regression and factor analysis. *Research in Nursing & Health*, *21*, 271–281.
- Muthén, L. K., & Muthén, B. O. (1998–2012). *Mplus user's guide* (7th ed.). Los Angeles, CA: Muthén & Muthén. Retrieved from [http://www.statmodel.com/download/usersguide/Mplus%20user%20guide%20Ver\\_7\\_r3\\_web.pdf](http://www.statmodel.com/download/usersguide/Mplus%20user%20guide%20Ver_7_r3_web.pdf)
- National Research Council. (2003). *Elder mistreatment: abuse, neglect, and exploitation in an aging America*. Washington, DC: The National Academies Press. Retrieved from [http://www.nap.edu/catalog.php?record\\_id=10406](http://www.nap.edu/catalog.php?record_id=10406)
- Otero, A., de Yébenes, M. J., Rodríguez-Laso, A., & Zunzunegui, M. V. (2003). Unmet home care needs among community-dwelling elderly people in Spain. *Aging Clinical and Experimental Research*, *15*, 234–242.
- Oyserman, D., Coon, H. M., & Kimmelmeier, M. (2002). Rethinking individualism and collectivism: evaluation of theoretical assumptions and meta-analyses. *Psychological Bulletin*, *128*, 3–72.
- Post, L., Page, C., Conner, T., Prokhorov, A., Fang, Y., & Biroscak, B. J. (2010). Elder abuse in long-term care: Types, patterns, and risk factors. *Research on Aging*, *32*, 323–348. doi:10.1177/0164027509357705
- Quail, J. M., Wolfson, C., & Lippman, A. (2011). Unmet need and psychological distress predict emergency department visits in community-dwelling elderly women: a prospective cohort study. *BMC Geriatrics*, *11*, 86.
- Raykov, T., Tomer, A., & Nesselroade, J. R. (1991). Reporting structural equation modeling results in Psychology and Aging: Some proposed guidelines. *Psychology and Aging*, *6*, 499–503.
- Schafer, J. L., & Graham, J. W. (2002). Missing data: Our view of the state of the art. *Psychological Methods*, *7*, 147–177. doi:10.1037/1082-989x.7.2.147
- Schofield, M. J., Powers, J. R., & Loxton, D. (2013). Mortality and disability outcomes of self-reported elder abuse: A 12-year prospective investigation. *Journal of the American Geriatrics Society*, *61*, 679–685. doi:10.1111/jgs.12212
- Stones, M. J., & Bédard, M. (2002). Higher thresholds for elder abuse with age and rural residence. *Canadian Journal on Aging*, *21*, 577–586. doi:10.1017/s0714980800002105
- Strasser, S. M., & Fulmer, T. (2007). The clinical presentation of elder neglect: What we know and what we can do. *Journal of the American Psychiatric Nurses Association*, *12*, 340–349. doi:10.1177/1078390306298879
- Tatara, T. (1994). Understanding the nature and scope of domestic elder abuse with the use of state aggregate data. *Journal of Elder Abuse & Neglect*, *5*, 35–57. doi:10.1300/J084v05n04\_04
- Valentine, D., & Cash, T. (1986). A definitional discussion of elder maltreatment. *Journal of Gerontological Social Work*, *9*, 17–28. doi:10.1300/j083v09n03\_03
- Vandenberg, R. J., & Lance, C. E. (2000). A review and synthesis of the measurement invariance literature: Suggestions, practices, and recommendations for organizational research. *Organizational Research Methods*, *3*, 4–70. doi:10.1177/109442810031002
- Vlachantoni, A., Shaw, R., Willis, R., Evandrou, M., Falkingham, J., & Luff, R. (2011). Measuring unmet need for social care amongst older people. *Population Trends*, *145*, 56–72. doi:10.1057/pt.2011.17