

Acculturative Stress, Depression, and Anxiety in Migrant Farmwork College Students of Mexican Heritage

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Migrant status (migrant, nonmigrant) and sex (female, male) differences were examined in a sample of 168 college students of Mexican heritage on measures of college stress, acculturative stress, depression, anxiety, and academic achievement. Migrant farmwork students reported higher levels of acculturative stress than nonmigrants, and men reported higher levels of acculturative stress than women. When language preference was held constant, there were no differences in depression and anxiety. However, migrant students reported higher levels of depression and anxiety than nonmigrants when language preference was not held constant. The overall sample reported high levels of depression: 55% versus the expected 20% of the general population shown in other research. Depression and anxiety were highly correlated, and women reported a higher grade point average than male students. Implications include the importance of integrating cultural factors in stress research with this population and accounting for acculturative stress, depression, and anxiety in clinical treatment.

Keywords: college students, migrant farmworkers, acculturative stress, stress and coping, depression, anxiety

Mexican Americans—and Latinos in general—are underrepresented in higher education compared with the number of Mexican Americans living in the

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United States; this is particularly true for students of migrant farmwork backgrounds. Latinos are estimated to be 45.5 million or 15.1% of the total U.S. population (U.S. Census Bureau, 2008). Simultaneously, about 60% of Latinos are high school graduates compared to 89% for non-Latino Whites (U.S. Census Bureau, 2007); and about 10% of the total students enrolled in degree-granting institutions are Latino compared to 67% for non-Latino Whites (U.S. Department of Education, National Center for Education Statistics, 2005).

The underrepresentation of Latinos, including Mexican Americans, in higher education is concerning because their absence from these institutions may negatively impact their overall future physical, social, spiritual, economic, and psychological well-being. A subgroup of Latinos that has been consistently described as greatly disadvantaged are migrant farmworkers (Kindler, 1995; Lopez, Scribner, & Mahitivanichcha, 2001; Zalaquett, McHatton, & Cranston-Gingras, 2007), who are primarily Mexican immigrants (Carroll, Samardick, Bernard, Gabbard, & Hernandez, 2005). Although there is limited research with migrant farmworkers (Zalaquett et al., 2007), there are some studies surfacing in the literature, primarily with adults (e.g., Alderete, Vega, Kolody, & Aguilar-Axiola, 1999; Hovey & Magaña, 2000) or minors (e.g., Kupersmidt & Martin, 1997; Weathers, Minkovitz, O'Campo, & Deiner-West, 2004; Wilson, Wold, Spencer, & Pittman, 2000). However, only one study was found in higher education that directly addressed young adults from a migrant farmwork background enrolled in college (Zalaquett et al., 2007), and no studies were found within the field of psychology that addressed migrant farmwork college students, acculturative stress, and levels of depression and anxiety.

The focus of the current study will be on college students from migrant farmwork backgrounds of Mexican heritage because they have been described as an educationally disadvantaged group of youngsters in the United States (Kindler, 1995; Lopez et al., 2001; Zalaquett et al., 2007), as well as having unmet medical needs (Weathers et al., 2004; Wilson et al., 2000) that negatively impact their overall functioning. This study adds needed research with migrant farmwork college students and examines the stressors they experience. More important, this study will differentiate between stressors related to being in college and those related to cultural factors. Furthermore, an examination of potential negative outcomes of the stressors—depressive and anxiety symptoms, including the impact of cultural factors on these symptoms—and academic achievement will be discussed.

Overview of Migrant Farmworkers' Experience in the United States

Although it is difficult to accurately describe a migratory population, there are an estimated 3 to 5 million migrant farmworkers in the United States

(National Center for Farmworker Health, 2000). Migrant farmworkers tend to move with the seasons for economic reasons to plant and harvest numerous agricultural crops including fruits and vegetables that allow for overabundance in U.S. grocery stores (Ashabrunner, 1993). Migrant farmworkers have an average age of 33 years; are mostly male (79%); primarily Latino (83%); born in Mexico (75%); married with children (51%); and the primary language is Spanish (81%) (Carroll et al., 2005). Educational attainment remains low—on average seventh grade is the highest grade completed; the average individual annual income is \$10,000 and for a family \$15,000–\$17,499; about 49% own a car; and about 17% own a home (Carroll et al., 2005). Adverse work and living conditions often lead to poor health outcomes: high rates of cervical cancer for migrant women; diabetes, hypertension, and human immunodeficiency virus (HIV) for all migrant farmworkers; a lower average life span compared with the average American; higher infant and maternal death rate; and higher occurrence of preventable diseases (Ashabrunner, 1993). Through these conditions, over 50% of migrant farmworkers travel with their families, including children (Carroll et al., 2005).

Acculturative Stress and Migrant Farmworkers

Stress researchers such as Lazarus and Folkman (1984) have long argued for a transactional perspective on stress based on the idea that when life demands are encountered, perceived demands are weighed against one's resources for coping with them. When demands are perceived to exceed one's resources, the stress response can ensue with its attendant emotional, physical, and psychological consequences (Sapolsky, 1998). Slavin, Rainer, McCreary, and Gowda (1991) argued that stress researchers often do not account for culture-specific stressors relevant to their participants, and therefore "a good deal of the important variability in the "real" severity of stressors will go unmeasured" (p. 161). To begin to better understand the stress process with migrant farmwork college students, the current study focuses on stressful events (i.e., college stress and acculturative stress) and adaptational outcomes (i.e., depression and anxiety) relevant for this population.

