

RESILIENCE IN OLDER ADULTS LIVING IN RURAL, SUBURBAN, AND URBAN AREAS

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ABSTRACT

Background: Possessing high levels of resilience may be one factor that helps older adults adjust to the hardships associated with aging. Residing in a rural, urban, or suburban location may impact the resilience level of older adults.

Purpose: First, to determine if resilience levels vary in older adults living in rural, urban, or suburban areas. Second, to determine if the relationships of socio-demographic factors (age, income, education, marital and employment status), social networks, health status, and resilience vary with the location in which older adults live.

Methods: Using a cross-sectional design, data were collected from 277 registered voters aged 65 years or over who lived in rural, suburban, or urban locations in New York State. The instruments used were the Resilience Scale, the SF-12v2, and the Lubben Social Network Scale-revised.

Results: No differences were found in resilience levels across the three locations. In regression analysis, stronger family networks, lower household income, and good mental and physical health status were found to be significantly associated with high resilience levels.

Conclusion: The location in which older adults reside did not affect resilience levels. Strong social ties and good mental and physical health were associated with resilience. The surprising association with resilience was low income. Mental health status was most strongly associated with resilience in older adults. Screening older adults for resilience levels and intervening when low levels are identified by implementing strategies to build resilience may be clinically relevant; however further research is needed.

INTRODUCTION

As people age they often encounter challenges such as the development of chronic illness and the emotional stress resulting from the loss of loved ones. Resilient older adults are able to adjust to life adversities with little disruption to their lives. Resilience is considered a personality characteristic that moderates the negative effects of stress and promotes adaptation (Wagnild & Young, 1993). In addition to having particular personality characteristics, resilient individuals often rely on protective factors to help adjust to difficult times. According to the Resiliency model (Richardson, 2002), if individuals experience disruption to their lives when a stressor is encountered, they rely on internal protective factors, such as self-reliance and good health, as well as external protective factors, such as social networks, to restore balance in their lives. This process is referred to as resilient reintegration.

In a study of rural community-dwelling older adults, high levels of resilience were found (Wells, 2009). In addition, better self-perceived mental and physical health status and stronger social networks, consisting of friends, were found to predict high resilience levels. In general, rural dwellers often have limited access to healthcare resources and are sometimes separated

from younger family members who leave to go metropolitan areas. The location in which older adults live may present challenges or offer benefits that affect their resilience levels; however, this has not been studied.

PURPOSE

The purpose of this research study was to determine if resilience levels vary among community-dwelling older adults living in rural, suburban, or urban locations. The first aim was to determine if there were differences in resilience levels among community-dwelling adults by location of residence. The second aim was to determine if the relationships of socio-demographic factors (age, income, education, marital and employment status), social networks, physical and mental health status, and resilience vary according to the location in which community-dwelling older adults live.

LITERATURE REVIEW

In studies of older adults, strong social networks have been found to be associated with higher resilience levels (Adams, Sanders, & Auth, 2004; Easley, 2003; Felten, 2000; Garmezzy, 1991; Hinck, 2004; Kinsel, 2005; Lamond et al., 2009; Montross et al., 2006). Hardy, Concato, and Gill (2004) assessed resilience in community-dwelling older adults who experienced a stressful event within the past 5 years and found that strong social support was not associated with resilience; however, living with others was associated with greater resilience. It appears that social networks may serve as a protective factor for individuals when faced with adversity.

Several studies found a relationship between physical health status and resilience (Adams, Sanders, & Auth, 2004; Felten, 2000; Hardy, Concato, & Gill, 2004; Hinck, 2004; Montross et al., 2006; Wagnild, 2003). Only one study, which included a sample of 125 Swedish adults age 85 years or older, did not find a relationship between physical health status and resilience (Nygren, Alex, Jonsen, Gustafson, Norberg, & Lundman, 2005). In general, better self-reported physical health status was associated with higher levels of resilience. As one ages, functional ability and health status may decline; thus, studying the relationship between health status and resilience in the older adult population is relevant.

