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ORIGINAL PAPER

Is the Physical Environment Associated with Spiritual and Religious Coping in Older Age? Evidence from Brazil

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Abstract

In this cross-sectional Brazilian survey, we examined associations between aspects of physical environment (PE) and spiritual/religious coping (SRC) behaviors. Our studied sample was 77 nursing homes (NH) and 326 community-dwelling residents (CDRs). Aspects of the PE were measured using the environmental domain of the WHOQOL-BREF. SRC was assessed using the BRIEF SRC scale. The PE was significantly associated with positive SRC alone and differed between the two studied samples. "Feeling safe in daily life" and "having access to health services" were positively associated with positive SRC behaviors in NH residents. "Having access to information" and "adequate transport" were significant among CDRs. Positive SRC behaviors are influenced by PE and should be considered in geriatric and gerontology care.

Keywords Older people · Physical environment · Spirituality · Religion · Coping

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Introduction

The world is rapidly aging and the proportion of persons with 60 years or more is expected to double by 2050, particularly in developing countries (World Health Organization [WHO] 2015). Older persons experience significant transitions with age (Prince et al. 2015), such as coping with chronic illnesses and the loss of significant persons (Koenig et al. 2012; Pargament and Lomax 2013), changes in social roles (Charles and Carstensen 2010), retirement (Segel-Karpas et al. 2013), decline in physical health, and a decrease in older people's autonomy (Cornwell and Waite 2009).

In order to cope with these changes and their life transition, older adults use several strategies including spiritual and religious coping (SRC; Lucchetti et al. 2016; Pargament et al. 2011). SRC refers to the use of spirituality and religious behaviors to overcome problems and stressful life events (Pargament et al. 2011) and can be both positive and negative. Examples of positive SRC are solving one's problems in collaboration with God and searching for help and comfort in the religious literature or offering spiritual help to others. On the other hand, negative SRC can manifest as negative revaluation of God, negative behaviors against or believing that God is punitive. People who use negative SRC may feel that a benevolent "Higher Power" is permitting them to unnecessarily struggle or suffer or be punished (Pargament et al. 2000; Pargament et al. 2011).

Several studies have shown that having spiritual and religious beliefs may enhance physical and mental health and quality of life (QOL; Gonçalves et al. 2015; Koenig 2015; Peres et al. 2018; Panzini et al. 2017/Summerskill and Horton 2015; VanderWeele et al. 2017; Vitorino et al. 2016a, b, 2018b). SRC is associated with physical health, psychological well-being, socializing, and overall QOL, and reduced symptoms of depression and anxiety in older age (Koenig et al. 2012; Lucchetti, et al. 2016; Pargament et al. 2011; Vitorino et al. 2016a, b).

Despite this evidence, further studies are needed in order to investigate which factors may influence the SRC behaviors, particularly in different populations such as NHRs. Among several psychological and social factors, we found no studies assessing whether physical environmental factors could impact religious and spiritual coping behaviors. Subjective and objective characteristics of older people's physical environments (PEs) are resources that affect behavior and provide opportunities for aging well (Wahl et al. 2012).

In order to understand how the environment can influence behaviors, it would be appropriate to include groups with different PEs such as community-dwelling residents (CDRs) and nursing home residents (NHRs). Unlike CDRs, NHRs left the physical familiarity and comforts of their own home (Johannesen et al. 2004) and are coping with severe physical functional decline (Yen and Anderson 2012). Exercising everyday choices and preferences also heavily depends upon the opportunity that is offered by PE (Andresen and Puggaard 2008). NHRs also experience greater loneliness (Drageset et al. 2015), poorer QOL (Lai et al. 2015), and anxiety and depression (Drageset et al. 2015). These higher propensities

illuminate a need for examining how the PE influences SRC behaviors among older people living in NHs versus in the community.

