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Predicting Physical Activity Among Low-income Mexican American Women: Application of the Theory of Planned Behavior

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Objectives: To utilize the theory of planned behavior (TPB) in explaining the prediction of physical activity intention and determine if present activity behavior attenuates theory construct relationships in a sample of low-income Mexican women. **Methods:** Data were gathered on 201 subjects through a self-report survey instrument and analyzed through structural equation modeling. **Results:** Present activity behavior attenuated theory construct

influence on intention, and perceived behavioral control was the strongest predictor of intent to engage in physical activity. **Conclusions:** Interventions promoting voluntary physical activity for this population group should address factors perceived as barriers to participating in activity situations.

Key words: activity behavior, attitudes, perceived behavioral control, subjective norm

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It is estimated that only 32% of the US population aged 18 years and older engage regularly in moderate physical activity.¹ This high physical inactivity level constitutes a significant public health issue due to well-recognized relationships with increased risk of coronary heart disease, colon cancer, hypertension, and osteoporosis.² A disturbing phenomenon attendant to this issue is the

low level of physical activity involvement among Mexican American women. The literature indicates that Mexican American females compared with Black and non-Hispanic white females were least likely to engage in moderate or vigorous physical activity and to be physically active during leisure.^{3,4} Due to its important role in helping achieve or maintain healthy weight, monitoring physical activity levels is of particular concern in view of our nation's prevalence of overweight and obesity. Healthy People 2010 identified overweight and obesity as one of the country's 10 leading health indicators resulting from associations with a number of disease conditions including cardiovascular disease, diabetes, and cancer.⁵⁻⁹ Additionally, being overweight decreases life expectancy by one to 3 years and increases the risk from all cause mortality by 50 to 100%.⁵ Despite these health risks, overweight and obesity estimates have increased markedly in the

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United States in recent years. Troubling in this continuing epidemic is the disparity among ethnic groups. Although the prevalence of overweight and obesity in the overall adult population is approximately 65.7%, among Mexican Americans it is 72.5%.¹⁰ Moreover, in adult female Mexican Americans, obesity prevalence and magnitude are significant. Thirty-seven percent of Mexican American women are obese, body mass index of 30.0 or more; and increases in morbid obesity, body mass index of 40.0 or more, between 1990 and 2000 were 4- to 5-fold.^{11,12}

Obesity is produced by a combination of increased energy intake and decreased energy expenditure; therefore, strategies to reduce the prevalence of obesity must include increased energy expenditure and/or decreased energy intake. Moderate and regular physical activity is a critical component of any weight control program; however, studies on the topic report decreased activity to be an independent predictor of obesity in female Mexican Americans.^{13,14} The enormity of the physical inactivity and overweight/obesity issue among Mexican American women is underscored by their level of chronic disease risk and morbidity. When compared with non-Hispanic whites, female Mexican Americans have 2 to 3 times greater type 2 diabetes rates; are 6 times more likely to develop end-stage renal disease; and are more subject to severe hyperglycemia and its related complications of hypertension, hyperlipidemia, and atherosclerotic vascular disease.¹⁵⁻¹⁹

Utilizing the physical activity component of the weight control equation for this population group requires identification of those factors that influence voluntary participation. Such factors could serve as the focus of culturally sensitive education interventions promoting healthy weight. Inquiry into the decision-making process that leads people to participate in regular physical activity has resulted in development of models composed of key psychological constructs designed to predict and explain voluntary behavior. Two social cognitive theoretical frameworks that have been identified as being particularly useful to this end are the theory of reasoned action and the theory of planned behavior.^{20,21} The theory of reasoned action proposes that the in-