In several studies of resilience, strong mental health status and high resilience levels were found to be related. Wagnild (2003) found a positive relationship between morale, life satisfaction, and resilience. An inverse relationship between mental health disorders, such as depression, and resilience was found (Hardy et al., 2004; Wagnild & Young, 1990). Nygren and colleagues (2005) found that mental health was correlated with resilience in women, but not men. Mehta et al. (2007) found that age influences the relationship of apathy, resilience, and disability with depression. Specifically, Mehta et al. (2007) found that with increasing age, resilience seems to lose importance with regard to late life depression. Lee, Brown, Mitchell, and Schiraldi (2008) found that optimism and self-esteem were significant predictors of resilience in both Korean mothers and daughters who immigrated to the United States. Recently, Lamond et al. (2009) found that emotional health, self-rated cognitive function, optimism, days spent with family and friends, and self-rated successful aging were most likely to predict resilience levels in a sample of community-dwelling older women. Many qualitative studies of older adults found relationships between positive attitudes, such as optimism, and fewer feelings of depression, and

well-being (Easley & Schaller, 2003; Hinck, 2004; Kinsel, 2005; Wagnild & Young, 1990; Yoon & Lee, 2007).

Resilience levels have been found to be associated with incomes levels in some studies. Wagnild (2003) compared income and resilience in 3 different samples and found lower income to be associated with lower resilience in two samples, but not the third. Hardy and colleagues (2004) found that higher incomes were associated with higher resilience levels.

Resilience has been studied in community-dwelling older adults and strong physical and mental health as well as strong social networks have been found to be associated with higher resilience levels. No studies have specifically addressed differences in resilience levels among those living in rural, suburban, or urban locations. Additionally, studies have not addressed whether the relationship of resilience and protective factors, specifically level of physical and mental health, strength of social networks, and socio-demographic factors, vary according to location. Research is needed to determine if the location in which older adults reside affects their resilience levels.

METHOD

Sample and Procedure

Data were pooled from two studies. The first study obtained data from a rural population (Wells, 2009). The second study, which was a replication of the first, obtained data from urban and suburban populations. Systematic sampling was used to randomly select adults age 65 years and over from voter registration lists of urban, suburban, and rural residents in New York State. The criterion used to determine the degree of rurality was the rural-urban continuum codes developed by the Economic Research Service (ERS), United States Department of Agriculture [USDA] (2003). The rural sample was obtained from the central and southern tier areas of New York State which are coded as 6, indicating that the county is non-metropolitan, has an urban population of 2,500 to 19,999, and is adjacent to a metropolitan county. The urban sample was obtained from voter registration lists of older adults who resided in zip codes within a mid-sized city in Central New York with a population of approximately 130,000. The suburban sample was obtained from two zip codes that border the city with one on the east side and one on the west side.

These cross-sectional studies were initiated after receiving approval from University Human Subjects Review Committees. Initially, a research packet containing items on demographics, resilience, social networks, and health status were mailed to 300 registered voters in the designated rural areas. In the subsequent study, 600 research packets were mailed to older adults who resided in suburban or urban zip codes. All participants were offered a chance to win a gift card to a retail store as an incentive to complete the forms. In the first study, follow-up postcards were sent to those who did not respond; however, this yielded few responses and was not repeated in the second study.

Instruments

The Resilience Scale (RS) was used to measure the level of resilience of the participants (Wagnild & Young, 1993). The RS was developed from the findings of a qualitative study of older women who had successfully adapted to a major loss (Wagnild & Young, 1990). These

women were found to have five characteristics which included: equanimity, self-reliance, perseverance, meaningfulness of life, and existential aloneness and the items on the RS address these characteristics. The RS has 25 items which are scored on a 7-point scale from 1, strongly disagree, to 7, strongly agree. Scores on the RS range from 25-175 and scores of 147-175 are considered high levels of resilience (Wagnild & Young, 1993). The Cronbach's alpha of the RS for this study was .94, which indicates strong internal consistency of the items in the scale.

