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Support and Influence in the Context of Diabetes Management: Do Racial/Ethnic Differences Exist?

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Abstract

This study examined the sources and frequency of, and dietary behavioral responses to, health-related social support and control in a racially/ethnically diverse sample of 1,361 adults with type 2 diabetes. Spouses were the most frequently reported sources of support/control for all racial/ethnic groups examined. Mexican Americans and Vietnamese Americans received more support/control compared to non-Hispanic whites. All types of social involvement were associated with good dietary behavior for Mexican Americans, whereas only support was associated with good dietary behavior for non-Hispanic whites. The findings underscore the importance of considering racial/ethnic differences in examining social network members' involvement in chronic disease management.

Keywords

social support; health-related social control; type 2 diabetes; chronic disease management; race/ethnicity

The increasing prevalence of type 2 diabetes in the USA and other industrialized nations is a growing public health concern. Approximately 25.8 million adults in the USA have diabetes; the majority of which have type 2 diabetes [Centers for Disease Control and Prevention (CDC), 2011]. However, racial and ethnic minorities are disproportionately more likely to experience the burden of diabetes. According to recent statistics, 7.1 percent non-Hispanic white, 8.4 percent Asian American, and 11.8 percent Hispanic adults in the USA have diabetes (CDC, 2011). Diabetes is associated with serious complications, suggesting a need to identify factors that can reduce the risk of these complications. Adherence to a demanding medical regimen is integral in preventing complications, with dietary changes as a key component (CDC, 2011). As these dietary changes require patients' daily attention to food choices, nonadherence is common (McNabb, 1997). Social network members can help promote greater adherence to dietary behaviors by serving as sources of health-related social support and control.

Social networks and health

It is well established that social network involvement is associated with a reduced risk of mortality and better health outcomes (Berkman, Glass, Brissette, & Seeman, 2000). One explanation that has been proposed as to how social networks have a positive impact on health and mortality is through better health behaviors (Seeman, 2000). Two distinct

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pathways through which relationships can positively affect individuals' health behaviors have been identified. First, social network members can encourage healthy behaviors by serving as sources of support and affirmation. *Health-related social support* refers to efforts by social network members to provide assistance and positive feedback aimed at promoting health-enhancing behaviors (Gallant, 2003; Franks, Stephens, Rook, Franklin, Keteyian, & Artinian, 2006). Because not all social interactions aimed at fostering healthy behaviors involve the provision of support, a second mechanism by which social network members can contribute to individuals' health behaviors is by serving as sources of influence and regulation (Berkman et al., 2000). *Health-related social control* refers to efforts by social network members to monitor and influence individuals' health behaviors (Lewis & Rook, 1999). Given that these two functions of relationships are unique constructs and have been found to have distinctive effects on recipients (Helgeson, Novak, Lepore, & Eton, 2004; Franks et al., 2006), it is important to examine the distinct contribution of both support and control on health behaviors. Although distinct constructs, these two social network functions do not necessarily occur independently of each other, as a significant positive association between the two constructs has been reported (Franks et al., 2006).

There are two gaps in the literature with regard to how interpersonal factors influence type 2 diabetes management. First, little evidence exists on how the two co-occurring social network functions (support and control) influence disease management. Second, although research has also focused on how the social networks of non-Hispanic white and Mexican-American patients are involved in their diabetes management through the provision of support (Wen, Shepherd, & Parchmant, 2004; Denham, Manoogian, & Schuster, 2007), little work has examined diabetes management among Vietnamese populations, and no studies to our knowledge have examined the importance of social control in diabetes management in racial/ethnic minorities. As a result, research has yet to examine whether the sources, frequency, and effectiveness of *both* health-related social support and control varies among different racial/ethnic groups.