tent to perform a behavior can be predicted by attitude and subjective norm constructs. Attitude reflects one's positive or negative evaluation of performing the behavior, and subjective norm is the belief that important others think the individual should perform the behavior and, in turn, his or her motivation to comply with these others. The theory of planned behavior (TPB) builds on the theory of reasoned action by adding a perceived behavioral control component, the perception of the degree of difficulty or ease that the individual associates with enacting the behavior.²⁰⁻²² The TPB theorizes that persons will intend to perform a behavior when they evaluate it positively, believe that important others think they should perform it, and perceive it to be under their own control.²² Research using the TPB has demonstrated that when volitional control is more problematic, such as in the study of physical activity, the addition of perceived behavioral control significantly improves the predictive ability of the model.^{23,24} In attempts to explain additional variance in physical activity intention in the TPB, the contribution of present activity behavior has been examined in a number of participation intention studies. When present behavior is included as a predictor of activity intent, although it does not completely remove the effects of attitude, subjective norm, or perceived behavioral control on intention, it nonetheless attenuates or weakens relationships among the TPB constructs.²⁵⁻²⁷ Hagger and others²⁴ suggest this may be due to cognitions such as attitudes, subjective norms, and perceived behavioral control having less utility in motivating individuals who are already engaging in regular physical activity. Though a considerable amount of physical-activity intention investigation has been conducted, there is a paucity of research pertaining to only adult Mexican American females. In their meta-analysis of 72 studies that examined relationships between physical activity and reasoned action/planned behavior theory constructs, Hagger and others²⁴ indicated no investigations dealt specifically with this population group. Given the high prevalence and disturbing trends of overweight and obesity among Mexican American adult females as well as this phenomenon's potential impact on health, it is important that factors con-

tributing to the prediction of activity intention among this group be investigated. The purpose of the present study was to extend the research using the TPB in predicting physical activity intention to Mexican American women. In addition, present activity behavior was entered into the model as an independent variable to determine if it attenuates relationships among theory constructs. It is hypothesized that present activity behavior will attenuate construct relationships as shown in other studies on the topic.

METHODS

Sample and Administration

Study subjects were drawn from the parents, legal guardians, and adult relatives of boys and girls enrolled in an educational and cultural enrichment program for economically disadvantaged youth. The program was held on the University of Texas-Pan American campus located in the Lower Rio Grande Valley region of Texas, and guidelines required enrollees to reside within a target area where a minimum of 90% of families meet US Department of Health and Human Services poverty criteria. This target area designation was certified by the area community action agency. In order to take part in the program, each child must receive a medical examination which required parental/legal guardian consent and presence during the examination. Examinations were performed in the university fieldhouse with accompanying parents, legal guardians, and adult relatives allowed seating during the process. It was during this time that data collection was conducted by the investigators. As the boys and girls enrolled in the program were of low-income family target area designation, it was logically assumed those parents, legal guardians, and relatives present, serving as subjects, were of low-income status as well. Subjects were informed their involvement was voluntary and the study's purpose was to determine their feelings about physical activity. All Human Subjects Research Board stipulations were observed to protect the confidentiality and rights of the respondent. Respondents were provided a voucher for a fat-free frozen dessert as an incentive for participating.

Instrumentation

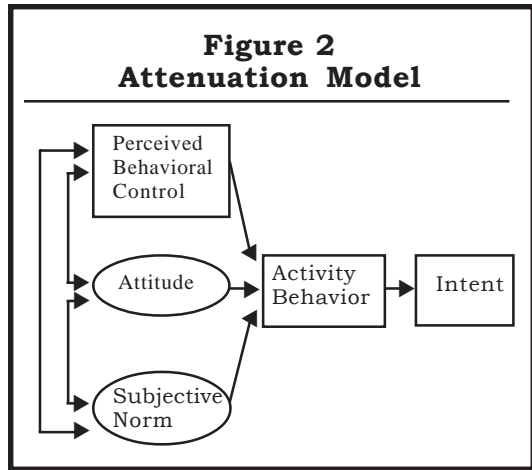
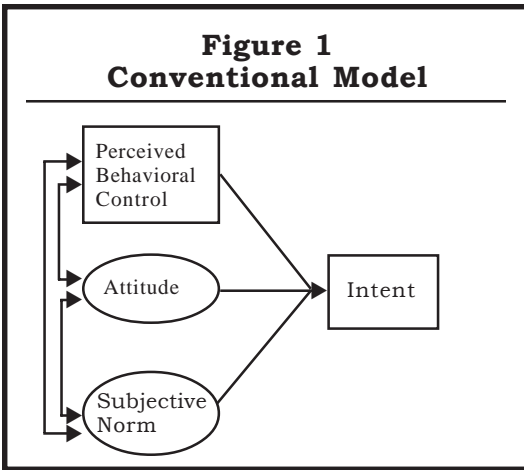
Data on TPB variables of attitude, sub-

