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Convoys of social support in Mexico: Examining socio-demographic variation

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Abstract

The Convoy Model suggests that at different stages of the lifespan the makeup of the social support network varies in step with developmental and contextual needs. Cultural norms may shape the makeup of social convoys as well as denote socio-demographic differences in social support. This study examines the social convoys of adults in Mexico. Specifically, it examines whether social network structure varies by age, gender, and education level, thus addressing the paucity of research on interpersonal relations in Mexico. A sample of 1,202 adults (18–99 years of age) was drawn from the Study of Social Relations and Well-being in Mexico. Hierarchical regression analyses indicated older adults had larger, more geographically proximate networks with a greater proportion of kin but less frequent contact. Women had larger, less geographically proximate networks with less frequent contact. Less educated individuals had smaller, more geographically proximate networks with more frequent contact and a greater proportion of kin. Age moderated gender and education effects indicated that younger women have more diverse networks and less educated older adults have weaker social ties. This study highlights socio-demographic variation in social convoys within the Mexican context, and suggests implications for fostering intergenerational relationships, policy, and interventions. Future research on Mexican convoys should further explore sources of support, and specifically address implications for well-being.

Keywords

culture; Mexico; social support; social networks; lifespan; aging

Introduction

It is well-established that social relationships are associated with development and well-being across the lifespan (Ainsworth, 1989; Dykstra, 2010; Furman & Buhrmester, 1985; Haller & Hadler, 2006; Qualls, 2014). The composition and function of social support networks vary as individuals adapt to their changing context and life circumstances (Antonucci, Birditt & Ajrouch, 2011; Carstensen, Isaacowitz, & Charles, 1999). Norms and

expectations related to social relationships vary across cultures (Kagitcibasi, 2005). More specifically, cultural worldviews may directly affect social network composition (Vaisey & Lizardo, 2010). Much of the cultural work on social relations has been conducted within Western, developed nations by examining how social relations vary by race and ethnicity (e.g., Ajrouch, Antonucci, & Janevic, 2001; Kim & McKenry, 1998; Vega, 1990). While some research has examined social relations across cultures, e.g. Japan, Lebanon, Germany, and China (Ajrouch, Abdulrahim, & Antonucci, 2013; Antonucci, Akiyama, & Takahashi, 2004; Fiori, Antonucci, & Akiyama, 2008; Fiori, Smith, & Antonucci, 2007; Fung, Stoeber, Yeung, & Lang, 2008), very little of this research has examined social relations within Hispanic cultures, such as Mexico. Given increasing rates of global aging, the cross-cultural examination of social support networks across the lifespan is warranted, particularly within Latin American contexts (Wong & Palloni, 2009). In an effort to advance the study of social relations in Mexico, we examine convoys of social relations over the life course with a particular focus on patterns by age, gender, and socioeconomic status (SES).

Theoretical Perspective

The current research is grounded in the Convoy Model of Social Relations which argues that people are surrounded by a multitude of social partners who support them across the lifespan (Antonucci et al., 2011; Kahn & Antonucci, 1980). Convoys are thought to be dynamic and lifelong, changing in some ways, but remaining stable in others, across time and situations. The structure of the social network, in terms of the number of relationships and specific characteristics of the network members, varies depending on personal (e.g., age, and gender) and situational characteristics (e.g., roles, and context) (Antonucci, 2001). A unique focus of the Convoy Model is its lifespan perspective. At the core of the model is the ability of the convoy to change over time and to vary by generation (i.e., across cohorts) and age (i.e., within the individual over time). The Convoy Model suggests that at different stages of the lifespan (e.g., childhood, young adulthood, or old age), the makeup of the convoy varies depending on the developmental and contextual needs of a given life stage. Similarly, Socioemotional Selectivity Theory posits that because of the more limited time perspective of late life, by older adulthood social networks become smaller and more family-focused (Carstensen et al., 1999). Carstensen et al. (1999) suggest that as people approach old age and death they become more selective about the relationships in which they invest their time and emotional resources.

In addition to age as a key personal characteristic influencing the social convoy, in recent iterations of the Convoy Model, culture is also considered a key situational element that affects social convoys (Ajrouch, et al., 2013; Antonucci, Ajrouch, & Abdulrahim, 2014). Cultural norms may shape expectations for the makeup of social relations (Kagitcibasi, 2005; Vaisey & Lizardo, 2010). Moreover, cultural norms may denote age, gender, and SES differences in social relations (e.g., cultural norms of age at marriage, and cultural expectations of receiving instrumental support in situations of financial strain). Informed by these theoretical perspectives, the goal of the current study is to examine convoys of social relations over the life course within the Mexican cultural context with a particular focus on patterns by age, gender, and socioeconomic status (SES). Specifically, our objective is to

examine the moderating effects of age in the association between (a) gender and social network structure, and (b) SES and social network structure.

Mexican Context

Despite the strong body of research on social relations in developed nations (Dykstra, 2010; Antonucci, 2001; Qualls, 2014), much less is known about social relations in developing nations. The makeup of social networks across Western (Wenger, 1997) and Asian (Antonucci, Akiyama & Birditt, 2004) nations is quite similar, but very little data are available from Africa and Latin America. An examination of social relations across the lifespan in Mexico serves to enlighten our understanding of the role of social relations in a distinct cultural context, which in turn would enhance our understanding of the importance of social relations in human development (Antonucci et al., 2011). As a neighbor of the United States, Mexico is increasingly influenced by US culture, as well as by unique contextual factors such as economic strife, violence related to drug trafficking, and transnational migration (Diaz-Loving, 2006). The juxtaposition of Mexico, as a nation experiencing development and globalization while attempting to maintain traditional family, and community values makes Mexico a particularly interesting cultural context for studying patterns of social convoys.

