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## The Influence of Time Perspective on Cervical Cancer Screening among Latinas in the United States

Angelica M. Roncancio, Ph.D.<sup>1</sup>, Kristy K. Ward, M.D.<sup>2</sup>, and Maria E. Fernandez, Ph.D.<sup>1</sup>

<sup>1</sup>Center for Health Promotion and Prevention Research, School of Public Health, The University of Texas Health Science Center

<sup>2</sup>Rebecca and John Moores UCSD Cancer Center, Department of Reproductive Medicine, Division of Gynecologic Oncology, La Jolla, CA

### Abstract

To develop effective interventions to increase cervical cancer screening among Latinas, we should understand the role of cultural factors, such as time perspective, in the decision to be screened. We examined the relation between present time orientation, future time orientation and self-reported cervical cancer screening among Latinas. A group of 206 Latinas completed a survey measuring factors associated with screening. Logistic regression analyses revealed that future time orientation was significantly associated with self-reported screening. Understanding the influence of time orientation on cervical cancer screening will assist us in developing interventions that effectively target time perspective and screening.

### Keywords

adherence; beliefs; ethnicity; theory; women's health

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Latinas carry a disparate burden of cervical cancer in the United States with an incidence nearly double the incidence for non-Latinas (Howlander et al 2011) As lack of timely screening is the main reason for the high incidence of cervical cancer (Barnholtz-Sloan et al., 2009), research has focused on identifying factors that influence screening. Demographic factors such as lower incomes (Ackerson & Gretebeck, 2007), lack of health insurance (Rodriguez et al., 2005), and not speaking English (Austin et al., 2002) are associated with lower screening rates among Latinas. Psychosocial factors such as social support (Byrd et al., 2007), perceived benefits and barriers to screening (Byrd et al., 2007; Byrd et al., 2004), and acculturation (Byrd et al., 2004; Chavez et al., 2001; Fernandez-Esquer et al., 2003; Moreland et al., 2006) have also been found to predict screening. Given the influence of culture on behavior (Borrayo et al., 2009; Goodenough, 1971; Tybout & Artz, 1994), it is important to identify the different culturally-influenced factors associated with cervical cancer screening among Latinas.

Culture is a set of shared rules established by a group of people to guide behavior. The rules, also known as cultural values, establish guidelines for acceptable attitudes and beliefs which in turn influence behaviors (Matsumoto & Juang, 2008). Time perspective is one such cultural value. Time perspective, as defined by Lewin (1997), is an individual's understanding of his or her psychological past and future at any point in time. It is described as consisting of three main temporal orientations: past, present, and future (Zimbardo & Boyd, 1999). Lewin maintained that time perspective is influenced by an individual's social background or culture. Jean Piaget's research which found that children gradually develop a sense of time including what the past and future mean supports the idea that time perspective is a learned cultural value (Piaget, 1999). As further support, researchers have found that the significance of the past, present and future varies depending on the society in question. For example, the future has been found to be more important to Western societies as compared to non-Western societies (McInerney, Roche, McInerney & Marsh, 1997).

A past orientation involves looking to the past for guidance on how to respond to the current situation. Those with present orientation are more concerned with immediate behavior and its outcomes as opposed to future consequences of behavior. These individuals are less likely to engage in behaviors that will result in future benefits than behaviors that provide immediate benefits. Finally, future-orientation involves considering the future effects and consequences of behavior before acting.

The majority of research investigating the association between time orientation and behavior has focused on present time orientation and future time orientation. Researchers have found that present time orientation predicts risky driving behavior (Zimbardo et al., 1997), increased smoking, drinking, and drug use (Keough et al., 1999), and is negatively associated with being screened for breast cancer (Lukwago et al., 2003).

Future oriented individuals tend to be responsible and self-motivated. Future orientation is associated with positive health behaviors that lead to better future health or the avoidance of future illness and negatively associated with smoking, alcohol and substance abuse (Keough et al., 1999; Petry et al., 1998; Wills et al., 2001), and engaging in HIV risk behaviors (Rothspan & Read, 1996). Future orientation also predicts mammography adherence (Steele-Moses et al., 2009).

Understanding the role of time orientation on cervical cancer screening among Latinas is important in order to develop culturally appropriate messages to increase screening. The present study examined the relationship between present time orientation, future time orientation, and self-reported cervical cancer screening behavior in the past three years among a group of Latinas. We hypothesized that present time orientation would be negatively associated with cervical cancer screening and future time orientation would be positively associated with cervical cancer screening.