Sources and frequency of health-related social support and control

Evidence suggests that spouses are a primary source of health-related social support (Trief, Sandberg, Greenberg, Graff, Castronova, & Yoon, 2003) and social control (Umberson, 1992; Tucker, 2002) for married individuals. Previous research on health-related social support and control has mainly focused on predominantly white samples; other social network members (including both kin and non-kin), however, may be important in fostering behavior change in cultures in which family members view the day-to-day tasks of managing a disease as a collaborative rather than an independent endeavor. Research on the social networks of Mexican Americans and Vietnamese Americans suggests that cultural values dictate that children, in particular, are commonly expected to provide care for their parents when in need (John, Resendiz, & De Vargas, 1997; Gellis, 2003;). Given that it may be more normative for multiple family members, including spouses and children, to be involved in the chronic disease management of Mexican Americans and Vietnamese Americans, individuals from these racial/ethnic groups may be more likely to receive more frequent support and control compared to non-Hispanic whites. Whether or not this more frequent kin involvement for Mexican Americans and Vietnamese Americans translates into better health behaviors is an important question to examine.

Behavioral responses to health-related social support and control

Although social network members engage in support and control to promote positive health behaviors in the recipient, evidence as to whether these attempts are successful has been mixed. Research has demonstrated that, in general, individuals with chronic conditions who

receive health-related social support fare well with regard to their self-management (Gallant, 2003; DiMatteo, 2004). For example, in a study of middle-aged and older adult couples managing diabetes, researchers found that spousal support was related to successful dietary management (Beverly, Miller & Wray, 2008). Research is less conclusive regarding health-related social control, however. Some studies have found social control to be associated with better health behaviors (Tucker, 2002; Stephens et al., 2009), whereas other studies have found social control to be associated with worse health behaviors (Lewis and Rook, 1999; Helgeson et al., 2004). For example, one study found that social control predicted improved health behaviors over time (e.g. decreases in smoking), but did not predict changes in other health behaviors such as alcohol use (Umberson, 1992). A majority of the studies to date, however, have focused on the effectiveness of health-related social support and control in the context of a marital relationship, and, again, most have used predominantly non-Hispanic white samples. Less is known about how these specific social network functions operate among individuals of other races/ethnicities managing a chronic disease. Research on the social networks of Mexican Americans and Vietnamese Americans has demonstrated that individuals in these two racial/ethnic groups value interdependence and family relations (Marin & Marin, 1991; Markus & Kitayama, 1991), suggesting that they may be more likely to respond with positive health behaviors to efforts by their social network members to encourage and regulate their social health behaviors.

The current study

The focus of the current study was to investigate the role of social networks in supporting and influencing disease-related health behavior among a racially/ethnically diverse sample of individuals with type 2 diabetes. Given racial and ethnic disparities in the prevalence of type 2 diabetes, it is important to consider how social network members contribute to the health behaviors of these racial/ethnic minorities. No studies to date, however, have examined racial/ethnic differences in the receipt of and response to both health-related social support and control attempts by network members. Thus, the current study sought to examine the following three questions:

1. Compared to non-Hispanic whites, what are the sources (kin and non-kin) of health-related social support and control for Mexican-American and Vietnamese-American patients?
2. Compared to non-Hispanic whites, do Mexican-American and Vietnamese-American patients receive more or less health-related social support and control?
3. Compared to non-Hispanic whites, is health-related social support and control associated with dietary behaviors for Mexican-American and Vietnamese-American patients?

Method

Participants and procedure

Data for the current study came from the Reducing Racial/Ethnic Disparities in Diabetes: The Coached Care (R2D2C2) Project, a 2-year, randomized control trial of patients with type 2 diabetes (Kaplan, Billimek, Sorkin, Ngo-Metzger, & Greenfield, 2010). The project received approval from the University of California, Irvine's Institutional Review Board. Patients were recruited from seven university-based primary care or endocrinology clinics where they received their primary diabetes care. The majority of patients receiving care at these clinics were non-Hispanic white, Mexican American or Vietnamese American, reflecting the racial and ethnic diversity in the local geographic area. To be eligible for this study, patients had to be 18 years of age, diagnosed with type 2 diabetes by a physician, and

had one doctor visit in the past two years. Patients who agreed to participate completed an informed consent as well as a Health Insurance Portability and Accountability Act (HIPAA) waiver to obtain consent to review their medical charts. Patients were given a questionnaire to complete, and received a \$20 gift card for their participation. Seventy-six percent of eligible patients consented to complete the baseline survey and agreed to allow access to their medical record information, in addition to laboratory and administrative data.