The Short-Form revised (SF-12v2) Health Survey was used to measure health status (Ware, Kosinski, Turner-Bowker, & Gandek, 2002). The SF-12v2 is a norm-referenced self-reported measure of health status and a revised version of the original SF-12. The SF-12v2 has two health summary components which include the Physical Component Summary (PCS) and the Mental Component Summary (MCS). In this study, the Cronbach's alpha coefficients for each summary component of the SF-12v2 were as follows: .87 for the MCS and .89 for the PCS, which indicate strong internal consistency.

The Lubben Social Network Scale-Revised (LSNS-R) was the instrument used to measure the social networks of community-dwelling older adults (Lubben, Gironde, & Lee, 2002). Items on the LSNS-R are rated on a scale of 0 to 5 with 0 indicating 'never' or 'none' and 5 indicating 'always' or 'nine or more'. A total score of the 12 item LSNS-R is obtained by summing each of the equally weighted items. The total score ranges from 0-60, and the subscales of friends and family networks each range in scores from 0-30. Cut-points for the total score or subscale scores were not identified and higher scores indicate stronger social networks (Lubben et al., 2002). In this study, the Cronbach's alpha for the total LSNS-R was .90. For the family and friend subscales, the Cronbach's alpha was calculated to be .89 and .88 respectively. The total LSNS-R and the subscales demonstrated strong internal consistency in this study.

Data Analysis

Statistical analyses were carried out using SPSS[®] 14.0 (SPSS Inc., Chicago, Ill). The level of significance was set at .05. Initial descriptive analyses included frequencies, means, and standard deviations. Norm-based scoring software was used to calculate the physical component score (PCS) and the mental component score (MCS) of the SF-12v2. Chi-square analysis was performed to determine if there were differences between location and categorical data. Continuous data were analyzed using t-tests and one-way analysis of variance (ANOVA) to assess differences in resilience across demographic categories, including location as well as in the SF-12v2 subscales, and the LSNS-R total score and subscales. Pearson product-moment correlation coefficients were calculated to determine if there were associations between resilience and the other continuous variables. Multiple linear regression models were built to evaluate independent predictors of resilience with control for demographic factors. Initially all the predictor variables were entered into the model and a backward elimination approach was used, removing any variable with $\alpha > .15$. The final model included the predictors remaining in the first model as well as location. Beta coefficients and 95% confidence intervals for the beta coefficients have been shown as well as the coefficient of variance (R^2) for this model. Power analysis was performed using SamplePower v2 (software) using the R^2 from the regression analysis of the rural sample. With 2 covariates (age and gender) and 3 main variables (PCS, MCS and LSNS-R), an alpha of 0.05 and an effect size of $R^2=.38$, only 30 people were needed for a power of 80%.

RESULTS

In total, the sample consisted of 277 participants. The approximate overall return rate was 31%. The majority of participants were female (53%), married (60%), and not employed (80%). The mean age of the participants was 75 years. Sixteen participants omitted their income level and three omitted their age. Demographic characteristics of participants according location are shown in Table 1.

Table 1. Demographic Characteristics of Participants

	Suburban n (%)	Urban n (%)	Rural n (%)	Pearson Chi- square Significance
Location	95 (34%)	76 (27%)	106 (38%)	
Gender				P=.11
Male	43 (45%)	29 (38%)	57 (54%)	
Female	52 (55%)	47 (62%)	49 (46%)	
Marital Status				P=.00
Single	5 (5%)	8 (10%)	8 (8%)	
Married	65 (68%)	35 (46%)	67 (63%)	
Divorced	3 (3%)	15 (20%)	4 (4%)	
Widowed	22 (33%)	18 (24%)	27 (26%)	
Employment Status				P=.35
Not working	78 (82%)	57 (75%)	85 (81%)	
Part-time	9 (10%)	14 (18%)	33 (12%)	
Full-time	8 (8%)	5 (7%)	10 (10%)	
Household Income				P=.00
<10,000	2 (2%)	15 (21%)	6 (6%)	
10-24,999	18 (20%)	18 (25%)	31 (31%)	
25-34,999	14 (16%)	9 (13%)	23 (23%)	
≥35,000	56 (62%)	30 (42%)	39 (39%)	
Education Level				P=.00
Some HS	2 (2%)	8 (11%)	6 (6%)	
HS degree	34 (36%)	39 (51%)	64 (60%)	
College	37 (40%)	12 (16%)	14 (13%)	
Graduate	21 (22%)	17 (22%)	22 (21%)	

The mean resilience level of the entire sample was 148 and no differences were found in location. Table 2 contains the results of one-way ANOVA for location with age, resilience, social networks consisting of friends and family, and physical and mental health status. The only statistical difference was found between location and social networks consisting of family.

