Abstract

Background: Hispanic adults in the United States are at particular risk for diabetes and inadequate blood pressure control. Physical activity improves these health problems; however Hispanic adults also have a low rate of recommended aerobic physical activity. To address improving physical inactivity, one area of rapidly growing technology that can be utilized is text messaging (short message service, SMS). A physical activity research team, Text4Walking, had previously developed an initial database of motivational physical activity text messages in English that could be used for physical activity text messaging interventions. However, the team needed to translate these existing English physical activity text messages into Spanish in order to have culturally meaningful and useful text messages for those adults within the Hispanic population who would prefer to receive text messages in Spanish.

Objective: The aim of this study was to translate a database of English motivational physical activity messages into Spanish and review these text messages with a group of Spanish speaking adults to inform the use of these text messages in an intervention study.

Methods: The consent form and study documents, including the existing English physical activity text messages, were translated from English into Spanish, and received translation certification as well as Institutional Review Board approval. The translated text messages were placed into PowerPoint, accompanied by a set of culturally appropriate photos depicting barriers to walking, as well as walking scenarios. At the focus group, eligibility criteria for this study included being an adult between 30 to 65 years old who spoke Spanish as their primary language. After a general group introduction, participants were placed into smaller groups of two or three. Each small group was asked to review a segment of the translated text messages for accuracy and meaningfulness. After the break out, the group was brought back together to review the text messages.

Results: A translation confirmation group met at a church site in an urban community with a large population of Hispanics. Spanish speaking adults (N=8), with a mean age of 40 (SD 6.3), participated in the study. Participants were engaged in the group and viewed the text messages as culturally appropriate. They also thought that text messages could motivate them to walk more. Twenty-two new text messages were added to the original database of 246 translated text messages. While the text messages were generally understood, specific word preferences were seen related to personal preference, dialect, and level of formality which resulted in minor revisions to four text messages.

Conclusions: The English text messages were successfully translated into Spanish by a bilingual research staff and reviewed by Hispanic participants in order to inform the use of these text messages for future intervention studies. These Spanish text messages were recently used in a Text4Walking intervention study.
Introduction

In the United States, Hispanic adults are at increased risk for diabetes and inadequate blood pressure control as compared to white, non-Hispanic adults [1]. Obtaining regular physical activity improves diabetes and hypertension [2]. However, the Hispanic adult population has lower rates of aerobic physical activity (29.1%) compared with the non-Hispanic white population (43.1%) [3]. One area of rapidly growing technology that is being utilized to change health behaviors is SMS text messaging (short message service, SMS) [4]. Intervention studies have shown that text messages can be effectively used in improving physical activity [5,6]. Using text messaging as an intervention to promote physical activity is important to consider in the United States, as 90% of adults use mobile phones and 81% of Americans overall engage in texting. Text messaging is even higher for the Hispanic population (87%) [7], a growing population that has increased by 50% since 2000 in the United States and now represents 53 million Americans [8].

A research team, called Text4Walking has completed formative work in the development of motivational physical activity text messages to be used in physical activity intervention studies. In order to develop an initial database of physical activity text messages in English that could be used for intervention studies, the Text4Walking research team held three focus groups with adults (N=23). To promote group discussion, pictures were used that depicted walking barriers and scenarios. Participants were asked to develop text messages to encourage people to overcome barriers to walking and become more physically active [9]. Additional text messages were later added to this original database by the Text4Walking team.

The research team wanted to include the Hispanic population in their physical activity intervention work because of the low physical activity rates in Hispanics residing in the United States. The vast majority of Hispanic adults (95%) consider it important for future US Hispanic generations to be able to speak Spanish [10]. In addition, Spanish was shown to be the preferred contact language in a longitudinal research program conducted with Mexican Americans to improve diabetes self-management [11]. Therefore, in order for this population to be part of future Text4Walking intervention studies, the team needed to translate existing English text messages into Spanish, to provide participants with a choice of receiving either Spanish or English text messages. However, no study has been located that specifically addresses the process of translating motivational physical activity text messages from English into Spanish.