Migrant farmworkers experience many sources of stress as they travel, but because they are immersed in and negotiate several cultures at once, they can be particularly susceptible to acculturative stress (Gil, Vega, & Dimas, 1994; Hovey & Magaña, 2000). A concept that is important to differentiate from acculturative stress is acculturation (Gil et al., 1994). Acculturation has been widely researched and refers to the process of cultural changes that take place when a person encounters two or more cultures; acculturation has been

described as a bilinear model resulting in four acculturation strategies/styles: assimilation, separation, integration, and marginalization (see Berry & Sam, 1997 for more detail). In differentiating acculturation styles and acculturative stress, Williams and Berry (1991) state:

The concept of acculturative stress refers to one kind of stress, that in which the stressors are identified as having their source in the process of acculturation, often resulting in a particular set of stress behaviors that include anxiety, depression, feelings of marginality and alienation, heightened psychosomatic symptoms, and identity confusion. (p. 634)

Furthermore, there is considerable disagreement on the conceptualization and measurement of acculturation (Berry & Sam, 1997; Kim & Abreu, 2001), including in research with the Latino community (Rogler, Cortes, & Malgady, 1991). Currently, there is no real consensus on how to measure acculturation styles (Berry, 2003). Given the lack of consensus on measurement, an alternative suggested by several studies is to measure language preference as a proxy for acculturation styles (Alderete et al., 1999; Folsom et al., 2007; Gil et al., 1994). Therefore, the current study will investigate *acculturative stress* and examine the effects of *language preference as a proxy for acculturation style* across the various dependent variables, to be expanded below.

The acculturative stress of the migratory lifestyle is likely to affect the individuals themselves as well as the minors who may be traveling with their families or who are left behind without a parent(s). In addition, for those migrant farmworkers who are also immigrants—about 75% of migrant farmworkers are immigrants from Mexico (Carroll et al., 2005)—their stress level is likely compounded by the stress of immigration. Note that in this article, *migrant* and *immigrant* have somewhat different meanings; the former refers to someone who migrates within the United States seasonally for employment, and the latter refers to someone who has moved from Mexico to the United States. Hovey and Magaña (2000) state “the immigration experience in concurrence with the migrant farmworker lifestyle may place an individual at risk for the development of psychological problems” (p. 127).

Qualitative research with Mexican migrant farmwork individuals and families have identified major stressors in the migrant farmwork lifestyle and include, starting with the most common: being away from family and friends, rigid work demands, unpredictable work/housing and uprooting, low family income/poverty/poor pay, poor housing conditions, language barriers, education of self and children, hard physical labor, lack of or unreliable transportation, and exploitation by employers (Magaña & Hovey, 2003; Parra-Cardona, Bullock, Imig, Villaruel, & Gold, 2006).

Stress, Children of Migrant Farmworkers, and Gender

Although there is limited research with migrant children and youth, they have been described as among the most educationally disadvantaged groups in the United States (Lopez et al., 2001; Zalaquett et al., 2007). They experience considerable disruption in their education—by leaving school early or starting late—because the family’s migration patterns do not coincide with the traditional school year calendar (Kindler, 1995). Migrant children are likely to have increased number of stressors, weaker social ties with peers, and a reduced sense of belonging to the community, school, and classroom (Cranston-Gingras & Anderson, 1990; Gil et al., 1994). Often times rather than advancing their education and due to the migrant family’s financial difficulties, migrant children are forced to work or to care for younger siblings (Zalaquett et al., 2007). Migrant youth have the highest dropout rate among students in the public school system (Hinojosa & Miller, 1984). Factors that contribute to high dropout and low academic achievement include frequent moves; adjusting to different school systems, curricula, and social conditions; late starts or early exits; and problems with records and transfers (Kindler, 1995).

Guendelman and Perez-Itriago (1987) suggest that females experience higher levels of acculturative stress than males in the migrant process. Guendelman and Perez-Itriago found that women’s experiences in migration are remarkably different from men’s as migration shapes seasonal roles that require continuous readjustments and disrupt the conventional gender relationship. As a result of being employed—many for the first time—migrant women experience a role expansion as wage earners, which strongly influences the relationship with their husbands, changing boundaries, attitudes, and power distribution. Furthermore, a qualitative study of Mexican immigrant migrant women identified their top stressors and include: language barriers, unpredictable work or housing/uprooting, being away from family or friends, hard physical labor/physical pain related to farmwork, and migration experience (Hovey & Magaña, 2003). Accounting for all the stressors, acculturative and otherwise, faced by female and male migrants, it is not surprising that research indicates they can be at higher risks for depression and anxiety, as is discussed in the following section.

Depression and Anxiety in Migrant Women and Men

Alderete et al. (1999) examined depressive symptoms in a sample of Mexican migrant farmworkers by using the Center for Epidemiologic Studies Depression Scale (CES-D). They found CES-D caseness (scoring 16 or

higher) rates of 21% for males and 20% for females; in the general population, about 20% of individuals reached the caseness level (Radloff, 1977). Further, Hovey and Magaña (2000) studied depression, anxiety, and their potential predictors in Mexican immigrant migrant females and males. Hovey and Magaña found higher rates of depressive symptoms that reached caseness level on the CES-D than the Alderete et al. (1999) study at 42% for females and 35% for males. Also, 35% of females and 22% of males reached caseness level for anxiety, compared with the 16% expected in the general population (Morey, 1991).

Furthermore, Hovey and Magaña (2003) examined levels of depression, anxiety, and suicidal ideation in Mexican immigrant migrant women. Their findings include: 30% of the sample reached caseness level for depression (using the CES-D); 25% reached caseness for anxiety. Hovey and Magaña concluded that migrant farmwork women who experienced suicidal ideation reported lower self-esteem, greater family dysfunction, less effective social support, greater hopelessness, higher acculturative stress, and more depression than migrant farmworker women with no suicidal ideation.