The sample for the current study included baseline data from 1,361 patients. Participants ranged in age from 19–92 years, with a mean age of 58.93 years ($SD=11.56$). More than half were female (59.6%), and most (59.6%) were married or in a marital-like relationship. Less than half (45.3%) of the participants had at least a high-school education, with 36% reporting an annual household income greater than \$20,000. Participants reported having diabetes for an average of 9.03 years ($SD=7.69$). The sample was representative of the surrounding geographic area, and was comprised of individuals from three racial/ethnic groups: Mexican American (54.5%); non-Hispanic white (26.5%); and Vietnamese American (19.0%).

Measures

Network members involved in diabetes management—Patients indicated (yes/no) whether the following social network members were involved in helping them take care of their diabetes on a regular basis: husband/wife, daughter (in-law)/son (in-law); brother/sister, other relative; friend neighbor; other network member. This question served as a proxy for patients' sources of health-related social support and control.

Health-related social support—To assess health-related social support, three items were adapted from Franks et al. (2006). Participants were asked to indicate the frequency of specific attempts by social networks members to provide support in the past month. A sample item included: “During the past month how often did (they) try to do something to help you stick with your diabetic diet?” Participants responded how often support was provided on a 6-point scale (0 = not at all, 5 = everyday), and a composite variable was created to represent health-related social support. The scale demonstrated good reliability (white $\alpha=.94$; Mexican American $\alpha=.96$; Vietnamese American $\alpha=.94$).

Health-related social control—To assess health-related social control, a total of seven items were adapted from Stephens, Fekete, Franks, Rook, Druley, & Greene. (2009). Participants were asked to indicate the frequency of specific attempts by social network members to exercise control in the past month. Two types of social control were examined in this study: persuasion (3 items) and pressure (4 items). A sample item for persuasion included: “During the past month how often did (they) try to do something to get you to improve your food choices?” A sample item for pressure included: “During the past month how often did (they) try to restrict you from making poor food choices?” Participants responded how often these control attempts were made on a 6-point scale (0=not at all, 5=everyday), and a composite variable was created to represent health-related social control. For each strategy, the scale demonstrated good reliability (persuasion: white $\alpha=.94$; Mexican American $\alpha=.96$; Vietnamese American $\alpha=.94$; pressure: white $\alpha=.94$; Mexican American $\alpha=.94$; Vietnamese American $\alpha=.90$).

Dietary behavior—To assess dietary behavior related to diabetes management, items were adapted from the Kristal Fat and Fiber Behavior Questionnaire (Shannon, Kristal, Curry, & Beresford, 1997). Patients were asked seven questions that assessed how often in the past week they selected low-fat, low-sugar diets (1=rarely or none of the time, 4=most or all of the time). A sample item included eating “foods high in sugar (such as candy, fruit juice,

cookies, tea or coffee flavored with sugar)". Items were averaged to form a composite measure of dietary behaviors. The scale demonstrated acceptable reliability (white $\alpha=.69$; Mexican American $\alpha=.71$; Vietnamese $\alpha=.64$).

Covariates—Additional variables were included as covariates in analyses that either have been used in previous literature on social network involvement and health or demonstrated a significant association with one of the key study variables. These included standard demographic characteristics, such as gender (0 = female, 1 = male), marital status (0 = not married, 1 = married or in a marital-like relationship), age, and education (0 = less than a high school education, 1 = at least a high school education). A composite measure of comorbid chronic health conditions using a modified version of the Total Illness Burden Index (TIBI; Greenfield, Billimek & Kaplan, 2010) and the duration of time diagnosed with type 2 diabetes also were included as covariates. For dichotomous covariates, weighted effects coding was used.