jective norm, perceived behavioral control, and intention as well as present activity behavior, age gender, and ethnicity were collected through a self-report survey instrument. The instrument was printed in both English and Spanish in order to accommodate non-English-speaking participants with items translated into Spanish and back-translated to ensure accuracy, clarification, and content preservation. During testing, bilingual research assistants were present to assist respondents with instrument-item reading, comprehension, clarification, and translation issues and/or concerns. Theory variables were consistent with those recommended by Ajzen and Fishbein²¹ and Ajzen,²² with items and scales drawn from works on the topic.²⁸⁻³¹ For purposes of the study, physical activity was defined as engagement in moderate to vigorous activities during leisure and/or free time. Activities were categorized based on the Compendium of Physical Activity metabolic equivalent (MET) values.³² Using these guidelines, examples given to subjects as moderate activities included bowling, dancing, golf, yoga, walking at a moderate or vigorous pace, softball, and weight lifting. Vigorous activities included aerobics, jogging/running, basketball, tennis, soccer, bicycle riding on a stationary bike or bike outside, swimming, and roller skating/in-line roller skating.

Attitude, subjective norm, perceived behavioral control, intention, and present activity behavior were measured as follows.

Attitude. Direct measures of attitude toward physical activity were determined by 3 semantic differential measures, scored on a scale of 1 to 5, in response to the statement "I think that for me, participation in regular physical activity during the next 4 weeks would be . . ." Pair end points were not useful at all – very useful, unpleasant – very pleasant, and not fun at – very fun. The theoretical range for the scale was 3 to 15, with a higher score indicating a more positive attitude toward activity. The scale's alpha reliability coefficient for the study herein was .87.

Subjective norm. Direct measures of subjective norm were obtained by summing responses to 2 statements. The statements, with response options indicated on a 5-point Likert-type scale rang-



ing from strongly disagree to strongly agree, were “My friends think I should participate in regular physical activity during the next 4 weeks,” and “My family thinks I should participate in regular physical activity during the next 4 weeks.” The score for the 2 statements combined could range from 2 to 10, a higher score indicative of stronger degree of subjective norm. The omission of a motivation to comply measure in the subjective norm assessment was due to reports that such a measure does not substantially improve predictions of intention and, in fact, may weaken them.^{22,33} The important-others measure’s internal reliability for the study at hand was .78.

Perceived behavioral control. Perceived behavioral control was obtained by the subject’s response to the statement “I feel it is up to me to decide if I want to participate in regular physical activity or not.” Degree of disagreement or agreement to this direct measure was assessed by a 5-point Likert-type scale with end points of strongly disagree to strongly agree.

Intention. Physical activity intention was measured by the statement “At the present time, I plan to participate in physical activity during the next 4 weeks.” Respondents indicated the degree to which they disagreed or agreed with the item on a 5-point Likert-type scale ranging from strongly disagree to strongly agree.

Present activity behavior. Current physical activity level was measured by the subject’s response to the statement

developed and utilized by the National Center for Health Statistics¹²: “The number of times a week I participate in at least 10 minutes of leisure-time physical activity which causes an increase in sweating, breathing, or heart rate is . . .” Possible responses ranged from none to 5 or more times.

Data Analysis

Relationships among attitude, subjective norm, perceived behavioral control, and present activity behavior with physical activity intention were examined through structural equation modeling (SEM). To achieve the study’s stated purpose of explaining intention among adult female Mexican Americans, 2 models were examined. Figure 1 presents the conventional theory of planned behavior model, and Figure 2 presents the attenuation model with present activity behavior entered as an additional variable in the prediction of physical activity intention. Model adequacy of fit to the data was evaluated using Amos 5.0 software.³⁴ Additionally, descriptive statistics were calculated.