Hovey and Magaña (2002) were the first to examine predictors of anxiety among female and male Mexican immigrant migrant farmworkers. They found that immigrant migrant farmworkers who experience elevated levels of acculturative stress also reported high levels of anxiety. Furthermore, Kupersmidt and Martin (1997) conducted a study with children (8 to 11 years old) of migrant farmworkers. They found that 66% of the children had one or more psychiatric diagnoses, with anxiety being the most prevalent diagnosis.

Overview of the Current Study

We found no studies that specifically addressed stress (including acculturative stress) and its potential adaptational outcomes (i.e., depression and anxiety) in college students from migrant backgrounds. As mentioned earlier, there was one study found that directly addressed migrant farmwork college students (Zalaquett et al., 2007) in the field of higher education. There are limited studies with migrant farmworkers in the psychology literature—current or past—and they primarily focus on adults or minors; the current study draws heavily from these studies. An obvious strength of the Zalaquett et al. study is that it addresses this important population and provides a thorough description of migrant college students. Weaknesses of the Zalaquett et al. study include not directly addressing psychological components—as it more directly addresses higher education issues; the study design is primarily descriptive in nature; and the questionnaire used was developed by the authors and neither reliability nor validity indices are provided.

This study sought to add needed research with college students of Mexican heritage. The independent variables were migrant status (migrant, nonmigrant) and sex (female, male) and the dependent variables were college stress, acculturative stress, level of depressive symptoms, level of anxiety symptoms, and self-reported grade point average (GPA) as an indicator of academic achievement. Language preference—a proxy for acculturation style—was used as a covariate. More specifically, it was hypothesized that migrant students and females would report significantly higher levels of college stress (Hypothesis 1) and acculturative stress (Hypothesis 2) than nonmigrant students and males. Next, we hypothesized that migrant students and females would report significantly higher levels of depressive (Hypothesis 3) and anxiety (Hypothesis 4) symptoms than nonmigrant students and males. The final and fifth hypothesis was that there would be a significant difference between migrant and nonmigrant students and between females and males in terms of self-reported GPA.

METHOD

Participants

Participants in this study were college students attending a religiously affiliated, private, and residential university in the southwest with a total enrollment of about 3,400 students. At this university, about 25% (approximately 850 students) of the total student body enrollment is of Latino background. The inclusion criteria included enrollment at the university and being of Latino background. The primary researcher personally contacted College Assistance Migrant Program (CAMP) staff, faculty advisors, and student leaders, and with their assistance recruited students through CAMP functions, Latino organizations, and English and Spanish classes. If students were approached more than once, they were asked not to complete the surveys a second time. Once approached, over 90% of students agreed to participate in the study; no compensation was offered. Once a student agreed to participate, a consent form outlined the purpose of the study, their voluntary participation, and their ability to withdraw at any time during the study. All responses were confidential, surveys were coded, and any identifying information was separated from the surveys and only available to the primary researchers. IRB approvals were secured prior to survey administration.

The total convenience sample size included 173 students. However, five survey sets were not included in the data analysis because the students self-identified other than Mexican/Mexican American/Chicano(a). Therefore,

the data analysis was conducted on a sample of 168 participants. There were a total of 107 (64%) females and 61 males (36%), which is representative of the overall sex ratio at the university. Of the total sample, there were 100 (60%) migrant students, and 68 (41%) nonmigrant students. The age ranged from 17 to 24 years with a mean age of 20 years; an additional eight students, from nonmigrant background, ranged from 25 to 52 years of age and they will be discussed in the exploratory section below. The sample included students from first year to senior year in college, including 64 (38%) first years, 44 (26%) sophomores, 33 (20%) juniors, and 26 (16%) seniors. Students were all of Mexican heritage including 34 who were born in Mexico and 134 who were born in the United States. Furthermore, 51% of the participants' mothers and 53% of the participants' fathers were born in Mexico. Other demographics include: 103 (61%) stated that they were first generation college students; 105 (63%) were employed; 72 (43%) received tutoring; 130 (77%) reported that their family owned a home; and 101 (63%) of their families made less than \$30,000 a year.

In this study, a migrant student was defined as someone whose family primarily earns their income from agricultural work. Migrant students at this university were or had been part of a year-long program—CAMP—designed to provide academic, financial, and social support for their first year of college. A nonmigrant student was defined as someone whose family earns their primary income from sources other than agricultural work.

Study Measures

Demographic Questionnaire

This portion of the survey was developed by the primary researcher to assess the various types of demographic data reported above.

College Stress

The Undergraduate Stress Questionnaire (USQ; Crandall, Preisler, & Aussprung, 1992) was used to measure level of college stress. Designed specifically for undergraduate college students, the USQ is a self-report checklist questionnaire that contains 83 items representing both major and minor life events. Students were asked to check those items that they had experienced in the last week. Scores ranged from 0 to 83. The items primarily represented negative life events, which have been shown to be more reliable predictors of stress outcomes; Johnson & McCutcheon further state that high

levels of negative life change, more so than positive life change, were related to increased depression, anxiety, and number of school days missed (as cited in Swearingen & Cohen, 1985).

Advantages of the USQ were that it was designed specifically for research with undergraduate students and the checklist format allowed for a shorter administration time. One disadvantage of this instrument is that there are limited studies using it, including research with racial and/or ethnic populations. However, given that the current sample included undergraduate students, it seemed to be the most appropriate instrument.

In their study, Crandall et al. (1992) reported that the USQ had a fairly good degree of internal consistency ($KR-21 = .80$), acceptable split-half reliability ($\alpha = .71$), and a good test-retest reliability ($\alpha = .83$). The authors also reported good criterion-related validity and predictive validity. In the current study, the internal consistency for the USQ was $\alpha = .80$.

