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Cera Cantu Date

Examining the Impact of the Cultural Gap Narrative on Family Functioning and Youth Substance Use among the HCHS/SOL Youth population.

By

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Master of Public Health

Epidemiology

_____

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Examining the Impact of the Cultural Gap Narrative on Family Functioning and Youth Substance Use among the HCHS/SOL Youth population.

By

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B.S. Public Health

Westminster College

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Faculty Thesis Advisor: Dr. Shakira Suglia, MS, ScD

An abstract of

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A thesis submitted to the Faculty of the
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Abstract

Examining the Impact of the Cultural Gap Narrative on Family Functioning and Youth Substance Use among the HCHS/SOL Youth population.

By Cera Cantu

The acculturation gap theory provides a more complex illustration of how cultural orientations affect health behaviors among adolescents by assuming that compromised family functioning results from gaps in cultural orientations between parents and their children, leading children to adopt negative health behaviors. The unique impact of cultural conflict on adolescent health in immigrant Asian-American households has been studied previously, yet, few studies on the topic of acculturation conflict have focused on Latino youth. This analysis explored the assumptions that there is a positive association between familial cultural orientation gaps and family functioning or adolescent cigarette use and that family functioning modifies the relationship between familial cultural orientation gaps and childhood cigarette use among the Hispanic Community Children's Health Study/Study of Latino Youth (SOL Youth) population. The analysis utilized two methods of conceptualizing discrepancies in cultural orientations between caregiver-child dyads, the interaction method and matched/mismatched method. All logistic regression models adjusted for age and gender of both caregivers and adolescents; children's immigration generation, ethnic identity, and Latino background; and caregivers' highest level of education. Using both methods, there was no statistical evidence that gaps in cultural orientations predict family functioning or cigarette use. There was statistical evidence that family functioning modified the relationship between familial cultural orientation gaps and childhood cigarette use in one model. Current popular thinking tends to attribute acculturation gaps to many youth problem behaviors, but this might not always be the case. The results from this analysis underscores the need to refine the framework behind this theory.

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Background

Social science disciplines have multiple definitions for the concept of acculturation; however, broadly speaking, acculturation is the developmental process by which individuals incorporate attitudes, behaviors, and values from their host culture and discard those from their native culture. Historically, researchers have measured acculturation using proxies such as immigrant generation or language preferences (1, 2). To more accurately capture the experience of acculturation, social scientists developed instruments to measure individuals' cultural attitudes, behaviors, or values. Earlier instruments regarded acculturation to be unidimensional or linear, meaning as an individual adopts aspects of their new host culture, they equally discard those of their native culture. Beginning in 1980, there was a shift in thinking about how acculturation operates, acknowledging that the process happens across multiple dimensions because individuals can not only decide which aspects of their cultural heritage to retain and which to adopt from their host culture, but also what extent their sense of self is composed of by these aspects (3, 4). This distinction recognizes that the concept of acculturation can be decomposed into two processes, acculturation and enculturation, where acculturation is the adaptation of aspects from the host culture and enculturation refers to the extent an individual retains aspects from the native culture. Further, cultural change can occur within three domains: practices, behaviors, and identification (5). Taken together, this updated view of the acculturative process emphasizes its nuanced nature by distinguishing that individuals can be completely acculturated or enculturated as well as multi-cultured to different degrees across the different domains.

Research has linked the process of acculturation to several health and behavioral outcomes among Latino populations, including adolescent substance use. For example, second-generation Latino youth tend to drink alcohol and use tobacco products compared to first generation or newly immigrated Latino youth (1, 6, 7). Nevertheless, when acculturation and health behavior research is considered together, meta-analyses conclude that even though acculturation, specifically assimilation into mainstream U.S. culture, shows a tendency to negatively affect health this relationship is still not well understood and is very complex (1, 8). Adding to this complexity is the use of inconsistent acculturation measurements between studies that often ignore the multi-dimensional or multi-domain aspects of the acculturation process (8-10).

The acculturation gap theory provides a more complex illustration of how cultural orientations affect health behaviors among adolescents (9, 10). This framework assumes that children from immigrant families adopt negative health behaviors because of stress induced from compromised family functioning causing communication difficulties and a decreased emphasis on the importance of family. The theory concludes that this compromised family functioning is a result of gaps in cultural orientations within family units.

The unique impact of cultural conflict on adolescent health in immigrant Asian-American households has been previously studied, yet few studies on the topic of acculturation conflict have focused on Latino youth (11-13). So far, some studies have found evidence supporting this theory, showing that among Latinos, parental-child acculturation conflict is associated with increased symptoms of depression (11, 14, 15), trends in substance use (16-18, 17,19), academic performance (16), and general health

risk behaviors (14). Conversely, other studies have concluded that differences in acculturation between caregivers and children were not related or were only narrowly related to youth problem behaviors (20, 21). Furthermore, some studies have shown that these externalizing or internalizing behaviors were mediated by or associated with family dynamics (15-19) while others have not found this relationship (11, 14).