Translation is an activity that inevitably involves at least two languages and two cultural traditions. The cultural implications for translation may take several forms ranging from lexical content and syntax to ideologies and ways of life in a given culture [12]. Therefore, the translator/facilitator in a research group has to decide on the importance given to certain cultural aspects. Important components to consider with bilingual interventions are bilingual and bicultural facilitators and materials, inclusion of family-based activities, literacy appropriate materials, social support, and a clear understanding of Hispanic cultural values [13].

Federal regulations in the United States require that information about participation in research be presented in a language understandable to the potential subject or their representative [14-16]. The informed consent process is one of the most basic concepts of human subject research. In the Belmont Report, the ethical principle of Respect for Persons requires that all subjects be given the opportunity to choose what they will or will not participate in [17]. Consenting requires adequate information, comprehension, and voluntariness. Thus, to meet the requirements of informed consent, if a study’s focus is a population whose principle language is not English, consent documents must be translated into that language. During the consent process an interpreter should be available as well. Each organization’s Institutional Review Board will require verification that the translated consent documents are true translations. Most organizations require a certified translation. It is important for researchers to know how their local policies meet federal requirements [18]. The purpose of this study was to translate a database of English physical activity text messages into Spanish and review those text messages with a group of Spanish speaking adults to inform the use of these text messages in an intervention study.

Methods

Design, Sample, and Setting

A translation confirmation group was used for this study [19]. Eligibility criteria for this study included being an adult who spoke Spanish as their primary language, 30 to 65 years old, not engaging in regular physical activity, with no health problems that prohibited them from increasing physical activity, and familiar with texting. The group met at a church site in an urban city with a large population of Hispanics as more than one-fourth (28%) of the city self-identifies as Hispanic [20].

Procedures

The consent form and study documents, including the existing English physical activity text messages, were translated from English into Spanish initially by a native English speaker fluent in Spanish. These translated messages were then reviewed by a native Spanish speaker fluent in English. These bilingual research team members then gained consensus on the translated documents. The team members used Columbian Spanish for translation. After this, all study documents were reviewed, revised as needed, and approved by a certified translator. Rush University Institutional Review Board approved the study.
The 1.5 hour session was co-moderated by a bilingual doctoral level researcher and a master’s prepared researcher. An English speaking doctoral level experienced focus group researcher was also present. A research assistant recorded participant contributions on a flip chart. The translated text messages were placed into PowerPoint, accompanied by a set of 44 culturally appropriate photos depicting barriers to walking, as well as walking scenarios. Prior to group activity, participants completed a brief survey regarding questions about their text message usage. A general introduction was then provided after which participants were placed into smaller groups of two or three. Each small group was asked to review a segment of the 246 translated text messages for accuracy and meaningfulness. Participants were given handouts with specific translated text messages upon which they were asked to write their comments. After the break out, the group was brought back together to review the text messages.

Data Analysis

The bilingual group leaders along with an experienced qualitative researcher reviewed three sources of data. First, they reviewed the handwritten participant notes on the handouts. Second, they reviewed the audiotape transcripts that were first transcribed into Spanish and then translated into English. Third, they reviewed the flip chart notes containing group reflections. A consensus was reached by the three researchers who reviewed the data as to when and how to edit any of the translated text messages, as well as determining which text messages should be added as a result of participant suggestions.

Results

Of the 13 adults screened for the study, 5 were either unable to attend the group or were ineligible. As a result, 8 Spanish speaking adults participated in the study (Table 1).