Results

Descriptive Analyses

Sociodemographic characteristics, stratified by racial/ethnic group, are presented in Table 1. As seen in the table, there were a larger proportion of female Mexican-American patients compared to the other two racial/ethnic groups. In addition, Vietnamese-American patients were older than patients in the other two racial/ethnic groups. Non-Hispanic whites were more likely to be married compared to Mexican Americans. Non-Hispanic whites were more likely to have at least a high school education and have an annual household income \$20,000 compared to the other two racial/ethnic groups. Finally, Mexican Americans were diagnosed with diabetes longer than non-Hispanic whites.

Sources and frequency of health-related social support and control

As seen in Table 2, patients from all three racial/ethnic groups named their spouses as the most frequent source of support/control (non-Hispanic whites: 39.9%, Mexican Americans: 48.5% and Vietnamese Americans: 50.5%). Children also frequently were named as sources of support/control. There was a larger proportion of network members named as sources of support/control for Mexican Americans and Vietnamese Americans compared to non-Hispanic whites.

To examine whether the sources of support/control differed by race/ethnicity, we conducted six one-way univariate analysis of covariances (ANCOVAs). Mexican Americans and Vietnamese Americans were significantly more likely to name a spouse as a source of support/control than non-Hispanic whites ($F(1, 1,131) = 4.49, p < .05$). Both Mexican Americans and Vietnamese Americans also were significantly more likely to name a child as a source of support/control than non-Hispanic whites ($F(1, 1,096) = 21.66, p < .001$). In addition, Mexican Americans were significantly more likely to name a sibling as a source of support/control compared to non-Hispanic whites and Vietnamese Americans ($F(1, 1,027) = 4.52, p < .05$). Finally, a significant difference was found for naming other relatives as sources of support/control, with Mexican Americans and Vietnamese Americans being more likely than non-Hispanic whites to name other relatives ($F(1, 964) = 4.07, p < .05$). There were no significant racial/ethnic differences in whether friend/neighbor or 'other' network member was named as a source of support/control.

Next, three one-way ANCOVAs were conducted to examine the frequency of support/control by race/ethnicity (see bottom of Table 2). Mexican Americans and Vietnamese Americans reported more frequent social network involvement than non-Hispanic whites.

Specifically, Mexican Americans and Vietnamese Americans were more likely than whites to report receiving more health-related social support ($F(1, 1,237) = 14.03, p < .001$), as well as health-related social control in the form of persuasion ($F(1, 1,230) = 22.05, p < .001$) and pressure ($F(1, 1,201) = 12.15, p < .001$).

Social network involvement and dietary behaviors

A total of nine multiple regression analyses were conducted to examine the unique effects of health-related social support and control on an important health behavior among patients with type 2 diabetes, specifically adherence to a healthy diet. As seen in Table 3, for non-Hispanic whites, only health-related social support was associated with good dietary behavior ($\beta = .16, p < .01$). For Mexican Americans, all types of network involvement were associated with good dietary behavior. Specifically, good dietary behavior was significantly associated with health-related social support ($\beta = .19, p < .001$), as well as health-related social control in the form of persuasion ($\beta = .19, p < .001$) and pressure ($\beta = .13, p < .01$). For Vietnamese Americans, there were no significant associations between any type of social network involvement and good dietary behavior.

Discussion

Two ways in which patients' social networks help them manage their chronic disease are by providing health-related social support and control. Individuals from various racial/ethnic backgrounds experience these attempts in different ways, however, with regard to the sources, frequency, and effectiveness. The current study sought to examine these racial/ethnic differences in a sample of non-Hispanic white, Mexican-American, and Vietnamese-American patients with type 2 diabetes.