While studies of acculturation discrepancies have the same methodological concerns as traditional acculturation studies, there are additional inconsistencies in how the cultural gaps between parents and adolescents are measured (10, 22). Theoretically, family units can have four combinations of cultural orientations:

1. Parents have high cultural orientation scores and children have low cultural orientation scores
2. Both parents and children have high cultural orientation scores
3. Both parents and children have low cultural orientation scores
4. Parents have low cultural orientation scores and children have high cultural orientation scores

Commonly, researchers measure gaps in cultural orientations by subtracting parents' and children's cultural orientation scores. This method assumes that for acculturation scales, all family units are in Group 4 and for enculturation scales all family units are in Group 1, but these assumptions are not always accurate (10, 16). When this is not the case, the absolute value of the difference is considered, but this can mask the independent effects of the acculturation process within the multiple groups (10, 16, 22). Another method of

summarizing the gaps in cultural orientations is the matched/mismatched method where parents and children are group based on whether their levels of cultural orientations match or not (10, 16). This method assumes Groups 1 and 4 have the same effect on behaviors and Groups 2 and 3 have the same effect on behaviors. Finally, the effect of cultural orientation gaps can be conceptualized with an interaction between the caregiver's and child's cultural orientations (10, 16, 22). The interaction method allows researchers to account for the effect of the independent contributions of youth and parent cultural orientations as well as the direction and type of cultural discrepancies (10, 16, 23). With this method, a statistically significant interaction term indicates that the gap between cultural orientations significantly impacts outcomes.

Each measurement method tells researchers slightly different information about how cultural gaps impact outcomes because they make different assumptions about the directions of cultural gaps within family units and the effects of different group combinations. The use of bidimensional acculturation scales help improve how informative each of these methods are because the impacts of acculturation and enculturation can be considered separately. Recent research utilizing bidimensional scales have concluded that disagreements in enculturation levels within families are more impactful on adolescent behaviors than gaps in acculturation (23-25).

While tobacco use among youth in the U.S. has decreased, this behavior is still a public health concern due to the long-term consequences of adolescent tobacco use which are well known, numerous, and follow youth into their adulthood. The 2012 Surgeon General report on preventing tobacco use among youth and young adults concluded adolescent smoking predicts chronic conditions such as impaired lung function and early

abdominal aortic atherosclerosis disease (26). Furthermore, national data sources suggest that tobacco use is higher among Latino youth compared to non-Latinos. The 2017 National Youth Tobacco Survey estimated 5.3% of Latino middle school students used a combustible tobacco product in the past 30 days, compared to 2.4% of non-Latino, White students and 3.9% of non-Latino, Black students (27). This estimated prevalence doubles among Latino high schoolers to 11.8%. Data from the 2012 US National Survey on Drug Use and Health indicated that 4.8% of Latino youth ages 12-17 have smoked all or part of a cigarette in the past 30 days (26). Similarly, among the SOL Youth population the prevalence of smoking susceptibility is 19.66% (28).

The main goal of this study was to explore the assumptions of the acculturation gap theory among the Hispanic Community Children's Health Study/Study of Latino Youth (SOL Youth) population. Specifically, the assumption that there is a positive association between familial cultural orientation gaps and family functioning as well as youth substance use. Additionally, the assumption that family functioning modifies the relationship between familial cultural orientation gaps and childhood substance use. SOL Youth is one of the largest and most comprehensive studies of a diverse sample of Hispanic/Latino children. This population is ideal for examining the effects of cultural gaps because both caregivers and children provide cultural orientation estimates using bidimensional scales, and the multi-site, national study provides a larger, more diverse sample than those previously considered in the research on this topic.

Methods

The HCHS/SOL is a population-based observational cohort study of 16,415 adults, 18–74 years old at baseline, who self-identified as Hispanic/Latino and of Central American, Cuban, Dominican, Mexican, Puerto Rican, South American, or other/more than one Hispanic/Latino heritage. Details regarding cohort population and the sampling methods have been reported elsewhere (29,30). To summarize, between 2008–2011 HCHS/SOL participants were recruited from Chicago, IL, Miami, FL, Bronx, NY, and San Diego, CA using a 2-stage probability sampling approach. The SOL Youth ancillary study is a cross-sectional study of 1,466 youth ages 8 to 16 years, living with a HCHS/SOL participant, and free from known serious health issues. The study sought equal proportions of male and female youth. All SOL Youth participants resided with a HCHS/SOL participant, but the parent/caregiver enrolled in the SOL Youth study was not required to be the HCHS/SOL participant, nor be a biological relative. All eligible youth in a family were invited, so multiple children residing with a HCHS/SOL participant could participate in SOL Youth. Further details of the cohort and the sampling methods have been previously published (31).