Acculturative Stress

The Acculturation Stress Scale (based on Alderete et al., 1999) was used to measure acculturative stress and includes factors such as language problems, perceived discrimination, perceived cultural incompatibilities, and the decreased commitment to culturally protective values such as familism and cultural pride (Gil et al., 1994). The acculturation stress scale used in this study was developed by Latino researchers and is a modification of the scale by Cervantes, Padilla, and Salgado de Snyder (1991), the Hispanic Stress Inventory. The Acculturation Stress Scale consists of 13 items and includes items that measure three subscales: perceived discrimination, language conflicts, and legal residence status. Items ask, for example, if participants have been discriminated against or have difficulties because of lack of English fluency. In the present study, three of the items were removed—they addressed seeking services from social agencies, fear of deportation, and avoidance of immigration officials—as they did not seem relevant in a residential college setting. The scale first asked the participant to identify whether the particular event had happened to them in the past 3 months. If the participant responded positively, a 5-point Likert scale asked them to rate the stressfulness of the event (1 = *not at all stressful* to 5 = *extremely stressful*). Alderete et al. (1999) reported reliability for the three subscales: discrimination, $\alpha = .70$; language conflict, $\alpha = .65$; legal status, $\alpha = .79$. In the current study, the internal consistency for the total Acculturation Stress Scale was $\alpha = .70$.

Depressive Symptoms

Depressive symptoms were measured by the CES-D (Radloff, 1977) instrument. The CES-D has been used extensively with the Latino population (e.g., Alderete et al., 1999; Hovey & Magaña, 2000). Furthermore, Radloff (1991) reported that the CES-D is suitable for research with young adults. The instrument consists of 20 items rated on a 4-point Likert scale (0 = *rarely or none of the time* to 3 = *most or all of the time*). The questions address depressed mood, feelings of guilt and restlessness, feelings of hopelessness and failure, loneliness, psychomotor retardation, loss of appetite and problems with sleep—all during a period of 1 week prior to completing the questionnaire. Four of the items are reverse scored. The total scale range is from 0 to 60 and has a specific threshold of 16 that designates “caseness.” Individuals scoring at or above this caseness level of 16 are considered to be in need of mental health services. Several studies have found that the CES-D has adequate internal consistency, ranging from $\alpha = .81$ to $.90$ (e.g., Golding & Aneshensel, 1989; Hovey, 2000). In the present study, internal consistency for the CES-D was $\alpha = .90$.

Anxiety Symptoms

The anxiety subscale of the Symptom Check List-90-R (SCL-90-R, Derogatis, 1977) was used to measure anxiety symptoms. The complete SCL-90-R is a 90-item scale that measures various psychological symptoms and somatic health issues. The anxiety subscale has 10 items and assesses signs of nervousness, tension, trembling, and feelings of panic and terror (Derogatis, 1994). Participants are asked to rate the level of distress for each item on a 5-point Likert scale (0 = *not at all* to 4 = *extremely*). Derogatis reported an internal consistency of $\alpha = .85$; and a test-retest reliability over a 10-week period was $.80$. The SCL-90-R has also been previously used with the Latino population (e.g., Rodriguez & DeWolfe, 1990). For the present study $\alpha = .90$.

Study Covariate: Language Preference

As mentioned earlier, given the lack of consensus in measuring acculturation styles, several studies suggest using language preference as a proxy (Alderete et al., 1999; Folsom et al., 2007; Gil et al., 1994). Therefore, as suggested by Slavin et al. (1991), the effects of cultural factors were

examined across the various dependent variables using language preference as a proxy for acculturation style and as a covariate.

The unidimensional seven-item scale (based on Alderete et al., 1999) measures use of Spanish versus English language in different social contexts (e.g., work, home, with friends). Items ask about participants' preferred language and what language they speak at work and home, for example. Each item has a range of 5 Likert-type responses (1 = *Spanish all the time* to 5 = *English all the time*) that indicate preference for using either English or Spanish. Therefore, the grand mean score of 1 indicates preference for Spanish and low acculturation to U.S. culture and 5 indicates preference for English and high acculturation to the U.S. culture. Alderete et al. reported $\alpha = .84$ in their study. In the present study, $\alpha = .90$.

Procedure

The self-report surveys were administered to students in a group format in a classroom at the university because this was the most convenient for the participants. Also, CAMP staff, faculty advisors, and student leaders cooperated with the primary researcher to administer the surveys in several classes and Latino organizations. All the proctors were bilingual (Spanish and English), and the primary researcher trained each of them in survey administration. Data collection took place in Spring 2000, Fall 2000, and Spring 2001.

Data Analyses

This cross sectional study primarily used a 2 (migrant, nonmigrant) \times 2 (female, male) analysis of variance (ANOVA), a multivariate analysis of variance (MANOVA), or a multivariate analysis of covariance (MANCOVA). The independent variables were migrant status (migrant, nonmigrant) and sex (female, male). The dependent variables were college stress, acculturative stress, depressive symptoms, anxiety symptoms, and self-reported GPA. Language preference was used as a covariate.

RESULTS

Preliminary Analyses

The data were collected from all four college levels—first year, sophomore, junior, and senior. ANOVAs were conducted to examine potential

significance across college levels for the dependent variables, and they showed nonsignificant results. Therefore, the subsequent analyses did not account for college level. Second, the data were collected across three semesters: Spring 2000, Fall 2000, and Spring 2001. Again, ANOVAs showed nonsignificance for the three different collection periods across the dependent variables. Therefore, the subsequent analyses did not account for the semester that the data were collected.