Early research on social relations in Mexico noted the importance of extended family relationships, neighborhood and community, and fictive kin (Wolf, 1956). Familism, the view of family as the central core of life, is suggested as an essential feature of Mexican culture (Sabogál et al., 1987; Vega, 1990). Because of this strong sense of familism, there is an expectation that Latinos will experience more support from their families than perhaps individuals from other cultures (Halgunseth, 2004). Recent research supports these ideas by suggesting that Mexicans rely primarily on immediate and extended family for social support (Diaz-Loving, 2006), however, large-scale examinations of Mexican social relations are limited. Findings from the Mexican Health and Aging Study (MHAS) suggest high rates of intergenerational co-residence (Wong & Palloni, 2009) and support exchanges (especially financial) (Gomes, 2007); yet, instrumental support between generations (i.e., financial, caregiving) is common even when generations live in different households (Vos, Solís & Oca, 2004). More recent work identifies distinct patterns of social networks among Mexican older adults, and suggests that more diverse networks, with greater contact frequency are associated with better well-being (Dobova, Pérez-Cuevas, Espinosa-Alarcón & Flores-Hernández, 2010). This evidence is beneficial in furthering the understanding of Mexicans' intergenerational relations in late-life; however, further study is needed to understand the dynamics of Mexican interpersonal networks across the lifespan.

Age, Gender, and SES Differences in Social Network Structure

Structural components of the social network, such as size, composition, proximity and contact frequency, may vary by age, gender, and SES. Throughout adulthood, the increased likelihood of major life transitions such as marriage, parenthood, and grandparenthood would suggest increasingly family-centered support networks with advancing age. Yet, Western theory (i.e., Carstensen et al., 1999) and research (i.e., Due, Holstein, Lund, Modvig & Avlund, 1999; English & Carstensen, 2014) suggest that with increasing age, overall

social network size decreases, while the number of close relationships remains relatively stable across the life-span until very old age. In the Mexican context, age differences in convoy structure may be likely due to greater familism among older generations (Sabogal, et al., 1987) and increased need for family support at the end of life (Luong, Charles & Fingerman, 2010). In general, age differences are evident with older adults having less frequent contact with and lower geographic proximity to social network members (Ajrouch et al., 2001; Cornwell, Schumm, Laumann & Graber, 2009; Hank, 2007). In the Mexican context, due to high rates of intergenerational co-residence, age differences in network proximity and contact frequency may not be consistent with findings from the US. Given the greater impact of globalization on younger generations, specifically the acceptance of Western/US values, generational differences are likely evident. For instance, younger Mexicans are more likely than older Mexicans to endorse values of independence (Mañago, 2014), which may lead to living independently from the extended family. In the current study, age differences in social network structure are hypothesized such that older Mexicans will have larger, more kin-centered networks with greater geographic proximity.

Gender differences in social relationships are evident throughout adulthood in most cultures. Within Western contexts, women tend to emphasize confiding and emotional support in their social relationships, whereas males tend to focus on having similar preferences for daily activities or instrumental support (Antonucci, 2001). Women report larger networks with more intimacy and closeness (Cornwell, 2011; Haines, Beggs & Hurlbert, 2008), often thought to be related to kinkeeping. Yet, the gender effects on proportion of kin in the network are inconsistent (Cornwell, 2011). Men may be more vulnerable in times of crisis because they tend to rely solely on their wives for intimacy, whereas women rely on multiple confidants (Cutrona, 1996). Moreover, women are likely to have more diverse networks than men (e.g., Fiori & Jager, 2012), suggesting that men have less balanced network composition. Geographic proximity tends not to differ between men and women; however, women consistently report greater frequency of contact with their social networks than do men (e.g., Cornwell et al., 2009; Mezuk & Rebok, 2008). This gender difference in contact frequency is thought to be a result of women's gender roles that prescribe norms of maintaining frequent contact, as the "kinkeeper". Within the Mexican context, traditional gender roles are strong (i.e., machismo and marianismo) (Franco, 1989; Gutmann, 2006); thus, similar gender effects are expected as those documented in other cultural contexts. In the current study, gender differences in social network structure are hypothesized such that Mexican women will have larger, more kin-centered networks with greater contact frequency than men.

Social relations have been found to vary by SES in the United States (Antonucci, Ajrouch & Janevic, 2003; Krause, 1999). Older adults with lower education levels, considered a reasonable approximation of SES, have smaller networks consisting of a greater proportion of family members (Cornwell et al., 2009). Moreover, individuals with lower levels of education, income, and occupational status tend to have fewer social resources (Shaw, Krause, Liang & Bennett, 2007). Research carried out in the United States suggests that SES influences social relations (Krause & Borawski-Clark, 1995; McPherson, Smith-Lovin & Cook, 2001); low SES individuals tend to have smaller networks composed of more family. Mexican convoys may not be consistent with these findings due to larger family sizes among

Mexicans of lower SES. Geographic proximity and contact frequency may vary due to socio-economic status, but findings are inconsistent. Some research suggests individuals with low income have more geographically proximate social networks with more frequent contact (Hank, 2007), yet others find no association between SES and geographic proximity (Ajrouch et al., 2001) or contact frequency (Cornwell et al., 2009). Of note, socio-demographic effects on proximity and contact frequency are found to vary across cultures (Hank, 2007). Because Mexicans experience great economic disparities and high poverty rates (INEGI, 2010), previous findings from Western nations likely are not applicable. Low SES in Mexico suggests less geographic mobility of individuals, which may extend to social network members as well. In the current study, SES differences in social network structure are hypothesized such that less educated Mexicans will have more kin-centered and geographically proximate networks with greater contact frequency.

Intersection of Age with Gender and SES

While age, gender, and SES are interlocking personal characteristics that may independently shape the experience of social networks, the effects of gender and SES on social networks may also vary by age (Ajrouch, Blandon & Antonucci, 2005). It appears that in research to date, gender differences have not been documented in social convoys among Mexican young adults; however, Montes de Oca (2006) identified gender differences in the social networks of aging Mexican men and women similar to patterns in the US. Older Mexican women had large, diverse and emotionally intimate social networks, whereas older men had smaller, less integrated networks, and seemed less involved in their support networks. Older generations of Mexicans tend to adhere more strictly to traditional gender roles (Chant & Craske, 2007), which may account for gender differences in social relationships in late-life. Thus, it is hypothesized that the influence of gender on social networks would be moderated by age, in that for older Mexicans the size, proportion of kin, and contact frequency of social networks would vary by gender, but not necessarily for younger Mexicans.