## Methods

### Participants and procedure

The participants in this study consisted of 210 females recruited at two study sites: 1. an annual health fair sponsored by the American Diabetes Association in Houston, Texas and 2. a Catholic church in Los Angeles, California. The majority of the participants (N=199) were recruited at the California study site. Verbal consent to participate was obtained. The questionnaire was anonymous, available in English and Spanish, required approximately 40 minutes to complete, and was completed on-site. Participants were entered into a gift card drawing in exchange for their participation. All procedures were approved by the University of Houston's Committee for the Protection of Human Subjects. Women who indicated that they had previously been diagnosed with cervical cancer (N = 4) were excluded from the current analyses. The final sample retained for analyses in the current study consisted of 206 women (mean age = 36.12, SD = 5.98). Approximately 97% of the women completed the Spanish version of the questionnaire.

### Measures

The measures employed in this study were part of a larger questionnaire which measured various demographic, psychosocial, and behavioral variables thought to be related to cervical cancer screening, diabetes and HIV/AIDS. The Spanish version of the questionnaire was created using a combination of back translation (Brislin, 1970) and the committee method of translation (Matsumoto & Juang, 2008).

**Zimbardo time perspective inventory (ZTPI)**—This 56-item measure was developed by Zimbardo and Boyd (1999) and is intended to assess the role past, present and future time influence an individual's behavior. The current study employed a shortened version of the ZTPI (SZTPI) which included the present hedonistic orientation and the future orientation subscales (25 items). The present hedonistic subscale consisted of 14 items with a response scale that ranged from 1-Very uncharacteristic to 5-Very characteristic. These items are intended to assess the extent to which an individual takes risks in their lives. Example items include: "I do things impulsively," "I often follow my heart more than my head," and "I try to live my life as fully as possible, one day at a time." Scores for this subscale were derived by summing the individual item scores and dividing by 14. The future orientation subscale consisted of 11 items with a response scale that ranged from 1-Very uncharacteristic to 5-Very characteristic. This subscale examines the extent to which planning for the future influences day-to-day behavior. Example items include: "Before making a decision, I weight the costs against the benefits," "I meet my obligations to friends and authorities on time," and "I believe that a person's day should be planned ahead each morning." Scores for this subscale were derived by summing the individual item scores and dividing by 11. In our sample, the reliability of the present hedonistic orientation subscale was Cronbach's alpha = 0.70 and the reliability of the future orientation subscale was Cronbach's alpha = 0.67. These values are similar to those obtained in previous research with different populations (Zimbardo & Boyd, 1999; D'Alessio, Guarina, Pascalis, & Zimbardo, 2003).

**Cervical cancer screening behavior**—This item asked, “How many Pap tests have you had in the last three years?” The response scale for the item ranged from 0 to 3. The response options were dichotomized into 1-*Pap test non-compliant* (i.e., has not had at least one Pap test in the past three years) and 2- *Pap test compliant* (i.e., has had at least one Pap test in the past three years). This definition of compliance is consistent with the U.S. Preventive Services Task Force (U.S.Preventive Services Task Force, 2012).

## Data Analysis

Descriptive statistics were derived using SPSS 17.0 (Chicago, IL). All subsequent analyses were conducted using Mplus version 5.1 (Los Angeles, CA). In general, 0-6.2% of the data were missing. We used Chi-square Fisher's Exact Tests to assess differences in cervical cancer screening by demographic variables. Demographic variables with significant p-values were retained. A multivariate logistic regression was estimated with present hedonistic time orientation and future time orientation were regressed onto Pap test compliance status. A two-sided significance level of .05 indicated statistical significance. Both present hedonistic time orientation and future time orientation were evaluated as continuous variables.

## Results

Descriptive characteristics of the participants are displayed in Table 1. Of the 372 mothers included in the present study most: were 25 years of age or older (58.9%; mean age= 36.06 years, SD= 5.96), had a high school diploma (53.6%) were married (74.6%), and had an annual income of \$30,000 or less (56.3%). The majority of women (90.5%) were Pap test compliant (i.e., reported having had at least one Pap test in the last three years). The mean score on the future orientation subscale was 37.98 (SD= 6.66) and the mean score on the present hedonistic orientation subscale was 39.92 (SD= 7.69). An examination of skewness and kurtosis for the time orientation subscales revealed a normal distribution of scores.

Chi-square Fisher's Exact Tests examined demographic factors by Pap test compliance status (results shown in Table 1). No statistically significant differences were observed between the demographic variables age, education, marital status, and income and self-reported cervical cancer screening behavior in the last three years. Given that all of the p-values for these variables non-significant (all p-values  $\leq .146$ ), none were included in the multivariate model. Study site was retained and included in the multivariate model (p-value = .045).