Lastly, language preference was used as a covariate to account for the impact of cultural factors across the various dependent variables as suggested by Slavin et al. (1991). ANOVAs showed nonsignificance for most of the dependent variables; exceptions were acculturative stress, depressive symptoms, and anxiety symptoms. Two assumptions were checked for each of the 3 dependent variables: the linearity of the relationship between the covariate and the dependent variable and the homogeneity of covariate-dependent variable slopes. For acculturative stress, the linearity assumption was met ($r = -.38$), which is expected since they are measuring similar concepts. The homogeneity of covariate-dependent variable slope was significant, $F(3, 117) = 2.86, p = .04$, meaning that the regression slopes are heterogeneous; therefore, the covariate could not be used for acculturative stress. For depression and anxiety, the linearity assumption was met for both ($r = -.15$ and $r = -.24$, respectively) as well as the homogeneity of regression slopes ($F(3, 159) = 0.35, p = .79$ and $F(3, 159) = 0.67, p = .57$, respectively) were met. Therefore, the analyses for research hypotheses 3 and 4 were analyzed with a MANCOVA with language preference as a covariate. To examine the impact of language preference on depression and anxiety, a MANOVA was also conducted to compare the results.

Research Hypotheses 1 and 2: College Stress and Acculturative Stress

Significant MANOVA main effects were found for migrant status, $F(2, 121) = 3.18, p = .05$ and for sex, $F(2, 121) = 3.88, p = .02$ for the dependent variables of college stress and acculturative stress. The interaction between migrant status and sex was not significant, therefore indicating that the effects of each independent variable can be interpreted separately (Stevens, 2002). Univariate tests showed that migrant status had a significant effect for acculturative stress, $F(1, 122) = 6.22, p = .01$ but not college stress. Migrant students reported higher acculturative stress than nonmigrant students (M migrant student = 7.79, $SD = 6.47$; M for nonmigrant students = 5.31, $SD = 3.47$). The effect size is $r = .23$, and Cohen's $d = .48$. Statistically significant effects were also found for sex on acculturative stress, $F(1, 122) = 5.90, p = .01$ but not college stress. Male students reported higher acculturative stress

than female students (M males = 7.76, SD = 5.81; M for females = 5.34, SD = 4.12). The effect size is $r = .23$, and Cohen's $d = .48$.

Research Hypotheses 3 and 4: Depressive and Anxiety Symptoms

A MANCOVA, where language preference was used as a covariate, showed nonsignificant main effects for migrant status and sex, as well as a nonsignificant interaction. When a MANOVA was conducted, without the language preference covariate, a significant multivariate main effect was found for migrant status, $F(2, 163) = 3.15, p = .05$. The main effect for sex and the interaction between migrant status and sex remained nonsignificant. The univariate analysis showed that the migrant effects were significant for both dependent variables, depression $F(1, 164) = 5.07, p = .03$ and anxiety $F(1, 164) = 5.44, p = .02$. Migrant students reported experiencing higher levels of depressive symptoms (M migrant = 20.19, SD = 11.27; M for nonmigrant = 16.31, SD = 9.07; the effect size is $r = .19$ and Cohen's $d = .38$) and anxiety symptoms (M migrant = 9.86, SD = 8.60; M for nonmigrant = 6.83, SD = 6.40; the effect size is $r = .20$ and Cohen's $d = .40$) than nonmigrant students.

In terms of caseness (i.e., elevated depression level as defined by a score of 16 or higher on the CES-D (Radloff, 1977) for depressive symptoms, 92 (55%) of the total sample reached caseness levels. Furthermore, of the total number of participants that reached caseness, 58 (63%) of those were of migrant farmwork background. In other words, about 55% of the total sample and 63% of migrant farmwork college students reported elevated levels of depression.

Research Hypothesis 5: GPA

Using an ANOVA, a significant univariate main effect was found for sex, $F(1, 128) = 6.72, p = .01$. The main effect for migrant status and the interaction between migrant status and sex were not significant. Therefore, females reported higher GPA than males (M female = 3.06, SD = .46; M for male = 2.85, SD = .43). The effect size is $r = .23$, and Cohen's $d = .47$.

Exploratory Results

Although traditional versus nontraditional college age was not a main variable in this study, this section may provide valuable information for

future studies. As mentioned previously, of the 168 participants, 8 of them were of nontraditional college age (25 or older, 4 females, 4 males). Therefore, the analyses were conducted without the eight surveys ($n = 160$). However, it is important to use caution when interpreting these results as the cell sizes differ greatly once the eight surveys were removed (migrant: female 64 and male 36; nonmigrant: female 39, male 21). For hypotheses 1 (college stress) and 2 (acculturative stress), significant multivariate main effects remain for migrant status, $F(2, 116) = 3.37, p = .05$ but the main effect for gender becomes nonsignificant, $F(2, 116) = 2.87, p = .06$. The interaction between gender and migrant status remains nonsignificant. Univariate tests showed that migrant status effects were significant for acculturative stress, $F(1, 117) = 6.80, p = .01$, but not college stress. For hypotheses 3 (depression) and 4 (anxiety), the MANCOVA and MANOVA analyses did not find main effects for gender or migrant status, and the interaction between the two variables remains nonsignificant. In other words, the main effect for migrant status disappears in this section. For hypothesis 5, a significant univariate main effect was found for gender, $F(1, 121) = 7.43, p = .007$. The main effect for migrant status and the interaction between gender and migrant status were not significant.

DISCUSSION

The results of this study add to the sparse literature within the field of psychology on the struggles and experiences of migrant college students of Mexican heritage. Although migrant students have been described as among the most educationally disadvantaged groups of youth in the United States (Kindler, 1995; Lopez et al., 2001; Zalaquett et al., 2007) the students in this sample have the motivation to overcome numerous barriers to be enrolled in college. The implications of this study can inform more appropriate research and clinical interventions with this population.