Research among Mexicans asserts a strong link between SES and family support (poorer individuals rely more on family support), but that older adults rely on family support regardless of SES (Montes de Oca, 2010). Thus, the association between SES and social relations may be less pronounced for older adults because of their increased need for resources and family support for care despite their socio-economic status. Additionally, while education offers opportunities to make social connections with diverse people beyond the geographic limitations, age may restrict those opportunities. For example, those who are better educated and therefore have wider employment opportunities may see those opportunities and consequent social connections, disappear with age. Instead of interacting with a greater variety of people in the work place they are now restricted to those within geographic proximity, thus increasing their proximity to network, but reducing the size and relational diversity of their networks. Thus, it is hypothesized that the influence of education level on social networks would be moderated by age, in that for younger Mexicans the size, proportion of kin, and proximity of social networks would vary by education level, but not necessarily for older Mexicans.

Present Study

The current study extends research on social relationships across the lifespan cross-culturally by addressing the paucity of research on interpersonal relations in Mexico. The overarching goal of the present study is to examine social convoys among Mexican adults by identifying associations among age, gender, and SES and social network structure. The following hypotheses were examined:

1. It is hypothesized that convoy structure (including network size, proportion of kin geographic proximity, and contact frequency) would vary by age, gender, and education level. Similar to patterns in the US (Ajrouch et al., 2001; Cornwell et al., 2009), it is hypothesized that younger adults would have smaller, but more diverse networks with less geographic proximity than older adults. Due to traditional gender roles, it is hypothesized that women, as kinkeepers, would have larger networks, a greater proportion of kin, and more frequent contact with support partners. Finally, it is hypothesized that lower SES would be associated with more family-centered, geographically proximate networks with more frequent contact due to lower mobility.
2. Given the intersection of age with gender and SES in predicting social relations in other cultures (Ajrouch et al., 2005; Antonucci et al., 2014), it is hypothesized that age would moderate the effects of gender and education level on convoy structure within the Mexican context. First, more pronounced gender differences in older adults' social relationships due to stricter adherence to traditional gender roles among older generations are hypothesized. Specifically, it is anticipated that older women would have larger and more kin-centered networks than older men, but that there would be fewer gender differences among younger adults. Second, more family-centered and geographically proximate social networks among younger adults of low SES as compared to those of high SES are hypothesized. It is anticipated that older adults would have similar convoy structure regardless of education level due to the increased need for geographically proximate and family-centered support in late-life (e.g., caregiving) across the socio-economic spectrum.

An examination of social relations in this unique cultural context will extend theoretical understandings concerning social relations. Specifically, this research further illuminates the intersection of culture, age, gender and SES with regards to social relations.

Method

Sample

Data for the current study are drawn from the Study of Social Relations and Well-being in Mexico collected in 2009 by Fuller-Iglesias and Antonucci. That survey included in-depth measures of social relations and support quality, as well as measures of physical and psychological well-being. A sample of 1,202 adults (18–99 years of age) was selected using stratified area probability methods. The sample was stratified by age and gender in accordance with the most recent Mexican census data (INEGI, 2005), in order to achieve a

representative sample from the Toluca metro area. In the actual population, older adults (60+) comprise only 13 percent of the population. Because of the interest in examining them specifically, older adults were oversampled to 33% of the sample. Toluca is a metropolitan area of approximately 1.5 million inhabitants located 65 kilometers west of Mexico City. The data were collected by professional interviewers via in-home interviews that lasted approximately 60 minutes. The survey consisted of a battery of measures and scales that have been validated with Spanish-speaking populations of Mexican origin, as well as original measures that were translated and back-translated into Spanish to ensure accuracy. The survey response rate was 52.5% of eligible individuals contacted. This rate, while not ideal, is consistent with household surveys in Mexico (Flores-Macias & Lawson, 2008). Low rates can be accounted for by global trends towards declining response rates, lack of exposure to academic research due to low mean education levels, lack of availability due to a job market that requires individuals to work long hours with long commutes, and the current climate of fear and mistrust in Mexico – the latter is due to high rates of societal violence making potential respondents reluctant to share information about their lives with a complete stranger (Groves, 2006; Groves & Couper, 2012). Moreover, due to financial restraints, it was not possible to provide financial incentives to the individuals surveyed.

Measures

Socio-demographic predictors—A description of the sample is provided in Table 1. Respondents were asked the year, month, and day of their birth, and age was calculated from the given birthdates. *Age* was used as a continuous variable. The mean age of the sample was 48.4. For post-hoc analyses, the sample was divided into theoretically derived (i.e., Elder, Johnson & Crosnoe, 2003) age groups of young adults (aged 18–35; $N = 413$), middle-aged adults (aged 36–60; $N = 379$), and older adults (aged 61 and over; $N = 410$) which fortunately also broke the sample into approximately equal thirds. Respondents indicated their gender as either “male” or “female”. Responses were coded into a dichotomous variable (0 = male, 1 = female) called *female*. Approximately half (52%) of the sample was made up of females. Respondents were asked the last year of school that they had completed. *Years of education* was measured as a continuous variable with a possible range of 0 to 17+ years. The majority of the sample had less than a high school education; the mean years of education of the sample was 7.5 ($SD = 5.2$).

Social network size—The hierarchical network mapping procedure developed by Antonucci (1986) was used to measure social network characteristics of respondents. After being told that they were going to be asked questions about people who were important in their life right now, respondents were shown a diagram consisting of 3 concentric circles. In the center of the smallest circle was the word “you.” Respondents were then asked “Beginning with the people you feel closest to, is there any one person or persons that you feel so close to that it’s hard to image life without them?” The first names of designated persons were then placed into the innermost circle of the diagram. Next, respondents were asked “Are there any people to whom you may not feel quite that close, but who are still very important to you?” The names of designated persons were then placed in the middle circle. Finally, respondents were asked “Are there people whom you have not already mentioned who are close enough and important enough in your life that they should also be

placed in your diagram?” The names of designated persons were then placed in the outer circle of the diagram. Network size was a count of the total number of people across all three circles in the network diagram. Participants’ network sizes ranged from 0 to 35. For (up to) the first ten network members, respondents then provided information about their physical proximity, frequency of contact, and relationship with each person.