Brazilian NHRs are seldom studied. Positive SRC has been deemed more important to the QOL of NHRs as opposed to CDRs (Vitorino et al. 2016a, b). Positive SRC has enhanced Brazilian NHRs' mental health (Vitorino et al. 2016a, b). There is some especially worrisome evidence that nearly 25% of Brazilian NHRs die 1 year after admission (Gorzoni and Pires 2011). The vast majority of older Brazilians (87.8%) consider themselves to be very religious (Zimmer et al. 2016). In this study, we examined the association between PE and SRC behaviors among Brazilian NHRs versus CDRs. We wanted to better understand what aspects of older people's PE are important to enhancing positive SRC.

Methods

Design and Ethical Considerations

This is a cross-sectional study including Brazilian NHRs and CDRs. Ethical approval for this study was granted by the Institutional Board Review of the Federal University of São Paulo, Brazil (#304.745). Further study details can be found in a previous publication (Vitorino et al. 2016a, b).

Data Collection

Data were collected from a convenience sample of NHRs between May and July 2011 in the state of Minas Gerais. Convenience sampling was used because so few (< 1%) older people in Brazil live in NHs (Institute for Applied Economic Research—IPEA 2011). Inclusion criteria were: (1) 60 or more years of age; (2) at least 6 months of residency; (3) no significant cognitive impairment; and (4) agreement to complete study questionnaires. We recruited 36 participants in the "Pouso Alegre" NH and 41 in the "Santa Rita do Sapucaí" NH. Registered nurses helped the primary investigator to identify potential participants. All potential participants consented to meet with the primary investigator, review a study information letter, and provide informed consent. NHRs completed questionnaires with the assistance of the primary investigator and a graduate research assistant. For NHRs having no formal schooling, survey questions were read out loud.

CDRs ($n = 326$) were randomly selected from a representative population of the two cities where NHR participants resided to maximize our ability to compare our two studied samples. The same inclusion criteria were used. Data were collected by the primary investigator and a graduate research assistant between September 2013 and March 2014 through door-to-door canvassing. Interested participants provided informed consent and completed a Mini-Mental State Examination (MMSE). The final sample size in Pouso Alegre and Santa Rita do Sapucaí was $n = 270$ and $n = 56$, respectively. Participants not meeting MMSE cutoff criteria (Brucki et al. 2003), based on their education, were debriefed.

Measures

Spiritual and Religious Coping (SRC) was measured using the 49-item BRIEF SRC scale (Panzini and Bandeira 2005). There are 34 positive SRC behavior items and 15 negative SRC behavior items. Positive SRC behaviors pertain to Transforming the Self (P1), Searching for Spiritual Help (P2), Helping another Person (P3), Positive Position before God (P4), Searching for Other Institutions (P5), Distancing through God/Religion/Spirituality (P6), and Searching for Spiritual Knowledge (P7). Negative SRC behaviors pertain to a Negative Revaluation of God (N1), Negative Position before God (N2), Dissatisfaction with Other Institutions (N3), and Reassessment of Negative Meaning (N4).

All behavioral items are measured on a 5-point Likert scale between 1 (not at all) and 5 (very much indeed). Likert scale scores are added to generate a total positive and negative SRC behavior score. Scores of 1.5 or less are considered 'insignificant' scores. Scores ranging from 1.51 to 2.5 are 'low' scores. Scores between 2.51 and 3.5 are 'average' scores. Scores ranging from 3.51 to 4.50 are 'high' scores. Scores ranging from 4.51 to 5.0 are 'very high' scores (Panzini and Bandeira 2005). The BRIEF SRC scale exhibits good psychometric properties among older Brazilians (Vitorino et al. 2018a). In this study, positive SRC Cronbach's alpha coefficients for NHRs and CDRs were $\alpha = 0.952$ and $\alpha = 0.809$, respectively. For negative SRC, these were $\alpha = 0.785$ and $\alpha = 0.671$.