Racial/ethnic differences in the sources and frequency of health-related social support and control

Spouses were the most frequently reported sources of health-related social support and control for patients from all three racial/ethnic groups of patients. This is not surprising, given evidence that spouses, in particular, are frequently involved in the management of patients' disease management (Ell, 1996). Spouses may be in a unique and influential position to support and control their partners' health behaviors because they commonly are involved in many of the activities required for the management of type 2 diabetes, such as dietary practices (Miller & Brown, 2005). In a study of couples managing type 2 diabetes, researchers found that patients with diabetes identified their spouses as their primary source of social support with regard to dietary management, as a result of spouses' involvement in meal planning, food selection and purchase, food preparation, and shared diet plans (Trief et al., 2003). Studies of social control also have found that the majority of married individuals named their spouses as sources of social control (Umberson, 1992).

Children were a frequent source of health-related support and control for Mexican Americans and Vietnamese Americans. In the Mexican-American culture, a strong attachment to the family, or familialism, is a value that emphasizes children's sense of duty in caring for their ill parents (John et al., 1997). Likewise, in the Asian-American culture, both respect and obligation are important components of family relationships, particularly directed toward parents (Gellis, 2003). Thus, children whose parents are managing a chronic condition may feel obligated by their cultural beliefs and values to help with the daily tasks of their parents' disease.

Mexican Americans and Vietnamese Americans received more support and control compared to non-Hispanic whites. Perhaps it is more normative, and thus, more expected,

for social networks to be involved in the disease management of individuals from these racial/ethnic backgrounds, especially for older adults, which mostly comprise the current sample. In Hispanic and Asian cultures, interdependence is emphasized (Markus & Kitayama, 1991; Marin & Marin, 1991), whereas for non-Hispanic whites, diabetes may be viewed more as an individual disease and, thus, white individuals do not expect – or receive – the involvement of their social networks. Indeed, in a study that examined ethnic differences in the amount of informal care received by disabled elders, older Latino adults received more informal care from their social networks compared to non-Hispanic whites (Weiss, Gonzalez, Kabeto, & Laga, 2005).

Racial/ethnic differences in the effectiveness of health-related social support and control

Only health-related social support was associated with good dietary behaviors for non-Hispanic whites. This is consistent with findings from previous studies comprised mostly of non-Hispanic whites that social support is associated with better health behaviors (Gallant, 2003; DiMatteo, 2004). The nonsignificant association between health-related social control and dietary behaviors is also consistent with some studies on social control in chronically ill individuals, most of which were comprised of predominately white samples (Franks et al., 2006; Thorpe, Lewis & Sterba, 2008). For example, in a study of men with prostate cancer, researchers found that social control was associated with worse, rather than better, health behaviors (Helgeson et al., 2004). Social network members may convey a sense of disapproval to targets of social control attempts, which may threaten the (target) individual's sense of independence and self-esteem. As research has shown, self-esteem plays a central role in the health and well-being of individuals of non-Hispanic whites compared to individuals from other races/ethnicities (Taylor & Brown, 1988). Thus, non-Hispanic whites may be more likely to behaviorally resist their network members' efforts to regulate their health behaviors by using health-related social control, but respond well to network members' efforts to affirm their health behaviors by using health-related social support.

All types of social network involvement were associated with good dietary behaviors for Mexican Americans. These findings suggest that Mexican Americans respond well to their social network members' efforts to promote better dietary behavior, regardless of the type of involvement. Given research suggesting that the Latino culture emphasizes collectivism and cooperation, with a strong attachment to family ties (Marin & Marin, 1991), it is not surprising that individuals from this ethnic group were more likely to respond well to social network members' efforts to promote healthy eating behaviors.

None of the three kinds of social network involvement were associated with good dietary behavior for Vietnamese Americans. It is important to note that, although results were not significant, the positive association suggests that more support and control using persuasion was associated with better dietary behaviors. It is possible, then, that a larger sample of Vietnamese Americans than that used in the current study may have influenced the results differently. Despite this possibility, the mainly kin involvement of Vietnamese Americans does not appear to be beneficial for the health behaviors of these patients in the current study. Results from other studies on the effectiveness of support networks of Vietnamese may shed some light on these findings. One study of Vietnamese Americans found that kin social support, in particular, had adverse effects on depressive symptomatology (Gellis, 2003). Gellis suggests that the stress of caring for the ill person may disrupt family harmony by leading to family strain and conflicts which, in turn, may be associated with more negative psychological consequences for the ill family member. Likewise, the disruption in family harmony that may result from trying to support or influence the eating behaviors of a patient with type 2 diabetes on an ongoing basis also may be associated with poor dietary behaviors for the patient. Furthermore, these patients may view themselves as a burden to their larger social networks (Kim, Sherman, Ko, & Taylor, 2006), making it more difficult

for them to seek support from other nonkin sources who may be more effective in fostering behavior change.