Proportion of kin in network—Proportion of kin refers to the percentage of the close social network that consists of kin. Respondents reported their relationship to the first ten people in their network. Non-family was coded as 0, and family was coded as 1. Proportion of kin was calculated by dividing the number of family by the total number identified in the first ten.

Geographic proximity—Geographic proximity refers to the proportion of network members who live in close proximity to the respondent. The question “Does [individual] live less than an hour from you by car?” was asked about the first ten people listed in the social network (0 = no, 1 = yes). The average proximity was the mean score across relationships (range 0 to 1), with higher scores indicating a greater proportion of the network living in close proximity.

Contact frequency—Contact frequency refers to the frequency of contact by any means (e.g., in person, phone, etc.) with social network members. The question “How often do you maintain contact with [Individual]?” was asked for the first ten people listed in the social network. Response categories were: daily; weekly; once or more a month; once or more a year; or irregularly. The contact frequency variable was created by calculating the mean score across relationships; higher scores indicated more frequent contact with the network.

Results

Descriptive analyses were conducted first to provide background information on the network characteristics. Then, the associations between socio-demographic factors and social network characteristics were examined using hierarchical linear regression analyses. Models were tested separately by social network characteristics (network size, proportion of kin, geographic proximity, and contact frequency). In each model, the first step included age, gender, and education level predicting the outcome variable; the second step added the mean-centered interaction of age and gender; and the third step added the mean-centered interaction of age and education level. To explore significant interactions, regression models were performed post-hoc to test the significance of the slopes within levels of the moderating variable (i.e., age).

Description of Social Relations

Table 1 presents mean scores and standard deviations for demographic and social network characteristic variables. The mean network size was 7.6, with a range of 0–35, indicating that most people in the sample have a small to moderate sized social network. On average 87% of the first ten network members were immediate or extended family members. The majority of a person’s network members, 79%, on average live less than an hour driving

distance from them. The mean frequency of contact with (up to) the first ten people listed was 4.3, indicating that on average individuals were in contact with their network members daily or a few times a week.

Socio-demographic Differences in Social Relations

Results of hierarchical regressions addressing both Research Question 1 (Step 1) and Research Question 2 (Steps 2 and 3) are presented in Table 2.

Network size—There were significant main effects indicating that being older, being female, and having a higher education level were associated with having a larger social network. These main effects represented 2% of variance in network size. As depicted in Figure 1A, age significantly moderated the association between education level and network size, representing an additional 1% of variance in network size. Post-hoc analyses indicate that for young individuals, education level was not associated with network size ($\beta = -.01$, $p > 0.10$). However, among middle-aged ($\beta = 0.11$, $p < 0.05$) and older individuals ($\beta = 0.13$, $p < 0.05$) higher education level was associated with having a significantly larger network.

Proportion of kin—Older adults had significantly more family members in their network than younger adults. The significant association between education level and proportion of kin suggested that individuals with higher education levels have fewer family members in their networks. Age and education effects represented 15% of the variance in proportion of kin in network. Contrary to expectations, gender was not significantly associated with proportion of kin in the network. However, as depicted in Figure 1B, the interaction between age and gender was significant in predicting proportion of kin, representing an additional 1% of variance in proportion of kin. Post-hoc analyses indicate that for young individuals, men reported a significantly higher proportion of kin in network than women ($\beta = -.25$, $p < 0.01$). However, among middle-aged ($\beta = 0.05$, $p > 0.10$) and older individuals ($\beta = 0.04$, $p > 0.10$), gender was not associated with proportion of kin.

Geographic proximity—Age was positively associated with geographic proximity, indicating that older adults report greater geographic proximity to their social networks. Males have a greater percentage of network members living in close geographic proximity than females. Individuals with lower education levels had significantly greater geographic proximity to their networks. These main effects represented 4% of variance in geographic proximity. Age significantly moderated the association between gender and geographic proximity (Figure 2A). Post-hoc analyses indicate that for young individuals, gender was significantly associated with geographic proximity such that men had greater network proximity than women ($\beta = -.23$, $p < .001$). However, among both middle-aged ($\beta = -.06$, $p > 0.10$) and older individuals ($\beta = .02$, $p > 0.10$), gender was not associated with geographic proximity. As depicted in Figure 2B, age significantly moderated the association between education level and geographic proximity, representing an additional 1% of variance in network proximity. Post-hoc analyses indicate that for young individuals, education level was not associated with geographic proximity ($\beta = .05$, $p > .10$). However, among both middle-aged ($\beta = -.11$, $p < 0.05$) and older individuals ($\beta = -.19$, $p < 0.001$), more years of education was associated with lower geographic proximity.

Contact frequency—Age was negatively associated with frequency of contact, indicating that older individuals have less frequent contact with their social networks. Males reported more frequent contact with their network than females. Years of education was negatively associated with contact frequency, indicating that individuals with higher education levels had less frequent contact with their social network members. These main effects represented 2% of the variance in contact frequency. Interactive effects for contact frequency were not significant.

Discussion

The current study explores major facets of the Convoy Model (Kahn & Antonucci, 1980) within the unique Mexican cultural context. Overall, Mexican social convoys were intermediate in size, similar to convoys in the United States (Antonucci, Akiyama, & Birditt, 2004), larger than convoys in Lebanon (Ajrouch et al., 2013), and smaller than convoys in China (Fung et al., 2008). Moreover, Mexican social convoys were composed primarily of family, confirming the expectation that Mexicans rely mostly on family members for support due to familistic values (Diaz-Loving, 2006; Halgunseth, 2004). The overwhelming geographic proximity of social networks reflected the Mexican cultural norm of relying on social support from individuals who live in the same home or on neighboring land, even in this urban context; related to this close geographic proximity Mexican adults generally maintained contact with their social network partners daily or weekly. Yet, discussed further below are interesting age effects that emerged.