Physical Environment

The PE was measured using the Brazilian version of the WHOQOL-BREF environmental domain (Group 1998). The WHOQOL-BREF is a 26-item instrument evaluating QOL (The WHOQOL Group 1998). These 26 items are housed across four domains: physical, psychological, social relationships, and the environment. The environment domain captures 8 aspects of the PE deemed relevant by older adults residing in 22 different countries worldwide. These aspects are: Q8: "How safe do you feel in your daily life?"; Q9: "How healthy is your PE?"; Q12: "Have you enough money to meet your needs?"; Q13: "How available to you is the information that you need in your day-to-day life?"; Q14: "To what extent do you have the opportunity for leisure activities?"; Q23: "How satisfied are you with the conditions of your living place?"; Q24: "How satisfied are you with your access to health services?"; and Q25: "How satisfied are you with your transport?" The Cronbach's alpha coefficient for the environment domain among CDRs was $\alpha = 0.635$. Among NHRs, it was $\alpha = 0.776$. Item responses reflect assessments over the past 2 weeks, on a 5-point Likert-type scale. The higher the Likert scale score, the higher the QOL (The WHOQOL Group 1998).

Other Variables

All study participants were asked about their age, gender, education, marital status, and perceived health. Perceived health was measured using the WHOQOL-BREF Global Question: "How satisfied are you with your health?" (The WHOQOL Group 1998).

Statistical Analyses

Data were analyzed using SPSS version 23. Descriptive analyses such as absolute and relative frequencies, means, and standard deviations (SDs) were undertaken of participants' sociodemographic characteristics and perceptions of the PE across our two studied samples. For comparative analyses, the level of significance applied for all the analyses was $p \leq 0.05$. The comparative inferential analysis of PE of NHRs and CDRs was performed by the Student's t test for independent samples. In a general linear model (GLM) regression analysis (Taylor 2011), place of residence, i.e., NHR versus CDR, interacted with participants' ratings of their PE taken from the WHOQOL-BREF. Age, perceived health, education, gender, and marital status were covariates. Positive and negative SRC behavior scores were adjusted for all 5 covariates and thus are marginal mean scores.

Results

A total of 403 Brazilian older adults were included (77 NH and 326 CDR). Table 1 describes our studied samples. There were far more male NHRs (49.4% vs 31.9% for CDRs, $p < 0.01$). Twice as many NHRs had no schooling ($p < 0.001$), and there were

Table 1 Community-dwelling and nursing home resident characteristics ($N = 403$)

	Community-dwelling residents *n* (%)	Nursing home residents *n* (%)
Gender		
Male	104 (31.9)	38 (49.4)
Female	222 (68.8)	39 (50.6)
Education		
No formal education	77 (23.6)	40 (51.9)
Has formal education	249 (76.4)	37 (48.1)
Marital status		
Never/divorced	158 (48.5)	74 (96.1)
Married	168 (51.5)	3 (3.9)
Has adult children		
Yes	298 (73.9)	39 (50.6)
No	105 (26.1)	38 (49.4)

Community-dwelling ($n = 326$) and nursing home ($n = 77$) residents

Table 2 Participants' scores for health satisfaction, physical environment, and spiritual/religious coping ($N = 403$)

	CDR mean (SD)	NHR mean (SD)	Group score comparisons[a]
Health Satisfaction			
How satisfied are you with your health?	3.59 (0.820)	3.81 (0.912)	−2.113*
Physical environment			
How safe do you feel in your daily life?	3.55 (0.871)	3.63 (1.050)	−0.679
How healthy is your physical environment?	3.59 (0.874)	3.97 (0.986)	−3.335**
Have you enough money to meet your needs?	3.47 (0.988)	3.03 (1.152)	3.350**
How available to you is the information that you need in your day-to-day life?	3.67 (0.933)	3.45 (0.967)	1.876
To what extent do you have the opportunity for leisure activities?	3.62 (0.881)	3.32 (1.185)	2.484*
How satisfied are you with the conditions of your living place?	3.39 (0.776)	4.06 (0.863)	−6.654***
How satisfied are you with your access to health services?	3.38 (0.817)	4.07 (0.644)	−6.927***
How satisfied are you with your transport?	3.47 (0.717)	3.59 (0.940)	−0.920
Spiritual/religious coping			
Positive spiritual/religious coping	3.57 (0.298)	3.04 (0.487)	9152***
Negative spiritual/religious coping	3.44 (0.402)	3.85 (0.505)	−6.59***