RESULTS

A total of 304 adults were tested; of these, 216 identified themselves as female Mexican Americans. Deletion of incomplete instruments yielded 201 study participants (M age=37.2 years, SD=6.81; age range 24 to 66 years). Subjects’ present physical activity behavior was low, with 24.4% indicating no participation and 49.8% reporting only one to two 10-

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Table 1
Structural Model Goodness-of-fit Indices

Model	χ^2	df	χ^2/df	CFI	RMSEA	AIC	PNFI
Conventional	15.05	11	1.37	0.99	0.04	63.05	0.51
Attenuation	57.16	17	3.36	0.91	0.11	111.16	0.54

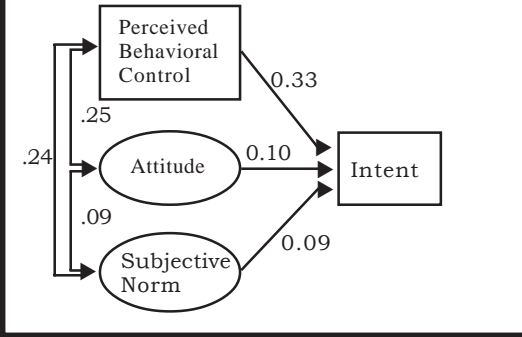
minute leisure-time activity engagements per week. Confirmatory factor analysis was used to test the measurement model. The fit of the model to the attitude and subjective norm scales was assessed by Cronbach alpha coefficient, composite reliability (CR), and variances extracted (VE). Previously mentioned alpha coefficient for the attitude scale was .87 and for the subjective norm scale was .78 with the CR for attitude and subjective norm scales .86 and .81, respectively. An acceptable fit for VE values is $>.50$.³⁵ Variance extracted values were .76 for attitude and .69 for subjective norm constructs. Confirmatory factor analysis indicated that an adequate fit of the model to the data was achieved.

Testing of the conventional and attenuation structural models included, in addition to obtaining measures of overall model fit, determination of pathway relationships among latent variables. Goodness-of-fit indices used to examine the models were comparative fit index (CFI), root mean square error of approximation (RMSEA), and comparative model Akaike information criterion (AIC) and parsimony normed fit index (PNFI) values. A good model fit is inferred when the CFI value is $>.94$; RMSEA value is $<.08$; and the comparative AIC values are smaller and PNFI values are higher.³⁵ Furthermore, due to this test's sensitivity to large sample size, the chi-square divided by degrees of freedom ratio was used, an acceptable ratio for this index being <3.0 .³⁵ Table 1 presents goodness-of-fit values for the 2 models. Overall, structural fit to the data values indicated the conventional model to be a better model fit and the attenuation model to be a poorer fit.

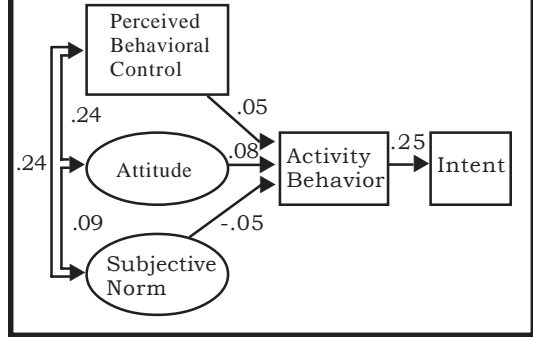
Figures 3 and 4 present conventional and attenuation model standardized pathway coefficients showing direction and magnitude of the associations. Resolving what indicates a large or small effect