Socio-demographic Implications

As predicted, there were generational differences. Older adults reported less frequent contact with and a greater proportion of kin in their networks. Both of these findings suggest that younger generations are shifting away from traditional Mexican social support norms. Although across age groups the Mexican social support network remains overwhelmingly composed of family members, younger generations have begun to include more non-family members (friends, neighbors, etc.) as part of their support network. Moreover, despite evidencing less geographic proximity, younger adults maintained more frequent contact with their social networks, likely indicating a greater utilization of technology (i.e., telephones, internet) to maintain frequent contact with social partners (Katz, 2008).

Gender differences in convoys may reflect gender roles within the Mexican context, wherein men act as the primary breadwinner and women act as kin-keepers (Diaz-Loving, 2006). Females' larger networks are perhaps due to their tendency to incorporate more extended family members in their network. However, given the lack of gender differences in proportion of kin, women also include more friends, indicating that women may be more adept at forming and maintaining social support ties in general. In contrast, men more typically maintain a small but geographically proximate network with frequent contact. Practically speaking, because men typically work much longer hours, they may have less time to focus on maintaining larger and more geographically distanced networks.

Individuals with lower education levels had smaller networks with greater geographic proximity and contact frequency. Their networks also incorporate fewer friends than those of

individuals with higher education levels. This finding is consistent with research findings in the US which suggest that more education yields larger and more diverse social networks, thus allowing individuals to be more selective in relying on kin (Antonucci, 2001). Moreover, because it takes financial resources to maintain longer distanced relationships, lower SES individuals may be unable to maintain social ties via phone or internet, yet still have frequent contact with their chosen network because they live in close proximity.

Intersection of Age and Gender

Greater differences between older men and women due to older Mexicans' more traditional gender norms were anticipated, consistent with previous research (Montes de Oca, 2006). The results suggested no gender differences among older adults, but instead pronounced gender differences among young adults. It seems that gender norms are in play in this moderated effect; but, not in a manner consistent with the expectations of this study. It was expected that older adults' more traditional gender roles would be associated with gender differences in social networks (Chant & Craske, 2007), yet the opposite is supported, indicating that subscribing to more progressive gender roles may be linked to gender differences in social networks. While in general the younger adults had more diverse networks than their older counterparts, young Mexican women had greater diversity in terms of network composition and geographic proximity than young Mexican men. Young women were more likely than young men to include friends in their social networks, and to rely on social support partners who did not live close to them. These findings imply that young women may be rejecting the Mexican feminine gender norm of *marianismo*, that prescribes women to self-sacrifice and place family first (Franco, 1989), by expanding their social support networks beyond primarily family to include friends as well. In contrast, among older Mexican men and women there may be fewer differences because with age there are fewer role distinctions. Men who are no longer working outside the home may have day-to-day lives that, like older women, are very home and family bound. Therefore, the social networks, including size, proportion of family, geographic proximity and contact frequency, are quite similar.

Intersection of Age and Education

As hypothesized, the impact of education level on social network structure varied by age. Though it was anticipated that education level would be more influential in young adulthood, SES was more influential for the size and geographic proximity of middle-aged and older adults' social networks. With increased age, lower education level was associated with having a smaller social network composed of individuals they live with or near. As suggested by Montes de Oca (2010), better economic resources may enable middle-aged and older Mexicans to acquire and maintain more social support resources. In contrast, low SES seniors may have fewer resources and poorer health, which leads them to rely on smaller, geographically close networks. Because it takes financial resources to maintain longer distanced relationships, lower SES middle-aged and older adults may be less able to maintain social ties via long distance travel, phone or internet, yet still have frequent contact with their chosen network due to living in close proximity. These less educated middle-aged and older adults may be at greater risk not only because of lower financial resources, but also because of fewer social support resources or poorer health. This difference suggests that

stressors related to SES influence not only the individual but also their relationships. Given the overall low economic status of Mexican society and the stark disparities between poor and rich, these findings highlight the negative implications of poverty for interpersonal interactions in mid-to-late adulthood. Consistent with previous research in the United States (e.g., Rook, 2009), older adults of low SES may have weaker social support ties.

As mentioned above, it is anticipated that among younger Mexicans education level would predict network structure, but this was not the case. Young adults with low and high education levels reported similar patterns of social relationships. Increased access to secondary education in recent decades (INEGI, 2010) among younger Mexicans may create more equal and extended access to work and friendship opportunities, thereby expanding their social support networks. On average, the young adult group had nearly completed secondary education whereas the oldest age group had only a few years of primary education on average (though nearly a third of older adults had never been to school). Mexican young people's increased access to secondary education may act as a threshold for their access to the resources and opportunities that have a similar effect on their social network structure.

In addition, these findings suggest that beginning in middle adulthood, individuals with lower SES evidence networks similar to those typically found in late adulthood. From a developmental perspective, this might be considered the effect of cumulative disadvantage. In essence the vulnerable individuals effectively enter 'old age' at an earlier chronological age, consistent with observations by others (Montes de Oca, 2010; Wong & Palloni, 2009) and research on cross-cultural differences in age identity (Barak, 2009). The cumulative impact of poverty on aging is often conceptualized in terms of health, but it appears to have implications for social relations as well.

Limitations and Future Directions

The current study not only suggests topics to explore in the future, but also analytical strategies and methodological approaches to pursue. As this project was designed to examine social convoys in Mexico, an important next step with these data is to examine cultural differences with a direct comparison between this survey and similar surveys in the US and other countries. Ideally, cross-cultural comparison will illuminate important lifespan differences in social relations across cultures, and identify unique facets of Mexicans' social convoys. Due to the cross-sectional nature of the present study, it was not possible to test the direction of effects or to determine whether age differences reflect cohort or age effects. Future research should examine Mexican convoys longitudinally in order to decipher effect direction, as well as individual and cohort change over time. Due to time restrictions, it was necessary to limit the amount of social relations data that could be collected. Because of this, there is only in-depth information on the first ten network members. While this provides an excellent assessment of the close social network, as the most important people are generally present within the first ten, it would be ideal to have comprehensive information on all network members. Additionally, future studies could examine other aspects of composition (e.g., closeness) and function (e.g., support exchange) of Mexican social convoys and the implications for well-being, particularly with regard to successful aging (e.g., Rowe & Kahn, 1997; Ryff, 1989). Given that previous studies in the US (Ashida & Heaney, 2008; Unger et

al., 1999) and Mexico (Doubova et al., 2010) have identified links between social convoy structure and well-being, future studies should further this research by examining socio-demographic implications for the convoy– health link within the Mexican context. For instance, the demonstrated interaction between age and SES in predicting social network size and proximity likely has implications for well-being as well. Finally, in order to achieve an improved response rate, future studies should employ diverse recruitment methods, and consider offering an incentive for participation.