Acculturation Variables

Children and caregivers participating in SOL Youth each completed the Brief Acculturation Rating Scale for Mexican Americans-II (ARSMA II) (32). The ARSMA II consists of 12 items addressing English and Spanish language use and association with Non-Hispanic individuals that are answered on a 5-point Likert-scale ranging from (1) *not at all* to (5) *almost always/extremely often*, yielding two independent subscales measuring Anglo orientation and Latino orientation. A high Anglo orientation score

indicates a higher level of acculturation, and a higher Latino orientation score indicates a higher level of enculturation. Since both the child participants and their respective caregiver independently completed the ARSMA II questionnaires, they each have separate ARSMA II measurements.

While the Latino orientation subscale for the children had good internal reliability (Cronbach's α= 0.84), factor analysis of the ARSMA II scales revealed that reliability of the Anglo orientation subscale and the composite ARSMA II scale was poor but increased (Cronbach's α: 0.64 to 0.69 and 0.77 to 0.81, respectively) when two items relating to associations with "non-Hispanics" were dropped from the scales (33). Since all other items in the questionnaire pertained to language acculturation, SOL Youth researchers hypothesized that the children were confused by the term "non-Hispanic". Following recommendations for SOL Youth analysis, these items were dropped when scoring the Anglo orientation for the children participants. The original scales for caregivers were used in this analysis because they all had good internal consistency (33).

Outcome Variables

Youth reported family functioning using the 12-item General Functioning subscale of the McMaster Family Assessment Device (34). The General Functioning subscale consists of 5-point Likert-scales ranging from (1) *strongly agree* to (5) *strongly disagree* and is scored as an average of the 12 items, a higher score indicating worse family functioning (Cronbach's α=0.77) (33). For multivariate logistic regression, family functioning scores were dichotomized at a score of 2.00 because previous studies have identified a score of $\geq$2.00 as an indicator of poor family functioning (35).

Ever use of cigarettes was a proxy for adolescent substance use because of data restrictions. This measure was determined based on answers to three questions from the tobacco susceptibility questionnaire administered at the participants' SOL Youth clinic visit. Children were considered to have ever used cigarettes if they said they had ever smoked a cigarette, tried cigarette smoking, or reported an age they had their first cigarette.

Covariates

Covariates were determined based on previous literature and a directed acyclic graph (Figure 1). Previous literature suggests that age and gender for both caregivers and adolescents (15-17, 20, 23) as well as children's immigration generation (23), ethnic identity (14), and Latino background (16) impact family functioning, adolescent cigarette use, and cultural gaps within caregiver-child dyads. In addition, family socioeconomic status could impact the relationships between cultural orientation gaps and family functioning or youth substance use (17, 20, 23). Language preferences for caregivers and children were not considered because the ARSMA II primarily measures language preferences. All covariates were self-reported by either the child or the caregiver during their SOL Youth clinic visit.

Ages and genders were self-reported by caregivers and children at their SOL Youth clinic visit. Children provided information about their Latino backgrounds. For this analysis, Latino backgrounds were grouped as Mexican American; Dominican or Cuban; Central or South American; and Puerto Rican or mixed/other Latino background. Immigration generations for child participants was derived based on place of birth information reported by children and caregivers. First generation was defined as a child

either born outside of the U.S. or with both parents born outside the U.S. Second generation was defined as U.S. born children with at least one foreign born parent. Third generation was defined as U.S. born children with two U.S. born parents. Foreign born was defined as individuals born outside of mainland U.S. Children and caregivers individually completed the 8-item Multidimensional Model of Racial Identity scale (36) to measure their individual ethnic centrality and ethnic regard on 5-point Likert-scales ranging from (1) *strongly agree* to (5) *strongly disagree*. All eight items were averaged to calculate a total ethnic identity score where a higher score indicates a stronger sense of ethnic identity. Family socioeconomic status was measured using the caregiver's reported highest level of education. Caregivers' education levels were categorized as less than high school, high school or equivalent, and more than high school.

From the total sample of 1466, the study population was limited to study participants with non-missing explanatory, dependent, or covariate values (N=1257; 86%). All statistical tests were two-sided and significant at α=0.05. All analysis was conducted using SAS software (37). Copyright © 2013, SAS Institute Inc. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc., Cary, NC, USA. All analysis was generated using survey procedures to account for sampling weights and clustering due to sampling and family units (38).

Demographic differences in mean ARSMA II composite and subscale scores for SOL Youth adolescents were examined using unadjusted linear regression, and P-values for mean differences between more than two categories were adjusted for multiple comparisons with the Tukey-Kramer test. Squared Pearson correlation coefficients for

ARSMA II subscale scores and ethnic identity scores among caregiver-child dyads were calculated using unadjusted linear regression.