concerning the standardized path coefficients is addressed in part by statistical significance tests, but interpretations are mitigated by sample size and intercorrelations among variables. A practical significance interpretative approach is to examine the absolute magnitude of the path coefficients using Kline's³⁶ guidelines. Standardized path coefficients with absolute values less than .10 may indicate a "small" effect; values around .30, a "medium" effect; and those greater than .50, a "large" effect. Fit indices indicated the conventional model to be adequate; and, although the magnitude of the path coefficients between latent variables were moderately related, they did support the hypothesized model. Conversely, the attenuation model's being a poorer fit is evidenced by resultant path coefficient decreases when physical activity behavior was included as a variable in intention prediction. Based on these indices, in the conventional model, SEM confirms perceived behavioral control makes the greatest contribution to form an intention to participate in physical activity with relatively small associations present with attitude and subjective norm. In the attenuation model, although perceived behavioral control and attitude and subjective norm association remained stable, their contribution to intention was weakened (Figure 4). The lessening effect on attitude and subjective norm path coefficients was minimal, but the magnitude of the perceived behavioral control path coefficient changed from a "medium" effect to a "small" effect.³⁶ This is supported by the 2 models' construct variable R-square value differences; that is, perceived behavioral control explained 15% of the variance (Beta=.47, $P<.001$) to intention prediction in the conventional model and minimal prediction, 1% of the variance, (Beta=.13, $P<.054$) in the attenuation model. These results indicate that inclu-

**Figure 3
Conventional Model Path
Coefficients**



**Figure 4
Attenuation Model Path
Coefficients**



sion of activity behavior reduces the effects of perceived behavioral control, attitude, and subjective norm on activity intention; and exclusion strengthens construct prediction of intent among the population group studied.

DISCUSSION AND IMPLICATIONS

This study employed SEM to examine associations among perceived behavioral control, attitude, subjective norm, and present activity behavior with intent to be physically active in a sample of low-income Mexican American females. Results suggest that perceived behavioral control served as the primary indicator of intention to be physically active; and consistent with previously mentioned studies, current activity behavior attenuated theory constructs' intention influence. This supports the relative efficacy of the conventional TPB in studying physical activity intention.

Our finding that perceived behavioral control exerts the greatest prediction on physical activity intention is somewhat contrary with the literature. According to narrative reviews, the majority of studies using the TPB in physical activity behavior research have reported that attitudes have the most pervasive influence on intentions.^{23,24} Terry and O'Leary³⁷ have shown that items used to measure perceived behavioral control can be classified as external aspects of control and difficulty. They view these aspects as the influence of external barriers on behavior. It seems that in our sample the per-

ceived control cognition is integral for translating thoughts into action, which is consistent with the idea that involvement in volitional behavior such as physical activity involves conscious evaluation of exercise barriers.³⁸ With the exception of low-income status, no socioeconomic data were available on the subjects; however, poverty is recognized as a powerful correlate of physical inactivity. Adults living at or below poverty status are less likely to have regular leisure-time physical activity and are more likely to be inactive than are persons with higher incomes.¹² Ajzen²² indicates that the magnitude of attitude, subjective norm, and perceived behavioral control on intention could vary with situational conditions. For the low-income Mexican American female, perception of control over perceived barriers may help explain the importance of this construct in intent to be physically active. Among those not experiencing the dire effects of poverty (unemployment, substandard housing, low educational attainment), intentions to be active may be less related to perceived behavioral control and more strongly reflective of personal attitudes. On the other hand, among low-income persons, perception of control over time, safety, and health factors become more important, regardless of affective feelings about physical activity.

The predictive power of perceived behavioral control in intention would indicate interventions promoting physical activity for Mexican American women

focus on fostering a sense of control over physical activity situations. In practical terms, this implies making physical activity more desirable and convenient. This infers addressing the barriers of availability and distance to facilities, health and safety concerns, and health care access; and availability of relevant health information and resources precede development of specific behavioral control strategies. This presents a daunting task, requiring both community and governmental support and commitment. Moreover, physical activity opportunities should be available to everyone; provision of equal opportunities for low-income individuals must be seen in the context of improving opportunities for all Americans.