Table 1. Demographics and text message use.

| Demographics                        | 40 (6.3) |
|-------------------------------------|----------|
| Age (years), mean (SD)              | 63       |
| Gender (%) – women                  | 100      |
| Ethnicity (%) – Hispanic            |          |
| Education                           |          |
| Some high school or less (%)        | 37.5     |
| Completed high school (%)           | 37.5     |
| Some college or completed college (%)| 25       |
| Body mass index, mean (SD)          | 32.25 (5.78) |
| Text message use                    | 100      |
| Mobile phone has text messaging capability (%) | 88       |
| Unlimited text messaging plan (%)   | 75       |
| Sends > 4 SMS text messaging weekly (%) | 63       |
| Receives > 4 SMS text messaging weekly (%) |         |
| Ease of use of text messaging function (%) | 50       |
| Very easy                           | 38       |
| Somewhat easy                       | 12       |
| Neither easy nor difficult          | 0        |
| Somewhat difficult                  | 0        |
| Very difficult                      | 0        |

Participants were engaged in the group. They thought that text messages could motivate them to walk more and suggested that receiving two text messages a day would be motivational for them. Twenty-two new text messages were added to the original database of 246 translated text messages, which resulted in a total of 268 text messages. While text messages were generally understood and seen as culturally appropriate, specific word preferences were seen related to personal preference, dialect, and level of formality which resulted in minor revisions to four text messages. Table 2 provides examples of 25 of the translated text messages from the approved database.
Table 2. Examples of Spanish text messages translated from English.

| English text message                          | Spanish text message                        |
|-----------------------------------------------|---------------------------------------------|
| Get up. Today is a good day to walk.          | Levántate. Hoy es un buen día para caminar. |
| Encourage family walking                      | Anime a la familia a caminar juntos         |
| Activity begins with childhood and never ends | La actividad empieza con la niñez y nunca termina |
| Get up and start walking                      | Levántese y empiece a caminar               |
| Walk for peace of mind                        | Camine para despejar la mente                |
| Enjoy nature – walk                           | Disfrute de la naturaleza. Camine           |
| Walking is exercise – you can do this!        | Caminar es ejercicio - ¡usted puede!        |
| Increase steps today – hike at a park         | Aumente sus pasos hoy - tome una caminata en el parque |
| Get out to walk                                | Salga a caminar                             |
| Eat less. Walk more                           | Coma menos. Camine más.                     |
| Walk with the family                          | Camine con la familia                       |
| Get out and enjoy the day                     | Salga y disfrute del día                    |
| Take some me time – walk                      | Dedique tiempo para usted                   |
| Make leisure time a healthy time              | Haga su tiempo libre un tiempo saludable    |
| Schedule time to walk                         | Reserve tiempo para caminar                 |
| Walk around, look around and be safe          | Camine, observe y manténgase seguro         |
| Walk and think about life                     | Camine y piense sobre la vida               |
| Challenge yourself and walk a little further  | Póngase la meta de caminar un poco más lejos|
| Walking daily helps to maintain walking       | Caminar diariamente ayuda a mantener el hábito de la caminata |
| Encourage others to walk with you by exploring as you walk | Anime a otros a que caminen con usted mediante explorar cuando camina |
| Walk with the kids                            | Camine con los niños                        |
| Relax by walking                               | Relájese caminando                          |
| Take a walk and clear your mind               | Salga a caminar y despeje la mente          |
| Get out and move about                        | Salga y manténgase activo                   |
| Don’t sit still, time doesn’t                 | No se sienta por mucho tiempo - el tiempo no espera |

Discussion

This study demonstrated a method whereby English motivational physical activity text messages could be successfully translated into Spanish by a bilingual research team and then reviewed with Hispanic participants in order to inform the use of these text messages in a future intervention study. It is important to use culturally appropriate text messages translated into Spanish to promote healthy behavior changes in the Hispanic population. While intervention sustainability is still a challenge, there is now an opportunity for text messaging programs to be used in the Hispanic population to improve health [21-23]. When ready to be used in the public policy arena, text messages need to be reviewed for both cultural and linguistic appropriateness [24].

This study had some limitations. The sample size was small, from one geographic location, and participants self-selected to be in the study. However, qualitative research is not conducted so that findings can be generalized to other populations. The purpose of this study was to review a translated set of text messages for use in a future intervention study.

