

UC San Diego

UC San Diego Electronic Theses and Dissertations

Title

Mental Health of Undocumented Mexican Immigrants Living in High-Risk Neighborhoods Near the California-Mexico Border

Permalink

<https://escholarship.org/uc/item/4rx729wt>

Author

Garcini, Luz Maria

Publication Date

2016

Peer reviewed|Thesis/dissertation

SAN DIEGO STATE UNIVERSITY
UNIVERSITY OF CALIFORNIA, SAN DIEGO

Mental Health of Undocumented Mexican Immigrants Living in High-Risk
Neighborhoods Near the California-Mexico Border

A dissertation proposal submitted in partial satisfaction of the
Requirements for the degree Doctor of Philosophy

in

Clinical Psychology

by

Luz M. Garcini

Committee in charge:

San Diego State University

Professor Elizabeth A. Klonoff, Chair
Professor John P. Elder
Professor Vanessa L. Malcarne

University of California, San Diego

Professor Neil Doran
Professor Mark G. Myers
Professor Monica D. Ulibarri

2016

Copyright

Luz M. Garcini, 2016

All rights reserved.

The Dissertation of Luz M. Garcini is approved, and it is acceptable in quality and form for publication on microfilm and electronically:

Chair

San Diego State University
University of California, San Diego

2016

DEDICATION

Este trabajo está dedicado a mi familia, en especial a mis hijos. Thania y Baruch, ustedes son mi motor y mi empuje. Mi trabajo y mi vida entera están dedicados a ustedes. Humberto, gracias por ser parte de mi historia y el apoyo económico durante mi desarrollo académico. A mis hermanos, Carlos y Ana, gracias por existir, a mis padres Luz y Carlos, gracias por darme el ser, y a mi papa Roberto por sus constantes llamadas en momentos difíciles. Richard Alter, gracias por tu paciencia cuando mas lo necesitaba. Margaret Kahn, Marina y Issac Plon, Abel Gomez, Rosa Zepeda, mi pastor Jesus Ponce y Lety Ponce, y a toda mi familia en el Centro de Fé, gracias porque cada uno de ustedes me ha ayudado a levantar cuando me cuesta trabajo caminar. Benito y Clarita, gracias por su constante compañía durante largas horas de trabajo. Nunca me han dejado sola.

Tambien especial dedicatoria para los millones de inmigrantes indocumentados que luchan día a día en este país por salir adelante. Gracias por producir y servirnos la comida que comemos, por mantener y cuidar las casas en las que vivimos, por atender y velar por nuestros hijos y familias como si fueran propias, pero sobre todo, gracias por ser un vivo ejemplo de que *“Si se puede!”* Gloria, te recuerdo y tu muerte no fue en vano. Gracias por darme un propósito!

Pero sobre todo, este trabajo es dedicado a Dios por ser mi roca, mi guía y mi esperanza. *“Porque yo sé muy bien los planes que tengo para tí —afirma el Señor—, planes de bienestar y no de calamidad, a fin de darte un futuro y una esperanza”* (Jeremias, 29:11)

TABLE OF CONTENTS

Signature Page	iii
Dedication	iv
Table of Contents	v
List of Abbreviations	vii
List of Figures	ix
List of Tables	x
Acknowledgements	xi
Vita	xii
Abstract of the Dissertation	xiv
Chapter 1: Introduction	1
1.1 The Foreign-Born Mexican Population in the United States	2
1.2 Undocumented Mexican Immigrants in the United States	4
Chapter 2: Background and Significance	6
2.1 Mental Health of Undocumented Immigrants	6
2.2 Summary and Limitations of Prior Research	7
2.3 Immigration-Related Risk Factors	8
Chapter 3: Culture and Context Sensitive Mental Health Assessment	13
3.1 Paradigm Shift to the Study of Mental Health among Immigrant Populations	13
3.2 Culture and Context Sensitive Assessments	14
3.3 Cultural Concepts of Distress among Latinos	14
3.4 Contextual Concepts of Distress among Undocumented Immigrants	19
Chapter 4: Theoretical Framework and Aims of the Study	22
4.1 The Socio-Ecologic Framework and the Minority Stress Model	22
4.2 Specific Aims of the Present Study	22
Chapter 5: Methods	24
5.1 Formative Research	24
5.2 Respondent Driven Sampling	24
5.3 Study Location	29
5.4 Participants	30