Although the present results add to the participation intention literature in an underreported and rapidly growing population group, several limitations should also be acknowledged. First, participants were a convenience sample of female Mexican Americans, and data were gathered through the use of a self-report instrument. This methodological limitation may not take into account the cultural validity of the intention prediction items. Even though bilingual personnel were present to assist participants, conducting elicitation interviews rather than self-report could enhance model construct interpretation and add confidence to the robustness of the theory. Second, subjects' level of acculturation, a factor which may play a role in activity intention and behavior, was unknown. The process of acculturation among Mexican Americans has been associated with poorer diet and increased obesity,^{13,39} and its impact on physical activity warrants investigation. Third, socioeconomic data relating to educational level, occupation, and income was not available. This information could help to more fully explain TPB construct implications and current activity behavior. Certainly an area for further inquiry is the influence of the family in physical activity behavior. Among Mexican Americans, the family is the central thread that connects all its members to each other and the culture with all its values. The traditional hierarchical role of the Mexican American male is that he is the primary decision maker and the female is the homemaker and caretaker. Even though Vega⁴⁰ reports that many Mexican American males and females feel this

traditional role is a thing of the past and is something more prevalent in Mexico than in the United States, it nonetheless may play an underlying role in the female's perception of behavioral control. Furthermore, more research is needed to determine if the present study's findings replicate in other geographic locations or among other Hispanic population groups and to examine for the strength of the effect on behavior that intentions based on perceived behavioral control produce. ■

REFERENCES

1. National Center for Health Statistics. Health Behaviors of Adults: United States, 1000-2001. Vital and Health Statistics. Hyattsville, MD: U. S. Government Printing Office 2004:219-220.
2. U. S. Department of Health and Human Services. Physical Activity and Health: A Report of the Surgeon General. Atlanta, GA: Centers for Disease Control and Prevention 1996:32-40.
3. Ford ES, Ford MA, Will JC, et al. Achieving a healthy lifestyle among United States adults: a long way to go. *Ethn Dis.* 2001;11:224-231.
4. Crespo CJ, Smit E, Anderson RE, et al. Race/ethnicity, social class and their relation to physical inactivity during leisure time: results from the third national health and nutrition examination survey, 1998-1994. *Am J Prev Med.* 2000;18:46-53.
5. Allison DB, Fontaine KR, Manson FE, et al. Annual deaths attributable to obesity in the United States. *JAMA.* 1999;282:1530-1538.
6. Calle EE, Rodriguez C, Walker-Thurmond K, et al. Overweight, obesity, and mortality from cancer in a prospectively studied cohort of U. S. adults. *N Engl J Med.* 2003;348:1625-1628.
7. Healthy People 2010. 2nd ed. Washington, DC: U. S. Department of Health and Human Services 2000:91-95.
8. Mokdad AH, Ford ES, Bowman BA, et al. Prevalence of obesity, diabetes, and obesity-related health risk factors. *JAMA.* 2003;289:76-79.
9. Must A, Spadano J, Coakley EH, et al. The disease burden associated with overweight and obesity. *JAMA.* 1999;282:1523-1529.
10. Hedley AA, Ogden CL, Johnson C, et al. Prevalence of overweight and obesity among US children, adolescents, and adults, 1999-2002. *JAMA.* 2002;291:2847-2850.
11. Freedman DS, Khan LK, Serdula MK, et al. Trends and correlates in class 3 obesity in the United States from 1990 through 2000. *JAMA.* 2002;288:1758-1761.
12. National Center for Health Statistics. Health, United States, 2005 With Chartbook on Trends in the Health of Americans. Hyattsville, MD: U. S. Government Printing Office 2005:40,106,276.
13. Hubert HB, Snider J, Winkelby MA. Health