Using Pearson's correlation coefficient, none of the socio-demographic factors (age, gender, income, education, marital status, and employment status) were found to be significantly correlated with resilience. The relationship between the family and friend subscales of the LSNS-

Table 2. ANOVA results for location with age, resilience, social networks, and physical and mental health status

	Suburban	Urban	Rural	F	Significance
Age					
Mean (SD)	76 (7)	74 (8)	75 (6)	.73	p=.48
Resilience					
Mean (SD)	148 (17)	147 (21)	149 (18)	.46	p=.63
Social networks (family)					
Mean (SD)	18 (5)	17 (7)	20 (6)	3.62	p=.03
Social networks (friends)					
Mean (SD)	16 (6)	17 (6)	17 (6)	1.29	p=.28
Physical health (PCS)					
Mean (SD)	44 (13)	43 (13)	42 (11)	1.06	p=.35
Mental health (MCS)					
Mean (SD)	54 (8)	53 (8)	54 (9)	.30	p=.74

R and resilience levels were both equally and weakly significantly correlated ($r=.21$, $p=.00$). Both physical (PCS) and mental health (MCS) status were correlated with resilience. The correlation between PCS and resilience was ($r=.23$), $p=.00$, while the MCS had a correlation coefficient of ($r=.42$), $p=.00$.

When all variables were entered into multiple regression models to predict resilience and a backward elimination method was used, four variables remained and included LSNS-R family subscale, household income, MCS, and PCS. Location was left in the final model because this was a primary variable of interest for the study. The linear combination of location, LSNS-R family subscale, PCS, and MCS was significantly related to resilience, $F(6,240)=13.9$, $p=.00$. The R^2 was .24 indicating that 24% of the variance of resilience levels can be accounted for by the linear combination of predictors. Higher perceived mental health status was the strongest predictor of resilience. The results of the final regression model for predicting resilience are included in Table 3.

DISCUSSION

In this cross-sectional study, the process of resilience was not explored; however, the level of resilience and significant associations with protective factors were identified. The mean resilience level of rural, suburban, and urban community-dwelling older adults, as measured by the Resilience Scale, was found to be 148, indicating high levels of resilience. The resilience level of older adults did not vary if they lived in a rural, urban, or suburban area. Although rural

Table 3. Final Regression Model for Predicting Resilience

Predictor Variables	Unstandardized <i>B</i> Coefficient	95% CI of <i>B</i>	<i>p</i> value
Rural to suburban	-1.96	(-6.90, 2.99)	.44
Rural to urban	-3.15	(-8.40, 2.10)	.24
LSNS family subscale	.55	(.19, .92)	.00
PCS	.35	(.17, .53)	.00
MCS	.83	(.58, 1.08)	.00
Income	-2.57	(-4.69, -.46)	.02

dwellers often face unique challenges related to limited access to healthcare due to distance and isolation (Long & Weinert, 1989), resilience level of rural dwellers is similar to those living in suburban and urban areas.

High levels of resilience have been found in other studies of older adults; however, location in which they resided was not identified (Nygren et al., 2005; Wagnild, 2003; Wagnild & Young, 1993). It does not appear that resilience levels decrease as one ages. Resilience levels may actually remain steady or increase as older adults gain from the challenges they cope with successfully; however, further research is needed to support this.