5.5 Procedures	31
5.6 Pilot Testing.....	32
5.7 Measures	33
5.8 Data Analytic Plan	44
Chapter 6: Results	46
6.1 Formative Research	46
6.2 Pilot Testing.....	48
6.3 Participant Characteristics in RDS Study	50
6.4 Prevalence of Psychological Distress in RDS Study	51
6.5 Prevalence of Mental Health Disorders in RDS Study	52
6.6 Prevalence of <i>Nervios</i> and <i>Ataque de Nervios</i> in RDS Study.....	53
6.7 Prevalence of <i>Ulysses Syndrome</i> in RDS Study	56
Chapter 7: Discussion	59
7.1 Prevalence of Psychological Distress	59
7.2 Prevalence of Mental Health Disorders Based on DSM Criteria	63
7.3 Prevalence of <i>Nervios</i> and <i>Ataque de Nervios</i>	67
7.4 Prevalence of <i>Ulysses Syndrome</i>	68
7.5 Inequities in Mental Health between UMIs and Deportees	70
7.6 Summary	70
7.7 Limitations	72
7.8 Directions for Future Research	73
7.9 Conclusions.....	74
References	75
Figures.....	87
Tables.....	95

LIST OF ABBREVIATIONS

ACA	Affordable Care Act
APA	American Psychological Association
BSI	Brief Symptom Inventory-Brief
^a BSI	Bradford Somatic Inventory
CDCPAR	Cancer Disparities Community Partners and Research
CFI	Cultural Formulation Interview
CIDI	Composite International Diagnostic Interview
DREAMers	Development, Relief, and Education for Alien Minors Act
DSM	Diagnostic and Statistical Manual of Mental Disorders
EMIC	Explanatory Model Interview Catalogue
GAD	Generalized Anxiety Disorder
GSI	General Severity Index
HTQ	Harvard Trauma Questionnaire
ICD	International Classification of Diseases
INS	Immigration and Naturalization Services
IRB	Institutional Review Board
M.I.N.I.	Mini International Neuropsychiatric Interview
MDD	Major Depressive Disorder
NCS-R	National Comorbidity Survey Replication
NIMH	National Institute of Mental Health
NLAAS	National Latino and Asian American Study
PI	Principal Investigator

PTSD	Post-traumatic Stress Disorder
QOL	Quality of life
RDS	Respondent Driven Sampling
SCLD	Structured Clinical Interview for DSM Diagnosis
SDPRC	San Diego Prevention Research Center
SDSU	San Diego State University
SPSS	Statistical Package for the Social Sciences Software
UCSD	University of California, San Diego
ULIs	Undocumented Latino immigrants
UMIs	Undocumented Mexican immigrants
U.S.	United States
WHO	World Health Organization

LIST OF FIGURES

Figure 1. Migration related stressors influencing the mental health of ULIs in the U.S.....	87
Figure 2. The Socio-ecological Model of Health.....	88
Figure 3. The Minority Stress Model.....	89
Figure 4. Recruitment tree	90
Figure 5. Recruitment coupon for RDS study	91
Figure 6. Psychological distress among UMIs in RDS study.....	92
Figure 7. Mental health disorders among UMIs in RDS study.....	93
Figure 8. Model to improve the quality of health research among UMIs.....	94

LIST OF TABLES

Table 1. Seed characteristics ($N = 3$).....	95
Table 2. Measures used in the assessment of <i>Nervios</i>	96
Table 3. Measures used in the assessment of <i>Ataque de Nervios</i>	98
Table 4. Measures used in the assessment of <i>Ulysses Syndrome</i>	99
Table 5. Lifetime prevalence of mental health disorders among Latinos (Alegría et al., 2008)	101
Table 6. RDS assumptions	102
Table 7 Characteristics of participants in focus groups during formative research.....	107
Table 8. Characteristics of key informants during formative research	108
Table 9. Variations in mental health symptom presentation across ULI subgroups	110
Table 10. Participant characteristics for pilot test study	112
Table 11. Participant characteristics for RDS study	114
Table 12. Population estimates for psychological distress among UMIs ($N = 22,000$)	118
Table 13. Population estimates for mental health disorders among UMIs ($N = 22,000$)	122
Table 14. Comorbidity of mental health disorders among UMIs ($N = 22,000$)	126
Table 15. Population estimates for <i>Nervios</i> and <i>Ataque de Nervios</i> among UMIs ($N = 22,000$)	128
Table 16. Migration-related loss among UMIs ($N = 22,000$).....	131

ACKNOWLEDGEMENTS

In addition to the incredible people recognized in this dissertation's dedication, I would like to acknowledge my mentors, Elizabeth Klonoff, Ph.D., Vanessa Malcarne, Ph.D., John Elder, Ph.D., Guadalupe Ayala, Ph.D., M.P.H., Monica Ulibarri, Ph.D., and Lisa Johnston, Ph.D. My training has been greatly enriched by their generosity of guidance and expertise. I feel incredibly fortunate to have had the chance to learn from such an esteemed and inspiring team. I would also like to acknowledge other members of my committee, Mark Myers, Ph.D., and Neal Doran, Ph.D. My gratitude is also extended to Jeff Baker, Ph.D., whose teachings and examples helped prepare me for graduate school. Finally I would like to acknowledge my research team, especially Angela Gutiérrez, Juan Peña, y Grecia Venegas. I cannot imagine a better group of people with whom to have experienced this amazing adventure.