Migrant status and sex differences in levels of college stress and acculturative stress were examined in hypotheses 1 and 2, respectively. The significant findings showed that migrant students reported experiencing higher levels of acculturative stress than nonmigrant students. This finding is supported by several studies that have documented the numerous stressful events experienced by migrant students, including frequent moves, repeated negotiations of new school settings, and unfavorable living conditions (Kindler, 1995; Lopez et al., 2001; Zalaquett et al., 2007).

Surprisingly, male students reported experiencing higher levels of acculturative stress than female students. This finding contradicts past research with adult female migrant farmworkers, and immigrants, which suggested

that females experience higher levels of stress (Guendelman & Perez-Itriago, 1987; Hovey & Magaña, 2000). One possible explanation is that male students experience the cultural differences between the Mexican culture and the dominant culture as more stressful. In other words, all of the participants in this study are likely to experience cultural differences with the dominant culture, yet this cultural gap may be more stressful for male students than female students. Future studies may further explore this finding by specifically examining changing gender roles for males of Mexican heritage in college.

Of note, in terms of college stress the results showed that all students in this sample were under similar levels of stress. The USQ (Crandall et al., 1992) asked questions related to being in college, such as having conflict with roommates, studying for exams, deciding on a major, and socializing. On the other hand, the Acculturation Stress Scale (based on Alderete et al., 1999) asked questions about being treated badly because of language difficulties, feeling unaccepted due to their culture, and being discriminated against. One possible explanation for the nonsignificant difference in college stress is that the participants in the current study have similar cultural backgrounds and they are all in the same college environment. Yet, when stress related to the cultural components was examined specifically, migrant students and males experienced greater acculturative stress. The fact that both college stress and acculturative stress were measured in this study shows the importance of taking into account cultural factors, as suggested by the Slavin et al. (1991) model. If only college stress had been measured in this study, then there would have been no apparent difference in terms of stress levels.

In the present study, there were no significant findings in terms of depressive and anxiety symptoms when an indicator of culture was held constant (i.e., language preference as a proxy for acculturation style was used as a covariate). As a point of comparison, when the data were analyzed without the covariate, the results indicated a significant finding for migrant status. In other words, migrant students reported experiencing more depressive and anxiety symptoms than nonmigrant students when language preference was not held constant. This comparison also lends support to the Slavin et al. (1991) model that suggests the importance of accounting for cultural factors in the stress process.

The sample reported high levels of depressive symptoms (i.e., reached or exceeded the caseness level of 16 on the CES-D): 55% vs. the expected 20% in the general population (Radloff, 1977). Further, of the total number of participants that scored 16 or higher on the CES-D, 63% were migrant participants. Other studies have found caseness levels on the CES-D in their samples (Alderete et al., 1999; Hovey & Magaña, 2000). Overall, this sample of Mexican and Mexican American college students reported experiencing very high levels of depressive symptoms. Furthermore, although there was no

“caseness” cutoff score for the anxiety scale, depression and anxiety were highly correlated ($r = .68, p = .01$). These findings have important implications for developing clinical interventions that are culturally responsive for college students of Mexican heritage.

Because the study took place in an educational setting, it was important to examine an index of academic achievement, namely, GPA. Female students reported a higher GPA than male students. Of note, there was no significant finding for migrant students. In fact, the overall average GPA for the sample was about a B (2.98) average. The participants in this sample on average seemed to be achieving well academically.

Limitations and Future Research

There are several limitations to this study. First, as mentioned in the Methods section, there were several students that were of nontraditional college age. The eight surveys were from students in the nonmigrant group. Once the results from the eight surveys were removed from the analysis ($n = 160$), some of the analyses were different than if they had been included. However, the cell counts became more unbalanced once the eight surveys were removed—which merits careful interpretation of the results. The implication is that traditional versus nontraditional college age may play a role in the stress and psychological outcomes for the participants in the current study. It is recommended that future studies account for this variable.

Another limitation of this study is the use of language preference as a proxy for acculturation style. Although there is disagreement in the measurement of acculturation styles (Berry & Sam, 1997; Kim & Abreu, 2001; Rogler et al., 1991), and several studies suggest using language preference as a proxy (Alderete et al., 1999; Folsom et al., 2007; Gil et al., 1994), only measuring language preference is a restricted and linear way of conceptualizing acculturation (Ruiz, 2007; Unger, Ritt-Olson, Wagner, Soto, & Baez-conde-Garbanati, 2007). More current models conceptualize acculturation as bilinear, where the person acculturates to the culture of origin and to the host culture (Berry & Sam, 1997). It is important for future studies to utilize more current models in conceptualizing acculturation.

There seems to be a connection between migration within the United States and immigration from Mexico to the United States, as was suggested in the demographic data presented in the literature review (Alderete et al., 1999; Hovey & Magaña, 2000, 2002, 2003). However, in the current study the number of immigrants was insufficient to conduct group comparisons. Future studies should further explore the connection between migration and immigration. Lastly, caution should be exercised when generalizing these

results to all migrant college students since the participants were recruited from a small, private, religiously affiliated college.

Suggestions for Clinical Interventions and Policy Changes

The high level of depressive symptoms, as well as the high correlation between anxiety and depressive symptoms, in the sample is of concern. Over time, the depressive and anxiety symptoms may lead to more serious mental health disorders, such as major depression, generalized anxiety, and post traumatic stress disorder. As was evident in the profile presented of migrant farmworkers, the depressive and anxiety symptoms could also impact serious medical issues for migrant farmworkers. Suggestions for psychological clinical interventions include group, family, and individual modalities. In addition to addressing current mental and physical concerns for migrant farmworkers, prevention is an area that is important to discuss.