Cultural gaps between caregiver and children dyads were conceptualized using three methods. First, difference scores for the individual ARSMA II subscales were calculated by subtracting the average scores for caregivers from the average scores for adolescents for each subscale. These differences were compared using one-way ANOVAs. Differences were compared to determine if, on average, the directions of cultural orientation differences among the caregiver-child dyads in the SOL Youth population agree with the assumption made by the acculturation gap theory that children typically are more accultured and less encultured than their parental figures (9, 22).

Second, the interaction method was used with multivariable logistic regression to examine the underlying processes of how caregiver and child cultural orientations impact both family functioning and adolescent cigarette use. Each ARSMA II subscale was standardized at the corresponding population mean. Four multivariate logistic models were analyzed, one for each outcome of interest by both cultural domains for caregiver-child dyads. An interaction term of child and caregiver cultural orientation scores was entered in each regression model simultaneously with the main effects of their individual cultural orientation scores (10, 22). These models controlled for all covariates mentioned in the methods section. In congruence with the acculturation gap theory, models predicting cigarette use also included interaction terms of child perceived family functioning with both caregivers' and children's cultural orientations and the interaction of both cultural orientations. Likelihood ratio tests with three degrees of freedom were used to test the significance of the additional interaction terms for family functioning

with caregiver-child cultural orientations. These interaction terms were dropped from the model when the likelihood ratio tests were insignificant, but family functioning remained in the models as a covariate.

Third, the matched/mismatched method of conceptualizing cultural orientation gaps was used estimate the effect of cultural orientation discrepancies in caregiver-child dyads regardless of the independent main effects of caregiver or child cultural orientations. Scores for each ARSMA II subscale, for both caregivers and children, were dichotomized at the middle of the overall scale; a score ≥2.5 was considered a high cultural orientation score and a score lower than 2.5 was considered low. Then, family units were grouped based on whether their cultural orientations matched for each cultural domain. Again, four models were analyzed, one for each outcome of interest by both cultural domains for caregiver-child dyads. Models using this method also tested for modification by child perceived family functioning on the associations between previous smoking and cultural orientation differences using likelihood ratio tests with one degree of freedom. These interaction terms were dropped from the model when the likelihood ratio tests were insignificant, but family functioning remained in the models as a covariate.

Results

Compared to boys, girls had significantly higher mean Anglo orientation (t=3.46, $P \leq 0.001$) and Latino orientation (t=2.00, $P=0.04$) scores, suggesting that on average girls are more bicultural than boys; however, their composite ARSMA II scores did not reflect this (Table 1). Average Latino orientation scores differed significantly between age groups (F(1,004)=3.95, $P=0.02$), with the youngest age group having lower Latino orientation scores. Average Anglo orientation scores also significantly varied between age groups (F(1,001)=3.01, $P=0.05$), with a trend of Anglo orientation scores increasing with age. Mean scores for each ARSMA II scale, differed significantly between immigration generations and Latino backgrounds. As expected, Anglo orientation scores increased with immigration generation, but the relationship was inversed for Latino orientation scores. Composite ARSMA II scores indicate that third generation immigrants are more likely to be strongly Anglo oriented as opposed to bicultural when compared to first- (adjusted t=-11.00, $P \leq 0.001$) and second- (adjusted t=-8.51, $P \leq 0.001$) generation youth. After adjusting for multiple comparisons, Puerto Ricans and children from mixed or other Latino backgrounds had significantly higher Anglo orientation scores and lower Latino orientation scores than all other Latino groups. Mexican Americans were more likely to be bicultural compared to all other Latino groups. Mean cultural orientation scores did not differ significantly between groups of caregiver's education levels.

Children with General Family Functioning scores indicating poor family functioning tended to have both lower average Anglo orientation scores and Latino orientation scores compared to youth with scores indicating healthy family functioning (4.34 vs 4.47, t=2.47, $P \leq 0.01$; 3.05 vs 3.15, t=1.41, $P=0.16$, respectively). Adolescents

reporting ever using cigarettes had slightly lower average Anglo orientation scores and higher average Latino orientation scores compared to those that had never smoked (4.31 vs 4.42, t=1.04, *P*=0.30; 3.21 vs 3.09, t= -0.89, *P*=0.38, respectively).