- status, health behaviors, and acculturation factors associated with overweight and obesity in Latinos from a community and agricultural labor camp survey. *Prev Med.* 2005;40:642-651.
14. Rutt CD, Coleman KJ. Examining the relationship among built environment, physical activity, and body mass index in El Paso, TX. *Prev Med.* 2005;40:831-841.
 15. Haffner SM, Morales PA, Hazuda HP. Level of control of hypertension in Mexican American and non-Hispanic whites. *Hypertension.* 1993;21:83-88.
 16. Hunt KJ, Williams R, Resendez RG. All-cause and cardiovascular mortality among diabetic participants in the San Antonio Heart Study: evidence against the "Hispanic paradox." *Diab Care.* 2002;25:1557-1563.
 17. Nakamura RM. Health in America: A Multicultural Perspective. Boston: Allyn & Bacon 1999:194-195.
 18. Sundquist J, Winkleby MA. Cardiovascular risk factors in Mexican American adults: a transcultural analysis of NHANES III, 1988-1994. *Am J Public Health.* 1999;89:723-730.
 19. West SK, Klein R, Rogriquez J. Diabetes and diabetic retinopathy in a Mexican American population: proyecto VER. *Diab Care.* 2001;24:1204-1209.
 20. Ajzen I. From intentions to actions: a theory of planned behavior. In Kuhle J, Beckman J, (Eds). Action-Control: From Cognition to Behavior. Heidelberg, Germany: Springer 1985:11-39.
 21. Ajzen I, Fishbein M. Understanding Attitudes and Predicting Social Behavior. Englewood Cliffs, NJ: Prentice Hall 1980:6-41.
 22. Ajzen I. The theory of planned behavior. Organizational Behav Human Decision Processes. 1991;50:179-211.
 23. Godin G, Kok G. The theory of planned behavior: a review of its applications to health-related behaviors. *Am J Health Promot.* 1996;11:87-98.
 24. Hagger MS, Chatzisarantis NL, Biddle SJ. A meta-analytic review of the theories of reasoned and planned behavior in physical activity: predictive validity and the contribution of additional variables. *J Sport Exerc Psychol.* 2002;24:3-32.
 25. Bagozzi RP, Kimmel SK. A comparison of leading theories for the prediction of goal directed behaviours. *Br J Soc Psychol.* 1995;34:437-461.
 26. Norman P, Smith L. The theory of planned behaviour and exercise: an investigation into the role of prior behaviour, behavioural intentions and attitude variability. *Eur J Soc Psychol.* 1995;25:403-415.
 27. Yordy GA, Lent RW. Predicting aerobic exercise participation: social cognitive, reasoned action, and planned behavior models. *J Sport Exerc Psychol.* 1993;15:363-374.
 28. Godin G, Shephard RJ. Psychosocial factors influencing intentions to exercise of young students from grades 7 to 9. *Res Q Exerc Sport.* 1986;57:41-52.
 29. Godin G, Vezina L, Leclerc O. Factors influencing intentions of pregnant women to exercise after giving birth. *Public Health Rep.* 1989;104:188-195.
 30. Mummery WK, Spence JC, Hudec JC. Understanding physical activity intention in Canadian school children and youth: an application of the theory of planned behavior. *Res Q Exerc Sport.* 2000;71:116-124.
 31. Wankel LM, Mummery WK, Stephens T, et al. Prediction of physical activity intention from social psychological variables: results from the Campbell's survey of well-being. *J Sport Exerc Psychol.* 1994;16:55-69.
 32. Ainsworth BE, Haskell WL, Whitt MC, et al. Compendium of physical activities: an update of activity codes and MET intensities. *Med Sci Sports Exerc.* 2000;32(Suppl):S498-S504.
 33. Ajzen I, Driver BL. Application of the theory of planned behavior to leisure choice. *J Leisure Res.* 1992;24:207-224.
 34. Arbuckle JL, Wothke W. Amos 5.0 User's Guide. Chicago: Small Waters Corporation 2005.
 35. Hair JF, Anderson RE, Tatham RL, et al. Multivariate Data Analysis. Upper Saddle River, NJ: Prentice Hall 1998:642, 689-690.
 36. Kline RB. Principles and Practice of Structural Equation Modeling. New York: Guilford Press 1998:118.
 37. Terry DJ, O'Leary JE. The theory of planned behaviour: the effects of perceived behavioural control and self-efficacy. *Br J Soc Psychol.* 1995;34:199-220.
 38. Bargh JA, Chartrand TL. The unbearable automaticity of being. *Am Psychologist.* 1999;54:462-479.
 39. Bermudez OL, Falcon LM, Tucker KL. Intake and food sources of macronutrients among older Hispanic adults: association with ethnicity, acculturation, and length of residence in the United States. *J Am Diet Assoc.* 2000;100:665-673.
 40. Vega WA. The study of Latino families: a point of departure. In Zambrana RE, (Ed). Understanding Latino Families: Scholarship, Policy, and Practice. Thousand Oaks, CA: Sage Publishing 1995:3-17.