Conclusions

The current study successfully applies the Convoy Model to the study of social relations in Mexico. This examination of multiple dimensions of social convoys within the unique Mexican context provides an opportunity to better understand the ways in which key personal variables such as age, gender, and education shape social relations. Among this community-based, regional sample of Mexicans, there is clear evidence of a cultural shift, with younger cohorts and increased educational attainment linked to larger networks that are more geographically and relationally diverse. Young women had the most diverse social networks. This interesting finding is consistent with the literature indicating that women have more complicated social networks; however, they may also be at the forefront of cultural shifts in social networks. In depth research is needed to understand the implications of this age and gender effect. In addition, less educated older adults had fewer social resources, thus warranting particular attention from researchers, practitioners, and policy-makers targeting this vulnerable group, and suggesting a need for intervention efforts. Finally, future research on Mexican convoys should explore developmental variations in the types and sources of support, and specifically address implications for wellbeing across the lifespan.

References

- Ainsworth MS. Attachments beyond infancy. *American Psychologist*. 1989; 44(4):709. [PubMed: 2729745]
- Ajrouch KJ, Abdulrahim S, Antonucci TC. Stress, social relations, and psychological health over the life course: A focus on Lebanon. *GeroPsych: The Journal of Gerontopsychology and Geriatric Psychiatry*. 2013; 26(1):15–27.
- Ajrouch KJ, Antonucci TC, Janevic MR. Social networks among blacks and whites the interaction between race and age. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*. 2001; 56(2):S112–S118.
- Ajrouch KJ, Blandon AY, Antonucci TC. Social networks among men and women: The effects of age and socioeconomic status. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*. 2005; 60(6):S311–S317.
- Antonucci TC. Hierarchical mapping technique. *Generations: Journal of the American Society on Aging*. 1986; 10(4):10–12.
- Antonucci, TC. Social relations: An examination of social networks, social support, and sense of control. In: Birren, JE.; Schaie, KW., editors. *Handbook of the Psychology of Aging*. New York, NY: Academic Press; 2001. p. 427–453.
- Antonucci TC, Akiyama H, Birditt K. Intergenerational exchange in the United States and Japan. *Annual Review of Gerontology and Geriatrics*. 2004; 24(1):224–248.

- Antonucci TC, Ajrouch KJ, Janevic MR. The effect of social relations with children on the education–health link in men and women aged 40 and over. *Social Science & Medicine*. 2003; 56(5):949–960. [PubMed: 12593869]
- Antonucci TC, Akiyama H, Takahashi K. Attachment and close relationships across the life span. *Attachment & Human Development*. 2004; 6(4):353–370. [PubMed: 15764124]
- Antonucci, TC.; Birditt, KS.; Ajrouch, KJ. Convoys of social relations: Past, present and future. In: Fingerman, KL.; Berg, CA.; Smith, J.; Antonucci, TC., editors. *Handbook of Life Span Development*. New York, NY: Springer Publishing Company; 2011. p. 161-182.
- Antonucci TC, Ajrouch KJ, Abdulrahim S. Social relations in Lebanon: Convoys across the life course. *The Gerontologist*, gnt209. 2014
- Ashida S, Heaney CA. Differential associations of social support and social connectedness with structural features of social networks and the health status of older adults. *Journal of Aging and Health*. 2008; 20(7):872–893. [PubMed: 18815414]
- Barak B. Age identity: A cross-cultural global approach. *International Journal of Behavioral Development*. 2009; 33(1):2–11.
- Carstensen LL, Isaacowitz DM, Charles ST. Taking time seriously: A theory of socioemotional selectivity. *American Psychologist*. 1999; 54(3):165–181. [PubMed: 10199217]
- Chant, SH.; Craske, N. *Género en Latinoamérica (Gender in Latin-America)*. Mexico City, Mexico: Ciesas; 2007.
- Cornwell B. Independence through social networks: Bridging potential among older women and men. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*. 2011; 66B(6):782–794.
- Cornwell B, Schumm LP, Laumann EO, Graber J. Social networks in the NSHAP study: Rationale, measurement, and preliminary findings. *Journal of Gerontology: Social Sciences*. 2009; 64B(S1):i47–i55.
- Cutrona, CE. Social support as a determinant of marital quality. In: Pierce, GR.; Sarason, BR.; Sarason, IG., editors. *Handbook of social support and the family*. New York, NY: Plenum Press; 1996. p. 173-194.
- Diaz-Loving, R. Mexico. In: Georgas, J.; Berry, J., editors. *Families across cultures: A 30-nation psychological study*. New York, NY: Cambridge University Press; 2006. p. 394-401.
- Due P, Holstein B, Lund R, Modvig J, Avlund K. Social relations: Network, support and relational strain. *Social Science and Medicine*. 1999; 48(5):661–673. [PubMed: 10080366]
- Doubova SV, Pérez-Cuevas R, Espinosa-Alarcón P, Flores-Hernández S. Social network types and functional dependency in older adults in Mexico. *BMC Public Health*. 2010; 10(1):104. [PubMed: 20187973]
- Dykstra PA. Personal relationships in late life: Special Issue Introduction. *Journal of Social and Personal Relationships*. 2010; 28(1):5–8.
- Elder, GH., Jr; Johnson, MK.; Crosnoe, R. The emergence and development of life course theory. In: Mortimer, JT.; Shanahan, MJ., editors. *Handbook of the life course*. Springer US; 2003. p. 3-19.
- English T, Carstensen LL. Selective narrowing of social networks across adulthood is associated with improved emotional experience in daily life. *International Journal of Behavioral Development*. 2014; 38(2):195–202. [PubMed: 24910483]
- Fiori KL, Antonucci TC, Akiyama H. Profiles of social relations among older adults: A cross-cultural approach. *Ageing and Society*. 2008; 28(02):203–231.
- Fiori KL, Jager J. The impact of social support networks on mental and physical health in the transition to older adulthood: A longitudinal, pattern-centered approach. *International Journal of Behavioral Development*. 2012; 36(2):117–129.
- Fiori KL, Smith J, Antonucci TC. Social network types among older adults: A multidimensional approach. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*. 2007; 62(6):P322–P330.
- Flores-Macias F, Lawson C. Effects of interviewer gender on survey responses: Findings from a household survey in Mexico. *International Journal of Public Opinion Research*. 2008; 20(1):100–110.