Community-dwelling residents ($n = 326$) and *NHR* nursing home residents ($n = 77$)

SD standard deviation

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

[a]Independent *t* test

Table 3 GLM regression analysis of positive spiritual/religious coping ($N=403$)

Independent variable	Multivariate F, df	Univariate B (S.E.)
Age[a]	0.283, 1	−0.001 (−0.005)
Gender (male = 1)[a]	1.882, 1	−0.048 (0.004)
Education (has formal education = 1)[a]	5.894, 1**	0.088 (0.002)*
Marital status (married before/married = 1)[a]	0.857, 1	0.026 (−0.003)
Perceived health (healthy = 1)[a]	7.687, 1**	0.056 (0.001)**
How safe do you feel in your daily life? * POR[b]	2.946, 2[c]	
NHRs		−0.015 (−0.002)*
CDRs		0.050 (0.000)
How healthy is your physical environment? * POR	1.293, 2	
NHRs		−0.064 (−0.002)
CDRs		0.014 (0.001)
Have you enough money to meet your needs? * POR	0.157, 2	
NHRs		0.016 (−0.001)
CDRs		−0.006 (−0.001)
How available is the information that you need in your day-to-day life? * POR	5.688, 2**	
NHRs		0.111 (−0.008)
CDRs		0.054 (0.001)**
To what extent do you have the opportunity for leisure activities? * POR	0.102, 2	
NHRs		−0.013 (0.005)
CDRs		0.005 (0.001)
How satisfied are you with the conditions of your living place? * POR	1.525, 2	
NHRs		0.061 (−0.003)
CDRs		−0.030 (0.003)
How satisfied are you with your access to health services? * POR	6.226, 2**	
NHRs		0.238 (−0.006)*
CDRs		0.016 (0.000)
How satisfied are you with your transport? * POR	9.969, 2***	
NHRs		−0.061 (0.011)
CDRs		0.096 (−0.001)**

CDRs community-dwelling residents ($n=326$), *NHRs* nursing home residents ($n=77$)

[a]Covariates

[b]*POR* place of residence

[c]$p=0.054$

*$p<0.05$; **$p<0.01$; ***$p<0.001$

more married CDRs (51.5% vs 3.9% for NHRs, $p<0.001$). Half of the NHRs had no children, compared to approximately 25% of the CDRs ($p<0.001$).

Table 2 shows the different perceptions of the PE and the coping scores for our studied samples. NHRs' scores were higher with respect to the overall health of their

PE, their satisfaction with the conditions of their living place, and their satisfaction with access to health services. CDRs had higher scores for having enough money to meet their needs and opportunities for leisure. On the other hand, the marginal mean score for positive SRC was significantly higher among CDRs ($X = 3.56$, SE = 0.02) versus NHRs ($X = 2.99$, SE = 0.07) and the marginal mean score for negative SRC was significantly higher ($p < 0.0001$) among NHRs ($X = 3.85$, SE = 0.09) versus CDRs ($X = 3.44$, SE = 0.02).

Table 3 presents the results of the multivariate GLM regression model, which was statistically significant ($F = 12.13$, $df = 21$, $p < .001$). There were some differences between groups. "How safe do you feel in your daily life?" and "How satisfied are you with your access to health services?" were statistically significantly associated with positive SRC behaviors in NHRs. On the other hand, "How available to you is the information you need in your day-to-day life?" and "How satisfied are you with your transport?" were significant among CDRs. Formal education and higher perceived health also enhanced positive SRC among both groups. All eight aspects of the PE were not statistically significantly associated with negative SRC behaviors among NHRs and CDRs, as was the case for all five control variables ($p = 0.09$ to $p = 0.88$).