A trend in the stress and coping literature is to examine preventive coping. McCarthy & Mejía (2001) discuss preventive coping among first generation college students from migrant families by using a psycho-educational group format and culturally sensitive exercises that are geared to enhance or develop self-confidence. They suggest that this format may help migrant college students manage the numerous challenges they face. Hovey and Magaña (2000) also made several suggestions for preventive efforts with migrant immigrant farmworkers, although not specifically for college students. Their suggestions primarily target farmworkers who are at risk for anxiety and depression and include: establish support groups at the camps or local community centers; educational workshops on anxiety and depression, substance use, and coping with the stress of a migratory lifestyle; and using churches to foster social networking, provide exposure to religious beliefs that may increase coping, and disseminate information about other community services.

In working with migrant children in schools, Kindler (1995) suggests the following to improve migrant students performance: classroom buddies; attention to withdrawn, aggressive, or overtalkative behaviors; extracurricular activities during school hours; high expectations and smaller classroom size; and technical assistance. Both Kindler (1995) and Lopez et al. (2001) agree that parental involvement is key, and staff should be held accountable for conducting outreach to them in nontraditional ways such as making more home visits and providing self-improvement training for parents.

Lastly, it is important to institute and fund more programs that assist migrant students be successful in college, such as CAMP. The migrant students in this study were part of CAMP for their first year of college. In

brief, in order to provide appropriate services CAMP integrates educational and financial services into its design. One recent aspect that is unique to the CAMP program used for the current study is the integration of a psychological counselor who conducts individual, group, and outreach services to migrant students. Other programs similar to CAMP, either in college or high school, may benefit from integrating psychological components into their design to assist students of migrant backgrounds succeed in school.

REFERENCES

- Alderete, E., Vega, W. A., Kolody, B., & Aguilar-Gaxiola, S. (1999). Depressive symptomatology: Prevalence and psychosocial risk factors among Mexican migrant farmworkers in California. *Journal of Community Psychology, 27*, 457–471.
- Ashabranner, B. (1993). *Dark harvest: Migrant farmworkers in America*. North Haven, CT: Linnet.
- Berry, J. (2003). Conceptual approaches to acculturation. In K. M. Chun, P. B. Organista, & G. Marin (Eds.), *Acculturation: Advances in theory measurement and applied research* (pp. 17–37). Washington, DC: American Psychological Association.
- Berry, J. W., & Sam, D. (1997). Acculturation and adaptation. In J. W. Berry, M. H. Segall, & C. Kagitcibasi (Eds.), *Handbook of cross-cultural psychology* (pp. 291–326). Needham Heights, MA: Allyn & Bacon.
- Carroll, D. J., Samardick, R., Bernard, S., Gabbard, S., & Hernandez, T. (2005). *Findings from the National Agricultural Workers Survey (NAWS) 2001–2002: A demographic and employment profile of United States farmworkers*. Rep. 9. Washington, DC: U.S. Department of Labor, Office of the Assistant Secretary for Policy.
- Cervantes, R. C., Padilla, A. M., & Salgado de Snyder, N. (1991). The Hispanic Stress Inventory: A culturally relevant approach to psychosocial assessment. *Psychological Assessment: A Journal of Consulting and Clinical Psychology, 3*, 438–447.
- Crandall, C. S., Preisler, J. J., & Ausprung, J. (1992). Measuring life event stress in the lives of college students: The Undergraduate Stress Questionnaire (USQ). *Journal of Behavioral Medicine, 15*, 627–662.
- Cranston-Gingras, A., & Anderson, D. J. (1990). Reducing the migrant student dropout rate: The role of school counselors. *The School Counselor, 38*, 95–104.
- Derogatis, L. R. (1977). *The SCL-90 Manual I: Scoring, administration and procedures for the SCL-90*. Baltimore: Johns Hopkins University School of Medicine.
- Derogatis, L. R. (1994). *SCL-90-R: Symptom Checklist-90-R*. Minneapolis, MN: National Computer Systems, Inc.
- Folsom, D. P., Gilmer, T., Barrio, C., Moore, D. J., Bucardo, J., Lindamer, L. A., et al. (2007). A longitudinal study of the use of mental health services by persons with serious mental illness: Do Spanish-speaking Latinos differ from English-speaking Latinos and Caucasians? *American Journal of Psychiatry, 164*, 1173–1180.
- Gil, A. G., Vega, W. A., & Dimas, J. M. (1994). Acculturative stress and personal adjustment among Hispanic adolescent boys. *Journal of Community Psychology, 22*, 43–54.
- Golding, J. M., & Aneshensel, C. S. (1989). Factor structure of the Center for Epidemiologic Studies Depression scale among Mexican Americans and non-Hispanic whites. *Psychological Assessment, 1*, 163–168.
- Guendelman, S., & Perez-Itriago, A. (1987). Double lives: The changing role of women in seasonal migration. *Women's Studies, 13*, 249–271.