- Franco, J. Plotting women: Gender and representation in Mexico. New York, NY: Columbia University Press; 1989.
- Fung HH, Stoeber FS, Yeung DY, Lang FR. Cultural specificity of socioemotional selectivity: Age differences in social network composition among Germans and Hong Kong Chinese. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*. 2008; 63(3):P156–P164.
- Furman W, Buhrmester D. Children's perceptions of the personal relationships in their social networks. *Developmental Psychology*. 1985; 21(6):1016.
- Gomes C. Intergenerational exchanges in Mexico: Types and intensity of support. *Current Sociology*. 2007; 55(4):545–560.
- Groves RM. Nonresponse rates and nonresponse bias in household surveys. *Public Opinion Quarterly*. 2006; 70(5):646–675.
- Groves, RM.; Couper, MP. Nonresponse in household interview surveys. John Wiley & Sons; 2012.
- Gutmann, MC. The meanings of macho: Being a man in Mexico City (Volume 3). Berkeley, CA: University of California Press; 2006.
- Haines VA, Beggs JJ, Hurlbert JS. Contextualizing health outcomes: Do effects of network structure differ for women and men? *Sex Roles*. 2008; 59(3/4):164–175.
- Halgunseth, LC. Continuing research on Latino families. In: Coleman, M.; Ganong, L., editors. *Handbook of contemporary families*. Thousand Oaks, CA: Sage; 2004. p. 333–351.
- Haller M, Hadler M. How social relations and structures can produce happiness and unhappiness: An international comparative analysis. *Social Indicators Research*. 2006; 75(2):169–216.
- Hank K. Proximity and contacts between older parents and their children: A European comparison. *Journal of Marriage and Family*. 2007; 69(1):159–173.
- INEGI. Census of Population and Housing 2005. 2005 [accessed 10 December 2014] Available at: <http://www.inegi.org.mx/est/contenidos/proyectos/ccpv/cpv2005/default.aspx>.
- INEGI. Interactive Data Analysis, Mexican Decennial Censuses. 2010 [accessed 10 December 2014] Available at: <http://www.inegi.org.mx/Sistemas/temasV2/contenido/sociedad/epobla06.asp?s=est&c=26360>.
- Kagitcibasi C. Autonomy and relatedness in cultural context implications for self and family. *Journal of Cross-Cultural Psychology*. 2005; 36(4):403–422.
- Kahn, RL.; Antonucci, TC. Convoys over the life course: Attachment, roles, and social support. In: Baltes, PB.; Brim, OC., editors. *Life-span, development, and behavior*. New York: Academic Press; 1980. p. 254–283.
- Katz, JE. *Handbook of mobile communication studies*. Cambridge, MA: MIT Press; 2008.
- Kim HK, McKenry PC. Social networks and support: A comparison of African Americans, Asian Americans, Caucasians, and Hispanics. *Journal of Comparative Family Studies*. 1998; 29(2):313–334.
- Krause, N. Mental disorder in late life. In: Aneshensel, CS.; Phelan, JC., editors. *Handbook of sociology of mental health*. New York: Springer US; 1999. p. 183–208.
- Krause N, Borawski-Clark E. Social class differences in social support among older adults. *The Gerontologist*. 1995; 35(4):498–508. [PubMed: 7557520]
- Luong G, Charles ST, Fingerman KL. Better with age: Social relationships across adulthood. *Journal of Social and Personal Relationships*. 2010; 28(1):9–23. [PubMed: 22389547]
- Mañago AM. Connecting societal change to value differences across generations: Adolescents, mothers, and grandmothers in a Maya community in Southern Mexico. *Journal of Cross-Cultural Psychology*. 2014; 45(6):868–887.
- McPherson M, Smith-Lovin L, Cook JM. Birds of a feather: Homophily in social networks. *Annual Review of Sociology*. 2001; 27(1):415–444.
- Mezuk B, Rebok GW. Social integration and social support among older adults following driving cessation. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*. 2008; 63(5):S298–S303.
- Montes de Oca, V. *Colección Cuadernos de Investigación*. México: Instituto de Investigaciones Sociales-UNAM; 2006. *Redes comunitarias, género y envejecimiento*.