Discussion

In this study, different aspects of the PE were associated with positive SRC behaviors among NHRs versus CDRs. These findings reinforce the role of the PE in the process of aging, as suggested by Lawton (Lawton 1977). In fact, people live out their lives and grow older in PEs, engaging day-to-day routines and self-care in environments that afford continuity and control, and good health (Wahl et al. 2012). Within this context, spirituality and religiosity should be considered an important part of geriatric and gerontological social care planning. Spirituality and religions are a particularly important part of day-to-day life in Brazil, especially among older people (Zimmer et al. 2016; Lucchetti et al. 2016).

Much work has established a link between positive SRC and good physical and mental health (Pargament et al. 2011; Vitorino et al. 2018b). Religious behaviors and spiritual beliefs also improve the intensity and frequency of good emotions, optimistic feelings, and social support (Pargament et al. 2011). Our novel findings specifically link the PE with positive SRC. Moreover, unique combinations of aspects of the PE enhanced positive SRC among participant NHRs and CDRs. Below, we will present some explanations.

"Feeling safe in daily life" was negatively associated with positive SRC behaviors among NHRs. NHRs' scores on physical safety were similar to CDRs' scores. NHRs were cared for by healthcare professionals 24 h a day, all visitors had to report to a reception area before approaching any residents, and NHRs were always accompanied on outings. Nurse managers were also readily available during work hours, and security officers were present around-the-clock. Perhaps, having felt safe for so long made NHRs less prone to engage in positive SRC. NHRs may not have felt as alone and at risk for harm and thus relied less on a

higher power for protection. In addition, the NHR participants were, on average, 7.1 years older than CDRs. Feeling unsafe can become more important to older people's mental well-being with age (Wu et al. 2015).

Higher satisfaction with access to healthcare services enhanced positive SRC behaviors among NHRs. Participant NHs did provide continuous access to registered nurses who administered medications. Nurse technicians and formal care providers assisted residents with washing, dressing, bathing, and eating. Both NHs were equipped with readily available psychologists, chaplains, nutritionists, and physiotherapists. Healthcare students were also present all year round. Brazilian CDRs face difficulties accessing public health services (Viana et al. 2015). In 2013, only 28% of all Brazilians could afford private healthcare services (Brazilian Institute of Geography and Statistics 2013). Public health services for older adults have been described as inadequate and insufficient (Pilger et al. 2013). Having continual access to a wide variety of health-related expertise and support services could have made NHRs more thankful. NHRs could have felt more drawn to connect with a higher power to express their gratitude. NHRs tend to be in poorer health than older adults living in their own homes due to their higher prevalence of chronic diseases and physical frailty (Prince et al. 2015). NHRs in this study reported far higher perceived health than CDRs. Unlike CDRs, NHRs had around-the-clock healthcare services and support at home.

Among CDRs, having access to information needed in their day-to-day lives enhanced positive SRC behaviors. With age, people invest more time and energy into close and intimate ties than peripheral ties (Carstensen et al. 2003). Older people in Brazil tend to live close to family, particularly in the smaller geographic areas like Santa Rita Sapucaí and Pouso Alegre (Melo et al. 2016). CDRs could have had greater opportunities to hear of family members' and friends' personal concerns. Among adults of varying age, family problems and health and financial worries have been associated with higher positive SRC behaviors (Iseselo et al. 2016; Lee et al. 2014). Brazil was also preparing for a presidential election at the time our study data were being collected. CDRs would have had unlimited access to television news or radio programs about the election. This could have aroused feelings of political and economic worry which CDRs handed over to a higher power.