Generally, all correlations between cultural domains were moderate or weak (Table 2). The strongest correlation was between the two ARSMA II subscales for the caregivers (R^2=0.33, *P*≤0.001). The correlation between the two ARSMA II subscales for adolescents was weak but significant (R^2=0.09, *P* ≤0.001). Adolescents' Latino orientation scales were correlated with caregiver Latino orientation (R^2=0.13, *P* ≤0.001) and Anglo orientation (R^2=0.14, *P*≤0.001) scales. In comparison, correlations between the adolescents' Anglo orientation scale and caregivers' Latino orientation and Anglo orientation scales were still significant but weaker (R^2=0.04, *P*≤0.001; R^2=0.06, *P*≤0.001, respectively). The ethnic identity scale for children was correlated with their Latino orientation scale (R^2=0.06, *P*≤0.001).

As in the preliminary SOL Youth analysis, average Anglo orientation scores were significantly higher among children compared to their caregiver (4.41 vs 2.62, t=50.58, *P*≤0.001) while average Latino orientation scores were significantly lower among children (3.06 vs 4.23, t=-32.58, *P*≤0.001) (Table 3). These differences suggest that the cultural differences within SOL Youth caregiver-child dyads follow the acculturation gap theory assumption that children typically are more accultured and less encultured than their parental figures (9, 22).

All cultural orientation interaction terms were not significant, indicating that gaps in cultural orientations, for both domains, among caregiver-child dyads do not

significantly contribute to either child perceived poor family functioning or previous smoking (Table 4). This was most apparent for the relationship between family functioning and gaps in Latino orientations. Contrary to the assumptions behind the acculturation gap theory, there was no statistical evidence of modification by family functioning on the association between caregiver-child cultural orientations and previous smoking.

For most models the independent cultural orientations for caregivers and children were not significant and the direction and magnitudes of the independent associations were similar. Among family units where parents had a mean Anglo orientation score, the odds of children reporting poor family functioning significantly decreased as their Anglo orientations scores increased by one unit (OR=0.75, 95% CI: 0.58-0.97). This relationship was slightly similar for previous smoking, but it was not statistically significant (OR=0.84, 95% CI: 0.54-1.30). The odds of children reporting previous smoking also decreased as their caregivers' Anglo orientations scores increased by one unit (OR=0.78, 95% CI: 0.54-1.12) among family units where children had a mean Anglo orientation score. For Latino orientations, the effects of independent cultural orientations for caregivers and children were all close to 1.00 and not statistically significant.

The results from the matched/mismatched analysis suggest that differences between Latino orientations among caregiver-child dyads do not impact child reported family functioning (OR=0.99, 95% CI: 0.84-1.18). While not significant, caregiver-child dyads with differing Anglo orientation scores had slightly lower odds of reporting poor family functioning (OR=0.90, 95% CI: 0.75-1.07). There was no statistically significant interaction by family functioning for the association between disagreements of Anglo

orientations among caregiver-child dyads and previous smoking, but the association of dissonance in Latino orientations with previous smoking was modified by family functioning (χ^2= 8.05, *P*=0.04). Disagreements between Anglo orientation scales among caregiver-child dyads did not change the odds of children reporting ever using cigarettes compared to dyads that had similar Anglo orientation scores (OR=1.03, 95% CI: 0.74, 1.42). Among caregiver-child dyads where children reported poor family functioning, mismatched Latino orientation scores had higher odds of reporting previous smoking, but this relationship was not statistically significant (OR=1.38, 95% CI: 0.87, 2.02). When children did not report poor family functioning, this relationship was reversed (OR=0.67, 95% CI: 0.40, 1.11).

Discussion

Using both the interaction and the matched/mismatched methods to assess the impact of gaps in cultural orientation among caregiver-child dyads provides complimentary results. According to the results obtained using the interaction method, gaps in cultural orientations among caregiver-child dyads do not significantly predict child reported family functioning or previous smoking. Instead this method did suggest that children's Anglo orientation scores impact their odds of reporting poor family functioning, regardless of their caregivers' Anglo orientation scores. Similarly, the results from the matched/mismatched method do not suggest that dissonance in cultural orientations between caregivers and child contribute significantly to reported previous smoking or family functioning, but it did illustrate a trend of discrepancies in Anglo orientations decreasing the odds of perceived poor family functioning and gaps in Latino orientations increasing the odds of previous smoking.

One of the main assumptions behind the acculturation gap theory is that the relationship between culturation orientations gaps in family units and maladaptive youth behavior is modified by family functioning, but in general this was not supported by this analysis when using the interaction method. However, there was evidence that family functioning modified the relationship between children reporting ever using cigarettes and Latino orientation dissonance using the matched/mismatched method, but this was not the case when looking at Anglo orientation. The inconsistencies in these results could in part be due to the low prevalence of cigarette use among the SOL Youth population (7.2%).