Multivariate logistic regression was used to examine the association between present hedonistic time orientation, future time orientation and being Pap test compliant (Table 2). Present hedonistic time orientation was not significantly associated with having had at least one Pap test in the last three years (p= .665). Study site was also non-significantly associated with being Pap test compliant (p= .079). However, future time orientation significantly predicted having had at least one Pap test in the last three years (p= .018). Women more oriented toward the future were 1.10 (CI= 1.00-1.24) times more likely be Pap test compliant than women with lower self-reported levels of future time orientation. The percent of variance in Pap test compliance accounted for by the model ( $R^2$ ) was 15.9%.

## Discussion

We found that Latinas more oriented toward the future were more likely to be Pap test compliant than women less oriented toward the future. While our study is the first to examine the effects of time perspective on Pap screening, these findings are consistent with the existing research demonstrating that future oriented individuals are more likely to participate in protective health behaviors (DiIorio et al., 1993; Mahon & Yarcheski, 1997; Steele-Moses et al., 2009). This finding provides important insight into how Latinas' view of time influences their cervical cancer screening behavior. Further, it suggests the need to target individuals with lower levels of future orientation in order to encourage timely screening.

While we found that future orientation was significantly associated with Pap status, present hedonistic orientation was not. Similarly, Guthrie and colleagues did not find an association between present hedonistic time orientation and various health outcomes (Guthrie et al., 2009). Present hedonistic orientation is most predictive of engaging in pleasurable health risk behaviors as opposed to more protective health behaviors (Henson et al., 2006). Cervical cancer screening is a protective health behavior that does not provide momentary pleasure and does not involve risk-taking. As such, our finding supports the idea that present hedonistic orientation best predicts health risk behaviors and may not increase our understanding of cervical cancer screening.

While this study yielded informative findings, some limitations should be mentioned. This study is exploratory in nature, so our findings and conclusions should be further examined in future studies. Also, since this is a correlational study we cannot draw any causal conclusions. Finally, this study was a secondary analysis of an existing dataset which only included the present hedonistic and future time orientation subscales of the Zimbardo time perspective inventory (ZTPI). This means that we were unable to examine any potential associations between cervical cancer screening and the three other subscales of time orientation described by Zimbardo and Boyd and included in the ZTPI: present fatalistic time orientation, past negative orientation and past positive orientation (Zimbardo & Boyd, 1999). Future studies should examine these other subscales to determine if they predict cervical cancer screening among Latinas. This information will inform prevention researchers about which dimensions of time orientation should be addressed in interventions.

The lack of cervical cancer screening has been recognized as a significant contributor to the disparate incidence of cervical cancer among Latinas (Barnholtz-Sloan et al., 2009). Therefore, increasing screening among Latinas is necessary in order to decrease the incidence of cervical cancer in this population. However, the goal of increasing screening among this population cannot be realized unless we have an in-depth understanding of the factors that affect engaging in this behavior. The current findings are an important addition to the existing research in this area. This study is the first to examine time perspective orientation and cervical cancer screening among Latinas. Our findings may provide some guidance regarding how to tailor cervical cancer interventions for Latinas depending on their level of future orientation. Once these women are identified, one strategy to increase

screening might involve priming the women to think about the future and then presenting messages that emphasize the importance of regular cervical cancer screening. Overall, the current study has provided an important first step increasing our understanding of time perspective relationship to cervical cancer screening among Latinas.

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**Table 1**  
**Demographic Characteristics of the Participants (N=206)**

	n (%)	Pap Test Non-Compliant N (%)	Pap Test Compliant N (%)	p-value
Age				
< 25	81 (41.1)	7 (7.2)	90 (92.8)	.604
25	116 (58.9)	9 (10.0)	81 (90.0)	
Education (high school diploma)				
No	91 (46.4)	9 (52.9)	76 (46.1)	.619
Yes	105 (53.6)	8 (47.1)	89 (53.9)	
Marital status				
Unmarried	49 (25.4)	3 (18.8)	17 (10.2)	.392
Married	144 (74.6)	13 (81.3)	149 (89.8)	
Income				
< \$30,000	103 (56.3)	10 (76.9)	82 (52.9)	.146
\$30,000	80 (43.7)	3 (23.1)	73 (47.1)	
Study Site				
Houston	11 (5.2)	3 (15.8)	6 (3.4)	.045
Los Angeles	199 (94.8)	16 (84.2)	170 (96.6)	

Frequencies that do not sum to the total N represent missing data.



**Table 2**  
**Logistic Regression Model for Having at Least 1 Pap Test in the Last 3 Years (N=206)**

Predictor	$\beta$	SE $\beta$	P value	Exp ( $\beta$ )	95% CI for Exp ( $\beta$ )
Present Hedonistic Time Orientation	.07	.17	.673	1.02	.94 – 1.14
Study Site	.18	.11	.084	5.07	.76 – 63.39
Future Time Orientation	.33	.14	.018	1.10	1.00- 1.24

$R^2 = .159$