Although social network members are involved in influencing patients' self-management behaviors, such as dietary adherence, other factors beyond patients' social networks are likely to play a role in influencing their health behaviors. Specifically, non-adherence to a diabetic diet among racial/ethnic minorities may be the result of barriers such as limited availability and access to healthy food choices, communication barriers that lead to a lack of understanding about how to make healthy food choices, and culture-specific practices and eating preferences, such as the extensive use of fat and oil in traditional Mexican dishes and the reliance of white rice among Vietnamese (Tripp-Reimer, Choi, Kelley, & Enslein, 2001). Thus, even if social network members attempt to support and influence patients' health behaviors, whether or not these attempts are successful may depend upon other barriers that racial/ethnic minorities face.

Limitations and future directions

In interpreting the results of the current study, several limitations should be considered. First, the current data are cross-sectional in nature and, thus, we were unable to determine whether support and influence attempts actually impacted patients' dietary behaviors, or whether the social network was responding to patients' behaviors. Future studies should consider focusing on how this process unfolds over time. Second, although Mexican Americans and Vietnamese Americans are largely represented in southern California (U.S. Census Bureau, 2008), the current study only examined the experiences of three racial/ethnic groups. Future studies should focus on how the social networks of patients from other racial/ethnic groups are involved in managing a chronic disease. Finally, results from this study cannot be generalized to other health behaviors, or to other disease with different treatment regimens. Type 2 diabetes is a condition requiring attention to a complex medical regimen on a daily basis, with high rates of nonadherence. Moreover, research has demonstrated that dietary behaviors are commonly shared within families managing type 2 diabetes (Denham et al., 2007). Whether or not these racial/ethnic differences in the social networks' involvement in disease management persist when evaluating other chronic conditions with less demanding regimens or fewer opportunities for families being involved is a question for future research.

Conclusion

The current study examined whether there were racial/ethnic differences in the receipt of, and responses to, health-related social support and control in the context of managing a chronic illness. The findings suggest that although there are some similarities in how social network members are involved in managing type 2 diabetes, notable differences across race/ethnicities exist. Results from this and future studies can help inform the design of programs for patients with type 2 diabetes that incorporate social network members into everyday disease management.