Developing culturally appropriate text messages necessitates the use of bilingual and bicultural facilitators and materials to facilitate the development of tailored text messaging [13]. By assuring cultural appropriateness, this study demonstrated an effective method to translate and review physical activity text messages. The research team recently successfully included these Spanish text messages in a Text4Walking intervention study.

Acknowledgments

We thank the Pastor, congregation, and the Text4Walking participants for supporting our research efforts; Rush University College of Nursing for funding the study; JoEllen Wilbur, PhD, RN, FAAN for her contribution to study design; Alexis Manning, MA and Aaron Troy Wiltz for assistance with conducting the study; and Martina Irene Buchholz, BS for assistance with the data.
Authors’ Contributions

Dr Buchholz was the lead writer on this manuscript. Dr Sandi and Dr Ingram advised and wrote about the cultural aspects of the study. Dr Welch advised and wrote about the IRB aspect of the study. Ms Ocampo advised and wrote about the Spanish text message aspect of the study.

Conflicts of Interest

None declared.

References

1. Centers for Disease Control and Prevention. MMWR 2013 Nov;62(Suppl 3). CDC Health Disparities and Inequalities Report — United States, 2013 URL: http://www.cdc.gov/mmwr/pdf/other/su6203.pdf [accessed 2015-04-23] [WebCite Cache ID 6Y1FM6VFB]

2. World Health Organization. Physical Activity. 2014 URL: http://www.who.int/mediacentre/factsheets/fs385/en/ [accessed 2014-10-16] [WebCite Cache ID 6TV2BvqN6]

3. National Center for Health Statistics. Health, United States: 2012, with Special Feature on Emergency Care. 2013. URL: http://www.cdc.gov/nchs/data/hus/hus12.pdf [accessed 2015-04-16] [WebCite Cache ID 6XxonDb8p]

4. Fioretti M, Diviani N, Schulz PJ. Mapping mHealth research: a decade of evolution. J Med Internet Res 2013;15(5):e95 [FREE Full text] [doi: 10.2196/mir.2430] [Medline: 23697600]

5. Buchholz SW, Wilbur J, Ingram D, Fogg L. Physical activity text messaging interventions in adults: a systematic review. Worldviews Evid Based Nurs 2013 Aug;10(3):163-173. [doi: 10.1111/wvn.12002] [Medline: 23746267]

6. Fanning J, Mullen SP, McAuley E. Increasing physical activity with mobile devices: a meta-analysis. J Med Res Med 2012;14(4):e161 [FREE Full text] [doi: 10.2196/mir.2171] [Medline: 23171838]

7. Pew Research Center. Mobile Technology Fact Sheet. 2014 URL: http://www.pewinternet.org/factsheets/mobile-technology-fact-sheet/ [accessed 2014-10-20] [WebCite Cache ID 6TV2Te1kq]

8. Brown A. The U.S. Hispanic Population has Increased Six-fold since 1970. 2014 URL: http://www.pewresearch.org/fact-tank/2014/02/26/the-u-s-hispanic-population-has-increased-sixfold-since-1970/ [accessed 2014-10-20] [WebCite Cache ID 6TV2Tr26]

9. Buchholz SW, Ingram D, Wilbur J, Pelt P. Using photos to develop text messages to promote walking. J Nurs Scholarsh 2013 Dec;45(4):380-387. [doi: 10.1111/jnu.12043] [Medline: 23870429]

10. Taylor P, Lopez MH, Martinez JH, Velasco G. When Labels Don’t Fit: Hispanics and Their Views of Identity. 2012. URL: http://www.pewhispanic.org/files/2012/04/PHC-Hispanic-Identity.pdf [accessed 2015-04-21] [WebCite Cache ID 6XxpDgDp4b]