Interestingly, this analysis suggests that as children become more assimilated in American culture, their odds of reporting poor family functioning decreased, regardless of their caregivers' cultural orientation. Also, the matched/mismatched method found a trend of discrepancies in Anglo orientations between caregivers and children decreasing the odds of perceived poor family functioning. Typically, Latino culture tends to emphasize family relationships and value a very strong sense of family as opposed to U.S. culture (39). Previous research has found that family cohesion tends to decrease as immigrants assimilate to U.S. culture (39). The incongruency between the results in this analysis and previous studies could be because the influence of discrimination or alienation was not accounted for. Children that are less acculturated may experience more discrimination. As a result, these individuals may rely more heavily on their family for support and view their family dynamics more positively (40). However, some qualitative research has identified parent-child differences in cultural orientations to be advantageous (20). Also, these findings could vary by Latino background or immigration generation, which was not considered in this analysis (16, 23).

Overall, these findings support claims that the current acculturation gap theory overstates the negative consequences of differences in cultural orientations between family members and ignores instances when gaps in orientations can be beneficial. Also, the trend that among dyads where children reported poor family functioning, gaps in Latino orientations increased the odds of cigarette use supports other findings that having similar Latin-American values within families might discourage externalizing behaviors, highlighting a need to refine the assumptions behind the acculturation gap theory to account for the differential effects by cultural domains (20-22).

Strengths and Weaknesses

Due to the size of the SOL Youth cohort, this is one of the larger analysis of the health or behavioral effects of cultural orientation gaps between caregiver-child dyads among Latino youth. Still, this analysis is limited because it relied on cross-sectional data, making it difficult to establish a causal relationship between cultural orientation discrepancies and family functioning or cigarette use, especially because individual cultural orientations as well as cultural gaps within family units are likely to change over time (20).

Additional limitations are present in this analysis due to the methods used to measure cultural orientations and the two outcomes of interest. While a bidimensional scale was used to measure cultural orientations, the ARSMA II scale used in SOL Youth does not account for all domains of the acculturation process because it primarily measures language acculturation. Furthermore, this analysis only measured reported cigarette use even though more than half (54%) of the population are preteens or younger. This age group is younger than when most adolescents will try smoking (41), leading to a small prevalence of cigarette use (7.2%) within the overall SOL Youth population. In this population, the prevalence of reported cigarette use increases with age from 1.4% among the youngest age group to 18.1% among the oldest age group. The small overall prevalence cigarette use impacted the statistical power for these corresponding models. Also, SOL youth only measures cigarette use, but alternative tobacco product use among adolescents is currently on the rise in the U.S. (26, 27). Finally, this analysis was not limited to cultural orientation gaps between parents and

children, but caregivers participating in SOL Youth were predominately biological parents (92%) and the caregivers' gender was controlled for in all statistical models.

Future Directions

There is still a lot to learn about the impact of cultural orientations and cultural orientation gaps within family units on health behaviors and perceived family functioning, but they are very complex and should be examined in greater depth. Specifically, this analysis can be improved by incorporating aspects from the other domains of acculturative process as well as discrimination. Also, examining how cultural gaps impact smoking susceptibility within this population may provide more important information given the age distribution in this population. Future research should particularly focus on how these relationships look over time and within different social contexts. Understanding the effects of cultural orientations within family units directly impacts how professionals such as teachers, social workers, or psychologists interact with youth and their families (19). Current popular thinking attributes acculturation gaps to many youth problem behaviors, but this might not always be the case (19-23). The results from this analysis underscores the need to refine the framework behind this theory.

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Tables

Table 1. Characteristics of adolescents in the SOL Youth cohort by average ARSMA II scores

	No.	Anglo Orientation Score[1]		Latino Orientation Score[2]		Composite ARSMA II[3]	
		Mean	SD	Mean	SD	Mean	SD
Total	1257	4.41	0.03	3.10	0.04	1.31	0.05
Sex							
Male	615	4.32	0.04	3.03	0.05	1.29	0.08
Female	642	4.50	0.03	3.17	0.05	1.33	0.06
		t(1001) 3.46***		t(1004) = 2.00*		t(1001) = .37	
Age							
8-12	681	4.16	0.06	3.01	0.05	1.34	0.07
13-14	337	4.42	0.03	3.20	0.07	1.23	0.10
15-16	239	4.70	0.05	3.19	0.09	1.32	0.11
		F(1001) = 3.01*		F(1004) = 3.95*		F(1001) = 0.53	
Immigration generation							
First	278	4.17	0.06	3.49	0.07	0.67	0.10
Second	808	4.43	0.03	3.16	0.05	1.27	0.06
Third	171	4.71	0.05	2.30	0.09	2.40	0.12
		F(980) = 24.24***		F(982) = 55.10***		F(980) = 61.90***	
Latino Group							
Mexican American	598	4.27	0.04	3.34	0.05	0.93	0.08
Dominican/Cuban	247	4.46	0.05	2.98	0.08	1.48	0.11
Central/South American	169	4.42	0.07	3.06	0.08	1.36	0.11
Puerto Rican/Mixed/Other	243	4.68	0.04	2.63	0.09	2.05	0.11
		F(967) = 18.25***		F(970) = 16.70***		F(967) = 23.95***	
Caregiver's highest level of education							
Less than High School	483	4.40	0.04	3.18	0.06	1.22	0.09
High School/Equivalent	354	4.36	0.06	3.04	0.07	1.32	0.11
More than High School	420	4.47	0.04	3.06	0.07	1.41	0.10
		F(999) = 1.28		F(1002) = 1.25		F(999) = 1.04	
Family functioning score[4]							
≥ 2.00	622	4.34	0.04	3.05	0.05	1.30	0.07
< 2.00	635	4.47	0.04	3.15	0.06	1.32	0.08
		t(993)= 2.46**		t(996) = 1.41		t(993) = 0.24	
Previous substance use							
Ever used cigarettes	91	4.31	0.10	3.21	0.14	1.10	0.18
Never used cigarettes	116	4.42	0.03	3.09	0.04	1.33	0.05
		t(999)= 1.04		t(1002) = -0.89		t(999) = 1.24	