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References

- Berkman LF, Glass T, Brissette I, Seeman TE. From social integration to health: Durkheim in the new millennium. *Social Science and Medicine*. 2000; 51:843–857. [PubMed: 10972429]
- Beverly EA, Miller CK, Wray LA. Spousal support and food-related behavior change in middle-aged and older adults living with type 2 diabetes. *Health Education and Behavior*. 2008; 35:707–720. [PubMed: 17456857]
- Centers for Disease Control and Prevention. National diabetes fact sheet: General information and national estimates on diabetes in the United States. Atlanta: GA: U.S. Department of Health and Human Services; 2011.
- Denham SA, Manoogian MM, Schuster L. Managing family support and dietary routines: Type 2 diabetes in rural Appalachian families. *Families, Systems, and Health*. 2007; 25:36–52.
- DiMatteo MR. Social support and patient adherence to medical treatment: A meta-analysis. *Health Psychology*. 2004; 23:207–218. [PubMed: 15008666]
- Ell K. Social networks, social support, and coping with serious illness: The family connection. *Social Science and Medicine*. 1996; 42:173–183. [PubMed: 8928027]
- Franks MM, Stephens MAP, Rook KS, Franklin BA, Keteyian SJ, Artinian NT. Spouses' provision of health-related social support and control to patients participating in cardiac rehabilitation. *Journal of Family Psychology*. 2006; 20:311–318. [PubMed: 16756407]
- Gallant M. The influence of social support on chronic illness self-management: A review and directions for research. *Health Education and Behavior*. 2003; 30:170–195. [PubMed: 12693522]
- Gellis ZD. Kin and nonkin social supports in a community sample of Vietnamese immigrants. *Social Work*. 2003; 48:248–258. [PubMed: 12718420]
- Greenfield, S.; Billimek, J.; Kaplan, SH. The Total Illness Burden Index. In: Preedy, VR.; Watson, RR., editors. *Handbook of disease burdens and quality of life measures*. New York, NY: Springer; 2010. p. 73-85.
- Helgeson VS, Novak SA, Lepore SJ, Eton DT. Spouse social control efforts: Relations to health behavior and well-being among men with prostate cancer. *Journal of Social and Personal Relationships*. 2004; 21:53–68.
- John R, Resendiz R, De Vargas LW. Beyond familism?: Familism as explicit motive for eldercare among Mexican American caregivers. *Journal of Cross-Cultural Gerontology*. 1997; 12:145–162. [PubMed: 14617933]
- Kaplan SH, Billimek J, Sorkin DH, Ngo-Metzger Q, Greenfield S. Who can respond to treatment? Identifying patient characteristics related to heterogeneity of treatment effects. *Medical Care*. 2010; 48:S9–S16. [PubMed: 20473205]
- Kim HS, Sherman DK, Ko D, Taylor SE. Pursuit of comfort and pursuit of harmony: Culture, relationships, and social support seeking. *Personality and Social Psychology Bulletin*. 2006; 32:1595–1607. [PubMed: 17122173]
- Lewis MA, Rook KS. Social control in personal relationships: impact on health behaviors and psychological distress. *Health Psychology*. 1999; 18:63–71. [PubMed: 9925047]
- Marin, G.; Marin, B. *Research with Hispanic populations*. Newbury Park: Sage Publications; 1991.
- Markus HR, Kitayama S. Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*. 1991; 98:224–253.
- McNabb WL. Adherence in diabetes: Can we define it and can we measure it? *Diabetes Care*. 1997; 20:215–218. [PubMed: 9118777]
- Miller D, Brown JL. Marital interactions in the process of dietary change for type 2 diabetes. *Journal of Nutrition Education and Behavior*. 2005; 37:226–234. [PubMed: 16053810]
- Seeman TE. Health promoting effects of friends and family on health outcomes in older adults. *American Journal of Health Promotion*. 2000; 14:362–370. [PubMed: 11067571]
- Shannon J, Kristal AR, Curry SJ, Beresford SAA. Application of a behavioral approach to measuring dietary change: The fat- and fiber-related diet behavior questionnaire. *Cancer Epidemiology, Biomarkers & Prevention*. 1997; 6:355–361.

- Stephens MAP, Fekete E, Franks MM, Rook KS, Druley JA, Greene K. Spouses' use of persuasion and pressure to promote patients' medical adherence after orthopedic surgery. *Health Psychology*. 2009; 28:48–55. [PubMed: 19210017]
- Taylor SE, Brown JD. Illusion and well-being: A social psychological perspective on mental health. *Psychological Bulletin*. 1988; 103:193–210. [PubMed: 3283814]
- Thorpe CT, Lewis MA, Sterba KR. Reactions to health-related social control in young adults with type 1 diabetes. *Journal of Behavioral Medicine*. 2008; 31:93–103. [PubMed: 17701335]
- Trief PM, Sandberg J, Greenberg RP, Graff K, Castronova N, Yoon M, et al. Describing support: A qualitative study of couples living with diabetes. *Families, Systems, and Health*. 2003; 21:57–67.
- Tripp-Reimer T, Choi E, Kelley LS, Enslein JC. Cultural barriers to care: Inverting the problem. *Diabetes Spectrum*. 2001; 14:13–22.
- Tucker JS. Health-related social control within older adults' relationships. *Journal of Gerontology: Psychological Sciences*. 2002; 57:387–395.
- Umberson D. Gender, marital status and the social control of health behavior. *Social Science Medicine*. 1992; 34:907–917. [PubMed: 1604380]
- U.S. Census Bureau. State and County QuickFacts. 2008. Retrieved from <http://quickfacts.census.gov/qfd/states/06000.html>
- Weiss CO, Gonzalez HM, Kabeto MU, Langa KM. Differences in amount of informal care received by non-Hispanic whites and Latinos in a nationally representative sample of older Americans. *Journal of the American Geriatrics Society*. 2005; 53:146–151. [PubMed: 15667392]
- Wen LK, Shepherd MD, Parchman ML. Family support, diet, and exercise among older Mexican Americans with type 2 diabetes. *The Diabetes Educator*. 2004; 30:980–993. [PubMed: 15641619]