11. Brown SA, Hanis CL. Lessons Learned from 20 Years of Diabetes Self-Management Research With Mexican Americans in Starr County, Texas. Diabetes Educ 2014 Apr 15;40(4):476-487. [doi: 10.1177/0145721714531336] [Medline: 24737885]

12. Kreps GL, Sparks L. Meeting the health literacy needs of immigrant populations. Patient Educ Couns 2008 Jun;71(3):328-332. [doi: 10.1016/j.pec.2008.03.001] [Medline: 18377773]

13. Mier N, Ory MG, Medina AA. Anatomy of culturally sensitive interventions promoting nutrition and exercise in Hispanics: a critical examination of existing literature. Health Promot Pract 2010 Jul;11(4):541-554 [FREE Full text] [doi: 10.1177/1524839908328991] [Medline: 19193933]

14. U.S. Department of Health and Human Services. Code of Federal Regulations Title 45 Part 46 Protection of Human Subjects. 2009. URL: http://www.hhs.gov/ohrp/policy/ohrpregulations.pdf [accessed 2014-10-19] [WebCite Cache ID 6TV3XxdM0]

15. U.S. Food and Drug Administration. CFR-Code of Federal Regulations Title 21: Section 50.25 Elements of Informed Consent. 2014. URL: http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfcrf/CFRSearch.cfm?FR=50.25 [accessed 2014-10-20] [WebCite Cache ID 6TV3dJfVP]

16. U.S. Food and Drug Administration. CFR-Code of Federal Regulations Title 21: Section 50.27 Documentation of Informed Consent. 2014. URL: http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfcrf/CFRSearch.cfm?FR=50.27 [accessed 2014-10-20] [WebCite Cache ID 6TV3p5ReU]

17. U.S. Department of Health and Human Services. The Belmont Report. 1979. URL: http://www.hhs.gov/ohrp/humansubjects/guidance/belmont.html [accessed 2014-10-20] [WebCite Cache ID 6TV3wB9HP]

18. Rush University Medical Center Policies and Procedures. Use of Translated Consent Documents for Research Subjects, Including "Short Form" Consents (Policy Number RA-IRB-202). 2011. URL: http://www.rushu.rush.edu/servlet/Satellite?blobloc=url&amp;blobheader=application%2Fpdf&amp;blobkey=id&amp;blobtable=document&amp;blobwhere=12511210999&amp;s-selector=1 [accessed 2014-10-20] [WebCite Cache ID 6TV4Oce4x]

19. Daniel M, Miller A, Wilbur J. Multiple instrument translation for use with South Asian Indian immigrants. Res Nurs Health 2011 Oct;34(5):419-432 [FREE Full text] [doi: 10.1002/nur.20450] [Medline: 21818758]

20. U.S. Census Bureau. Joliet, Illinois Population: Census 2010. 2011. URL: http://censusviewer.com/city/IL/Joliet [accessed 2014-10-20] [WebCite Cache ID 6TV4XleKs]
21. Holton A, Love B. Lonely no more: remembering text messaging in mHealth conversations. Health Commun 2013;28(5):530-532. [doi: 10.1080/10410236.2012.713776] [Medline: 23356483]

22. Kolodziejczyk JK, Norman GI, Barrera-Ng A, Dillon L, Marshall S, Arredondo E, et al. Feasibility and effectiveness of an automated bilingual text message intervention for weight loss: pilot study. JMIR Res Protoc 2013;2(2):e48 [FREE Full text] [doi: 10.2196/resprot.2789] [Medline: 24200517]

23. Whittaker R, Matoff-Stepp S, Meehan J, Kendrick J, Jordan E, Stange P, et al. Text4baby: development and implementation of a national text messaging health information service. Am J Public Health 2012 Dec;102(12):2207-2213. [doi: 10.2105/AJPH.2012.300736] [Medline: 23078509]

24. Tirado M. Role of mobile health in the care of culturally and linguistically diverse US populations. Perspect Health Inf Manag 2011 Jan;8:1e [FREE Full text] [Medline: 21307988]