[1] ARSMA II American orientation score
[2] ARSMA II Latino orientation score
[3] Composite ARSMA II score is calculated by subtracting averaged Latino orientation scores from averaged Anglo orientation scores.
[4] A score of ≥ 2.00 on the McMaster Family Assessment Device General Functioning subscale is an indicator of poor family functioning.
*$P \leq 0.05$, **$P \leq 0.01$, ***$P \leq 0.001$

Table 2. Squared Pearson correlation coefficients between ARSMA II and ethnic identity scales for caregiver-child dyads (N=1257)

Variable	Variable	1	2	3	4	5
1	Child Anglo orientation[1]	1.00				
2	Child Latino orientation[2]	0.09***	1.00			
3	Child's ethnic identity[3]	0.00	0.06***	1.00		
4	Caregiver Anglo orientation[1]	0.06***	0.14***	0.00	1.00	
5	Caregiver Latino orientation[2]	0.04***	0.13***	0.00	0.33***	1.00

[1] ARSMA II Anglo orientation score
[2] ARSMA II Latino orientation score
[3] Multidimensional Model of Racial Identity scale
***$P \leq 0.001$

Table 3. Differences of averaged ARSMA II subscales within caregiver-child dyads (N=1257)

	Youth	Caregivers	Difference	
ARSMA II sub-scale	Mean (SD)	Mean (SD)	Mean	t
Anglo orientation score[1]	4.41 (0.02)	2.62 (0.03)	1.78 (0.04)	50.58***
Latino orientation score[2]	3.06 (0.03)	4.23 (0.02)	-1.17 (0.04)	-32.58***

[1] ARSMA II Anglo orientation score
[2] ARSMA II Latino orientation score
***$P<0.001$

Table 4. Effect of cultural orientations by cultural domain within caregiver-child dyads on poor family functioning and cigarette use, tested using the interaction method (N=1257)

Cultural Domain	Poor family functioning[1]		Cigarette use[2]	
Anglo Orientaiton[3]	OR	95% CI	OR	95% CI
Child	0.75	(0.58, 0.97)*	0.84	(0.54, 1.30)
Caregiver	0.96	(0.80, 1.16)	0.78	(0.54, 1.12)
Child*Caregiver	0.76	(0.51, 1.12)	0.80	(0.35, 1.81)
Latino Orientation[4]				
Child	0.97	(0.81, 1.15)	0.92	(0.63, 1.33)
Caregiver	1.09	(0.89, 1.33)	0.88	(0.57, 1.37)
Child*Caregiver	1.00	(0.72, 1.41)	0.64	(0.33, 1.24)

[1]Multivariable logistic regression of family functioning regressed by individual children and caregiver ARSMA II sub-scales and interaction between children and caregiver ARSMA II subscales, controlling for youth and caregiver age and gender; youth ethnic identity, immigration generation, and Latino background; and caregiver highest level of education.
[2]Multivariable logistic regression of cigarette use regressed by individual children and caregiver ARSMA II sub-scales and interaction between children and caregiver ARSMA II subscales, controlling for youth and caregiver age and gender; youth ethnic identity, immigration generation, Latino background, and reported family functioning; and caregiver highest level of education.
[3] ARSMA II Anglo orientation score
[4] ARSMA II Latino orientation score
*$P \leq 0.05$

Table 5. Effect of cultural orientation discrepancies by cultural domain within caregiver-child dyads on poor family functioning and cigarette use, tested using the matched/mismatched method (N=1257)

Cultural Domain	Poor family functioning		Cigarette use	
Anglo Orientation[1]	OR	95% CI	OR	95% CI
Matched	REF[2]		REF[3]	
Mismatched	0.90	(0.75, 1.07)	1.03	(0.74, 1.42)
Latino Orientation[4]				
Matched	REF[2]			
Mismatched	0.99	(0.84, 1.18)		

[1]Multivariable logistic regression of family functioning regressed by matched/mismatched ARSMA II subscale scores within caregiver-child dyads, controlling for youth and caregiver age and gender; youth ethnic identity, immigration generation, and Latino background; and caregiver highest level of education.