- Hinojosa, D., & Miller, L. (1984). Grade level attainment among migrant farmworkers in south Texas. *Journal of Educational Research, 77*, 346–350.
- Hovey, J. D. (2000). Acculturative stress, depression, and suicidal ideation in Mexican immigrants. *Cultural Diversity & Ethnic Minority Psychology, 6*, 134–151.
- Hovey, J. D., & Magaña, C. (2000). Acculturative stress, anxiety, and depression among Mexican immigrant farmworkers in the Midwest United States. *Journal of Immigrant Health, 2*, 119–131.
- Hovey, J. D., & Magaña, C. (2002). Psychosocial predictors of anxiety among immigrant Mexican migrant farmworkers: Implications for prevention and treatment. *Cultural Diversity & Ethnic Minority Psychology, 8*, 274–289.
- Hovey, J. D., & Magaña, C. (2003). Suicide risk factors among Mexican migrant farmworker women in the Midwest United States. *Archives of Suicide Research, 7*, 107–121.
- Kim, B. S. K., & Abreu, J. M. (2001). Acculturation measurement: Theory, current instruments, and future directions. In J. G. Ponterotto, J. M. Casas, L. A. Suzuki, & C. M. Alexander (Eds.), *Handbook of multicultural counseling* (2nd ed., pp. 394–424). Thousand Oaks, CA: Sage.
- Kindler, A. L. (1995). Education of migrant children in the United States. Retrieved from <http://www.ncela.gwu>
- Kupersmidt, J. B., & Martin, S. L. (1997). Mental health problems of children of migrant and seasonal farm workers: A pilot study. *Journal of the American Academy of Child and Adolescent Psychiatry, 36*, 224–232.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer.
- Lopez, G. R., Scribner, J. D., & Mahitivanichcha, K. (2001). Redefining parental involvement: Lessons from high-performing migrant-impacted schools. *American Educational Research Journal, 38*, 253–288.
- Magaña, C. G., & Hovey, J. D. (2003). Psychosocial stressors associated with Mexican migrant farmworkers in the Midwest United States. *Journal of Immigrant Health, 5*, 75–86.
- McCarthy, C. J., & Mejía, O. L. (2001). Using groups to promote preventive coping: A case example with college students from migrant-farm working families. *The Journal for Specialists in Group Work, 25*, 267–275.
- Morey, L. C. (1991). *Personality assessment inventory: Professional manual*. Odessa: Psychological Assessments Resources.
- National Center for Farmworker Health. (2000). About farmworkers. Retrieved from <http://www.ncfh.org/aboutfws.htm>
- Parra-Cardona, J. R., Bullock, L. A., Imig, D. R., Villaruel, F. A., & Gold, S. J. (2006). “Trabajando duro todos los días”: Learning from the life experiences of Mexican-origin migrant families. *Family Relations, 55*, 361–375.
- Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1*, 385–401.
- Radloff, L. S. (1991). The use of the Center for Epidemiologic Studies Depression Scale in adolescents and young adults. *Journal of Youth and Adolescence, 20*, 149–166.
- Rodriguez, R., & DeWolfe, A. (1990). Psychological distress among Mexican-American and Mexican women as related to status on the new immigration law. *Journal of Consulting and Clinical Psychology, 58*, 548–553.
- Rogler, L. H., Cortes, D. E., & Malgady, R. G. (1991). Acculturation and mental health status among Hispanics: Convergence and new directions for research. *American Psychologist, 46*, 585–597.
- Ruiz, P. (2007). Spanish, English, and mental health services. *American Journal of Psychiatry, 164*, 1133–1135.
- Sapolsky, R. M. (1998). *Why zebras don't get ulcers: An updated guide to stress, stress-related diseases, and coping*. New York: Freeman.

- Slavin, L. A., Rainer, K. L., McCreary, M. L., & Gowda, K. K. (1991). Toward a multicultural model of the stress process. *Journal of Counseling & Development, 70*, 153–163.
- Stevens, J. (2002). *Applied multivariate statistics for the social sciences* (4th ed.). Mahwah, NJ: Erlbaum.
- Swearingen, E., & Cohen, L. (1985). Life events and psychological distress: A prospective study of young adolescents. *Developmental Psychology, 21*, 1045–1054.
- U.S. Census Bureau. (2007). The American Community—Hispanics: 2004. Washington, DC: U.S. Census Bureau.
- U.S. Census Bureau. (2008). U.S. Hispanic Population Surpasses 45 Million Now 15 Percent of Total. Retrieved from <http://www.census.gov/Press-Release/www/releases/archives/population/011910.html>
- U.S. Department of Education, National Center for Education Statistics. (2005). *The condition of education 2005, NCES 2005–094*. Washington, DC: U.S. Government Printing Office.
- Unger, J. B., Ritt-Olson, A., Wagner, K., Soto, D., & Baezconde-Garbanati, L. (2007). A comparison of acculturation measure among Hispanic/Latino adolescents. *Youth Adolescence, 36*, 555–565.
- Weathers, A., Minkovitz, C., O’Campo, P., & Deiner-West, M. (2004). Access to care for children of migratory agricultural workers: Factors associated with unmet need for medical care. *Pediatrics, 113*, 276–282.
- Williams, C. L., & Berry, J. W. (1991). Primary prevention of acculturative stress among refugees: Application of psychological theory and practice. *American Psychologist, 46*, 632–641.
- Wilson, A. H., Wold, J. L., Spencer, L., & Pittman, K. (2000). Primary health care for Hispanic children of migrant farm workers. *Journal of Pediatric Health Care, 14*, 209–215.
- Zalaquett, C. P., McHatton, P. A., & Cranston-Gingras, A. (2007). Characteristics of Latina/o migrant farmworker students attending a large metropolitan university. *Journal of Hispanic Higher Education, 6*, 135–156.

Correction to Shirom, Oliver, & Stein (2009)

In the article, “Teachers’ Stressors and Strains: A Longitudinal Study of Their Relationships” by Arie Shirom, Amalya Oliver, and Esther Stein (*International Journal of Stress Management*, 2009, Vol. 16, No. 4, pp. 312–332), the two co-authors’ affiliations were incorrectly listed. The co-authors’ correct affiliations are as follows: Amalya Oliver, Hebrew University of Jerusalem and Esther Stein, Beit Berl Educational College.

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