None of the socio-demographic factors except income were found to be significantly correlated with resilience. In regression analysis, higher income was found to be significantly associated with lower resilience levels. This is an unusual finding that is not supported in the literature (Hardy et al., 2004; Wagnild, 2003). A possible explanation for the finding in this study may be that data were collected when the economy was taking a downturn. Those with higher incomes were losing more money in the stock market than those with lower incomes. This may have affected resilience levels. Further research is needed to determine the relationship between income and resilience.

While this study did find a relationship between resilience and social networks consisting of friends and family, it was a weak relationship and only social networks consisting of family were found to significantly predict resilience in regression analysis. Within the Resilience Scale, self-reliance is a measure of resilience. Thus, those with high resilience levels tend to have high levels of self-reliance. In Chi-square analysis there were differences in strength of social networks and location. Rural dwellers had the strongest family networks. Urban dwellers were more likely to be divorced and not married than rural and suburban dwellers. These differences may partially explain why stronger family networks were found to predict resilience in regression analysis. This finding is somewhat surprising because it indicates that rural dwellers do not have less contact with family members than those living in other locations. Wells (2009) found that in rural older adults, high resilience levels were associated with social networks consisting of friends, but not family. This was thought to be due in part, to the fact that many young adults leave rural areas to attend college or find employment in urban areas which causes rural elders to rely on friends for support.

This study found that better perceived physical health status was associated with resilience, and this is well supported in the literature (Adams, Sanders, & Auth, 2004; Felten, 2000; Hardy, Concato, & Gill, 2004; Hinck, 2004; Montross et al., 2006; Wagnild, 2003).

Resilience and physical health were only weakly correlated in this study, indicating that declining health status may not reduce resilience levels dramatically. Nygren et al. (2005) found that physical health status and resilience were not related in Swedish adults age 85 years or older. Although older adults may experience decline in physical health, resilience does not always decline.

Better mental health status had the strongest association with high resilience levels, and several studies of older adults support this relationship (Easley & Schaller, 2003; Hardy et al., 2004; Hinck, 2004; Kinsel, 2005; Lamond, 2009; Lee, Brown, Mitchell, and Schiraldi, 2008; Mehta et al., 2007; Nygren et al., 2005; Wagnild, 2003; Wagnild & Young, 1990; Yoon & Lee, 2007). Mental health status appears to be an important aspect of resilience in older adults across rural, suburban, and urban locations. In the future, early identification of mental health problems and timely interventions may assist in building resilience of older adults; however, research is needed to support this.

LIMITATIONS

Mailed surveys may not have captured the true level of resilience of community-dwelling older adults. Using only self-reported measures to obtain data is a weakness of this study. The response rate of 31% is not unusual for mailed surveys; however, the sample may have been biased to those with high resilience levels may have been more likely to respond. Because the sample was obtained from areas in New York State, results may not be generalizable to other populations. In order to complete the surveys, subjects had to be able to read and have adequate visual acuity to complete the surveys. This may have excluded those with low literacy skills and poor visual acuity. In addition, the education level of the participants in the sample is higher than those in the population. Because participants had high levels of mental health status, those with poor mental health may have chosen not to complete the packets, due to fear of disclosing private information or because of lack of energy.

CONCLUSION

While the cross-sectional design of this study prohibited the identification of causal relationships, associations among the protective factors and resilience in relation to location were determined. Resilience levels were high in older adults despite whether they lived in rural, suburban, or urban areas. Strong social networks and good physical and mental health were important protective factors associated with high resilience levels across all locations. Resilience is an important concept that needs further study in the older adult population because it focuses on promoting wellness. Within the new healthcare reform law, there are provisions in Medicare reimbursement to support disease prevention and health promotion. Resilience is thought to moderate the negative effects of stress and promote adaptation (Wagnild & Young, 1993). Screening older adults for resilience levels may help identify those at risk for adapting poorly when exposed to stressors and perhaps early interventions can be initiated to help build resilience. Steinhardt, Mamerow, Brown, and Jolly (2009) found that using strategies to build resilience along with diabetic education were effective in helping African American adults with diabetes to have positive outcomes. Further research is needed to determine if interventions can effectively build resilience in those identified as having low levels to help promote adaptation during times of physical or emotional hardship.

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