[2] ARSMA II Anglo orientation score

[3] Multivariable logistic regression of cigarette use regressed by matched/mismatched ARSMA II subscale scores within caregiver-child dyads, controlling for youth and caregiver age and gender; youth ethnic identity, immigration generation, Latino background, and reported family functioning; and caregiver highest level of education.

[4] ARSMA II Latino orientation score

Table 6. Effect of Latino orientation[1] discrepancies within caregiver-child dyads on cigarette use stratified by poor family functioning, tested using the matched/mismatched method (N=1257)

	Family functioning ≥ 2.00[2]		Family functioning <2.00[2]	
Latino Orientation[1]	OR	95% CI	OR	95% CI
Matched	REF[3]		REF[5]	
Mismatched	1.38	(0.87, 2.20)	0.67	(0.40, 1.11)

[1] ARSMA II Latino orientation score

[2] A score of ≥ 2.00 on the McMaster Family Assessment Device General Functioning subscale is an indicator of poor family functioning.

[3] Multivariable logistic regression of cigarette use regressed by matched/mismatched ARSMA II subscale scores within caregiver-child dyads stratified by reported family functioning, controlling for youth and caregiver age and gender; youth ethnic identity, immigration generation, and Latino background; and caregiver highest level of education.

Figures

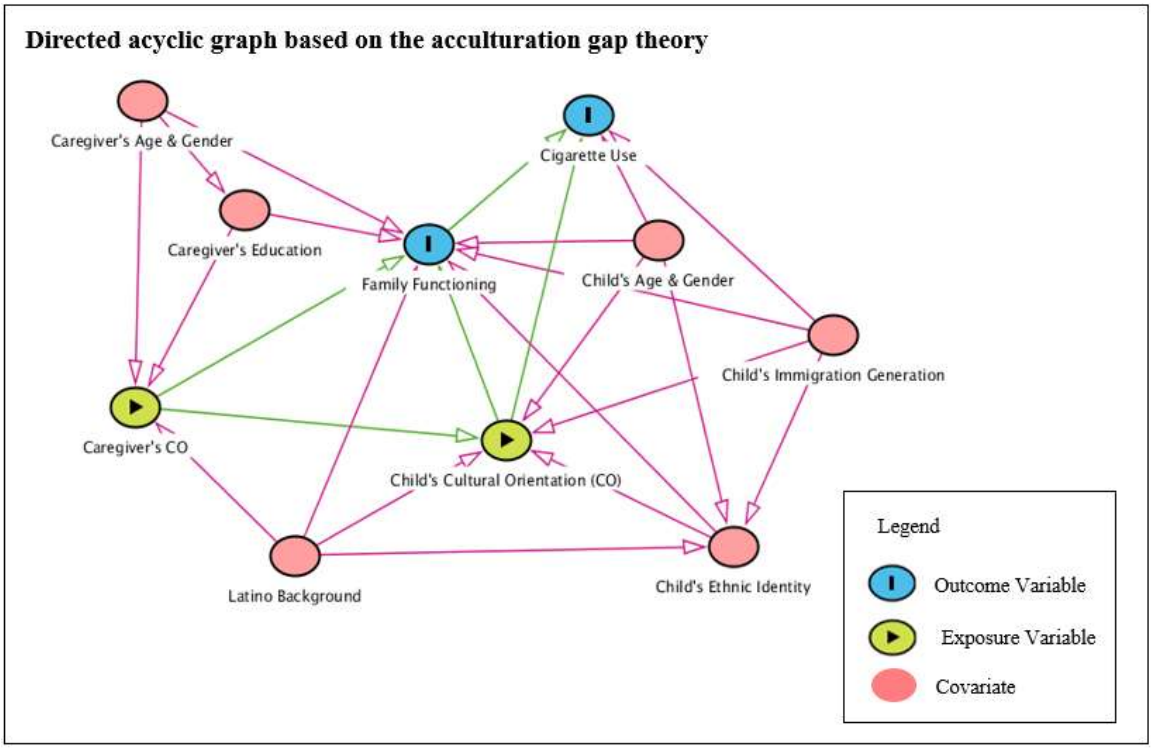

Figure 1.
Directed acyclic graph of cultural orientations in caregiver-child dyads and family functioning and adolescent cigarette use based on the acculturation gap theory. Made using DAGitty software (42).