Table 1

Sociodemographic Characteristics of Respondents by Race/Ethnicity (N = 1,361)

	Non-Hispanic white (n=360)	Mexican American (n=742)	Vietnamese American (n=259)
Gender: % female	44.4 ^a	67.3 ^b	58.7 ^c
Age: <i>M (SD)</i>	60.68 (10.76) ^a	55.46 (10.94) ^b	66.43 (10.22) ^c
Marital status: % married	60.7 ^{ab}	56.6 ^a	67.2 ^b
Education: high school	91.2 ^a	21.5 ^b	48.5 ^c
Income: \$20,000	72.8 ^a	25.7 ^b	6.8 ^c
Years diagnosed with diabetes: <i>M (SD)</i>	8.25 (8.61) ^a	9.58 (7.33) ^b	8.54 (7.23) ^{ab}

Note. Values in the same row with different letters in their superscripts are significantly different from one another at $p < .05$.

Table 2

Sources and Frequency of Health-Related Social Support and Control by Race/Ethnicity (N = 1,361)

	Non-Hispanic white (n=360)	Mexican American (n=742)	Vietnamese American (n=259)
<i>Sources[§]</i>			
Spouse	39.9% ^a	48.5% ^b	50.5% ^b
Child	21.4% ^a	47.7% ^b	42.1% ^b
Sibling	10.3% ^a	17.9% ^b	8.6% ^a
Other relative	7.1% ^a	15.1% ^b	15.4% ^b
Friend/neighbor	10.6%	12.7%	12.3%
Other source	6.8%	7.8%	10.5%
<i>Frequency</i>			
Health-related social support	2.35 ^a	3.09 ^b	3.22 ^b
HRSC ^I : Persuasion	2.09 ^a	2.95 ^b	3.17 ^b
HRSC ^I : Pressure	1.55 ^a	2.29 ^b	2.08 ^b

Note. Values in the same row with different letters in their superscripts are significantly different from one another at $p < .05$.

Each analysis controlled for age, education, gender, marital status, total illness burden index, and duration of time with diabetes. Adjusted values are presented.

[§]Non-parametric methods were used for pairwise comparisons.

^IHRSC = health-related social control.

Table 3
Dietary Behavioral Responses to Health-Related Social Support and Control by Race/Ethnicity

	Non-Hispanic white (n=360)			Mexican American (n=742)			Vietnamese American (n=259)		
	β	T	Adjusted R^2	β	t	Adjusted R^2	B	t	Adjusted R^2
Health-related social support	.16**	2.93	.05	.19***	5.02	.08	.11	1.60	.10
HRSC: Persuasion	.01	.21	.03	.19***	4.84	.08	.12	1.78	.10
HRSC: Pressure	-.06	-1.04	.04	.13**	3.21	.06	-.02	-.24	.11

* $p < .05$;

** $p < .01$;

*** $p < .001$.

Note. HRSC = health-related social control. A total of nine separate regression analyses are reported above. Each analysis controlled for age, education, gender, marital status, total illness burden index, and duration of time with diabetes.