- Montes de Oca Zavala, V. Family Support Networks and Population Ageing. Qatar Foundation, UNFPA, Northwestern University, UN Programme on Ageing; 2010. Families and intergenerational solidarity in Mexico: Challenges and opportunities; p. 107-111.
- Qualls SH. What social relationships can do for health. *Generations*. 2014; 38(1):8–14. [accessed 21 January 2015] Available at: <http://asaging.org/blog/what-social-relationships-can-do-health>.
- Rook KS. Gaps in social support resources in later life: An adaptational challenge in need of further research. *Journal of Social and Personal Relationships*. 2009; 26(1):103–112. [PubMed: 25360058]
- Rowe JW, Kahn RL. Successful aging. *The Gerontologist*. 1997; 37(4):433–440. [PubMed: 9279031]
- Ryff CD. Beyond Ponce de Leon and life satisfaction: New directions in quest of successful ageing. *International Journal of Behavioral Development*. 1989; 12(1):35–55.
- Sabogál F, Marin G, Otero-Sabogál R, Marin BV, Perez-Stable EJ. Hispanic familism and acculturation: What changes and what doesn't? *Hispanic Journal of Behavioral Sciences*. 1987; 9(4):397–412.
- Shaw BA, Krause N, Liang J, Bennett J. Tracking changes in social relations throughout late life. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*. 2007; 62(2):S90–S99.
- Unger JB, McAvay G, Bruce ML, Berkman L, Seeman T. Variation in the impact of social network characteristics on physical functioning in elderly persons: MacArthur Studies of Successful Aging. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*. 1999; 54(5):S245–S251.
- Vaisey S, Lizardo O. Can cultural worldviews influence network composition? *Social Forces*. 2010; 88(4):1595–1618.
- Vega WA. Hispanic families in the 1980s: A decade of research. *Journal of Marriage and the Family*. 1990; 52(4):1015–1024.
- Vos SD, Solís P, Oca VMD. Receipt of assistance and extended family residence among elderly men in Mexico. *The International Journal of Aging and Human Development*. 2004; 58(1):1–27. [PubMed: 15248470]
- Wenger GC. Social networks and the prediction of elderly people at risk. *Aging and Mental Health*. 1997; 1(4):311–320.
- Wolf ER. Aspects of group relations in a complex society: Mexico. *American Anthropologist, New Series*. 1956; 58(6):1065–1078.
- Wong, R.; Palloni, A. Aging in Mexico and Latin America. In: Uhlenberg, P., editor. *International Handbook of Population Aging*. Netherlands: Springer; 2009. p. 231-252.

Figure 1.

Graphs of interaction of age $\times$ education predicting network size (1A) and age $\times$ gender predicting proportion of kin (1B). Notes: young $N = 406$, middle $N = 371$, old $N = 393$. Education range: 0–17, network size range: 0–35, proportion kin range: 0–100%.

Figure 2.

Graphs of interaction of age $\times$ gender (2A) and age $\times$ education (2B) predicting geographic proximity. Notes: education range: 0–17, geographic proximity range: 0–100%. Young $N = 406$, middle $N = 371$, old $N = 393$.

Table 1

Sample Characteristics

	Total sample <i>N</i> = 1202	
	M (SD)	Range
Demographics		
Age	48.4 (19.6)	18–99
Female (<i>N</i> : 622)	52%	
Years of education	7.5 (5.2)	0–17
Convoy characteristics		
Network size	7.6 (4.6)	0–35
Proportion of kin	87%	0–100
Close geographic proximity	79%	0–100
Contact frequency	4.3 (0.7)	1–5

Table 2
Socio-demographic Main Effects and Interactions Predicting Network Structure Characteristics

	Network size			Proportion of kin			Geographic proximity			Contact frequency		
	B (95% CI)	β	B (95% CI)	β	B (95% CI)	β	B (95% CI)	β	B (95% CI)	β	B (95% CI)	β
Step 1												
Age	.20 (.05; .36)	.09 [*]	.03 (.03; .04)	.31 ^{***}	.01 (.00; .02)	.07 [*]	-.04 (-.07; -.02)	-.13 ^{***}				
Female	.70 (.17; 1.22)	.08 ^{**}	-.02 (-.04; .01)	-.04	-.05 (-.08; -.02)	-.11 ^{***}	-.13 (-.20; -.05)	-.10 ^{***}				
Education	.12 (.06; .18)	.13 ^{***}	-.01 (-.01; -.002)	-.12 ^{***}	-.01 (-.01; -.003)	-.12 ^{***}	-.01 (-.02; -.001)	-.08 [*]				
	R ²	.02	R ²	.15	R ²	.04	R ²	.02				
	F	6.35 ^{***}	F	69.59 ^{***}	F	15.04 ^{***}	F	7.53 ^{***}				
Step 2												
Age	.48 (.06; .90)	.21 [*]	.01 (-.003; .03)	.14	-.01 (-.04; .01)	-.10	-.05 (-.12; .01)	-.16				
Female	1.58 (.21; 2.94)	.18 [*]	-.07 (-.13; -.02)	-.18 [*]	-.12 (-.19; -.05)	-.25 ^{***}	-.16 (-.36; .04)	-.12				
Education	.12 (.06; .18)	.13 ^{***}	-.01 (-.01; -.002)	-.12 ^{***}	-.01 (-.01; -.002)	-.12 ^{***}	-.01 (-.02; -.001)	-.08 [*]				
Age × female	-.18 (-.45; .08)	-.16	.01 (.001; .02)	.23 [*]	.02 (.00; .03)	.23 [*]	.01 (-.03; .05)	.05				
	R ²	.02	R ²	.16	R ²	.04	R ²	.02				
	F	5.24 ^{***}	F	53.50 ^{***}	F	12.30 ^{***}	F	5.68 ^{***}				
Step 3												
Age	.09 (-.41; .58)	.04	.01 (-.01; .03)	.06	.01 (-.02; .03)	.07	-.04 (-.11; .03)	-.12				
Female	1.36 (-.01; 2.72)	.15	-.08 (-.13; -.02)	-.19 ^{***}	-.11 (-.18; -.04)	-.22 ^{**}	-.15 (-.35; .05)	-.12				
Education	-.11 (-.27; .05)	-.12	-.01 (-.02; -.003)	-.24 ^{**}	.01 (-.002; .01)	.13	-.002 (-.03; .02)	-.02				
Age × female	-.14 (-.40; .13)	-.12	.01 (.00; .02)	.25 [*]	.01 (-.002; .03)	.19	.01 (-.03; .04)	.03				
Age × education	.05 (.02; .07)	.23 ^{**}	.00 (.00; .002)	.11	-.001 (-.004; -.001)	-.23 ^{**}	-.002 (-.01; .00)	-.06				

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Network size			Proportion of kin			Geographic proximity			Contact frequency		
B (95% CI)	β		B (95% CI)	β		B (95% CI)	β		B (95% CI)	β	
R ²	.03		R ²	.16		R ²	.05		R ²	.02	
F	6.06***		F	43.30***		F	11.66***		F	4.65***	

Notes:

 $p < 0.001$,

**
 $p < 0.01$,

*
 $p < 0.05$.

$N = 1202$. Variable ranges – age: 18–99, education: 0–17, network size: 0–35, proportion kin: 0–100%, geographic proximity: 0–100%, contact frequency: 1–5.