Satisfaction with transportation enhanced positive SRC among CDRs. NHRs had continuous access to cars and drivers. We did not know whether CDRs were driving. We only knew that CDRs had to make their own transportation arrangements and generally had lower scores for transport adequacy. Limited transportation decreases social contact (Mezuk and Rebok 2008). In older age, having limited means of transportation can negatively impact mental health (Hardy et al. 2011; Satariano et al. 2012). Older people who stop driving are more prone to depression (Satariano et al. 2012). Perhaps, CDRs felt blessed when transportation was available. Each NH also contained a place of worship. To get to religious services or meetings, CDRs would need to arrange for transport. Pouso Alegre is a much larger and busier city than Santa Rita do Sapucaí with complex public transit systems and two-thirds of our CDRs lived in Pouso Alegre.

Demanding and/or stressful PEs can provoke negative behavioral responses among NHRs (Lawton 1987). In this study, negative SRC behaviors were significantly higher and more prevalent than positive SRC behaviors among NHRs. However, the PE was not significantly associated with negative SRC behaviors. Older people tend to move to a NH because of changes in levels of care of financial constraints experienced by family (Lini et al. 2016; Perry et al. 2014). In Brazil, families consider NHs a last resort; thus, less than 1% of older people live in NHs (IPEA 2011). Perhaps, this is why negative SRC behaviors had little to do with NHRs' perceptions of their PE. NHRs may have also had time to psychologically adapt to their PE given that their average duration of residency was 9.3 years (Vitorino et al. 2016a, b). Negativity toward a higher power is also not culturally condoned coping behavior (Pargament et al. 2011; Zimmer et al. 2016).

All these findings add new knowledge. We have begun to identify significant links between positive SRC and the PE, and unique combinations of significance to NHRs and CDRs. However, our study was descriptive as opposed to causal, which is a potential limitation since positive SRC may influence older Brazilian's perceptions of their PE as well. Another limitation is that we used the environment section of WHOQOL-BREF and not a questionnaire dedicated entirely to physical environment. Within the WHOQOL-BREF, generic wording is used in item 13: "How available is the information that you need in your day-to-day life?". We do not know what kind of information enhanced CDRs and NHRs' positive SRC behaviors. In qualitative interviews, we can ask NHRs and CDRs about the day-to-day information that they draw upon to strengthen their positive SRC behaviors. This could be a religious text or an Internet resource or a television show.

Despite these potential limitations, our findings emphasize that NHRs and CDRs positive SRC can be influenced by the PE in which they reside. We have identified changeable aspects of the PE for geriatric and gerontological social care planners. Some safety measures already in place in the NHs we recruited from included high outdoor fences, mandatory guest registration, and bonded staff. Other day-to-day safety-enhancing activities could include routinely asking NHRs how safe they feel, particularly newer residents, and ensuring that security staff are especially visible to residents. Care providers can easily communicate to residents that safety is a priority, particularly in the evening and at night. Religious leaders such as pastors, priests, and parish nurses from prior places of worship, and NH chaplains could encourage and practice positive SRC with NHRs. Providing new NHRs with access to information about available health services, including healthcare provider visit and health promotion activity schedules, is another cost-efficient activity.

Access to day-to-day information and adequate transportation was significant among CDRs. Post-secondary institutions in Brazil are starting to offer free or low-cost classes to help older people use tablets, smartphones, and computers. Google and YouTube offer free spiritual and religious messages, music and videos, and downloadable apps for staying connected with spiritual and religious communities. Those with limited mobility can especially benefit from this virtual world. The free pass on public transport, guaranteed by the Brazilian Statute of the Elderly, can help CDRs get to and from places of worship. In Brazil, family and religious communities typically share this information with CDRs.

Conclusion

Positive SRC enhances the physical and mental health of older people. Positive SRC behaviors in this study were significantly associated with a number of aspects of the PE that we recommend geriatric and gerontological social care planners and NH managers consider. Physical safety and access to health services were important to NHRs. Access to information and adequate transportation were important to CDRs.

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Compliance with Ethical Standards

Conflict of interest The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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