This study was funded by the Ford Fellowship Dissertation Award, the PIMPSA Dissertation Award, and the UC MEXUS Dissertation Award. The results of this dissertation are being prepared for publication. The dissertation author was the primary investigator and author of this material.

VITA

2003	Bachelor of Arts, University of Houston
2008	Master of Arts, University of Houston-Clear Lake
2012	Master of Science, San Diego State University
2015	Master of Public Health, San Diego State University
2016	Doctor of Philosophy, San Diego State University and University of California, San Diego

PUBLICATIONS

Peña, J. M., **Garcini, L. M.**, Gutierrez, A. P., Ulibarri, M. D., & Klonoff, E. A. (in press). Traumatic events and symptoms among Mexican deportees in a border community. *Journal of Immigrant & Refugee Studies*.

Garcini, L. M., Murray, K., Zhoe, A., Klonoff, E. A., Myers, M., & Elder, J. P. (2016). Mental health of undocumented immigrant adults in the United States: A systematic review of methodology and findings. *Journal of Immigrant and Refugee Studies*, 14(1), 1-25. doi:10.1080/15562948.2014.998849

Garcini, L. M., Ayala, G. X., Molina, M., Quintanar, E., Johansen, C., & Hector, R. (2015). Predictors of routine medical care use among Mexican Immigrants/Mexican-Americans varying in legal status. *Field Actions Science Reports (FACTS)*, [Online], Special Issue: 13. URL: <http://factsreports.revues.org/3915>

Hsueh, L., **Garcini, L. M.**, Zhou, A. Q., Malcarne, V. L., & Klonoff, E. A. (2015). Assessment on the use of the Suinn-Lew Asian Self Identity Acculturation Scale in health studies of Asian immigrant populations. *Field Actions Science Reports (FACTS)*, [Online], Special Issue: 13. URL : <http://factsreports.revues.org/3915>

Barnack-Tavlaris, J., **Garcini, L. M.**, Macera, C., Brodine, S., & Klonoff, E. A. (2014). Human Papillomavirus vaccination awareness and acceptability among U.S. and foreign-born women living in California. *Health Care for Women International*, 37, 444-462. doi:10.1080/07399332.2014.954702

Murray, K., Barbour, L., Morlett, A., & **Garcini, L. M.** (2014). Latinos & political advocacy for cancer control in a United States-Mexico border community. *Hispanic Health Care International*, 12, 198-209. doi:10.1891/1540-4153.12.4.198

Molina, M., Ayala, G. X., Baquero, B., Madanat, H., & **Garcini, L. M.** (2014). The link

between border crossing and obesity. *Journal of Immigrant and Minority Health*, 17, 614-617. doi:10.1007/s10903-013-9972-8.

Garcini, L. M., Murray, K., Barnack-Tavlaris, J., Malcarne, V. L., & Klonoff, E. (2013). Awareness and knowledge of Human Papillomavirus (HPV) among ethnically diverse women varying in generation status. *Journal of Immigrant and Minority Health*, 17, 29-36. doi: 10.1007/s10903-013-9913-6

Murray, K., Klonoff, E. A., **Garcini, L. M.**, Wall, T. L., & Myers, M. (2013). Assessing acculturation over time: A four-year prospective study of Asian-American young adults. *Asian American Journal of Psychology*, 5, 252-261. doi:10.1037/a0034908

Barnack-Tavlaris, J., **Garcini, L. M.**, Sanchez, O., Hernandez, I., & Navarro, A. (2013). Focus group discussions in community-based participatory research to inform the development of a Human Papillomavirus (HPV) educational intervention for Latinas in San Diego. *Journal of Cancer Education*, 28, 784-789. doi:10.1007/s13187-013-0516-7

Garcini, L. M., Short, M., & Norwood, D. (2013). Affective and motivational predictors of perceived meaning among college students. *Journal of Happiness and Wellbeing*, 1, 51-64.

Garcini, L. M., Barnack-Tavlaris, J. L., & Galvan, T. (2012). The study of Human Papillomavirus (HPV) vaccine uptake from a parental perspective: A systematic review of observational studies in the United States. *Vaccine*, 30, 4588-4595. doi:10.1016/j.vaccine.2012.04.096

Ledoux, T., Barnett, M. D., **Garcini, L. M.**, & Baker, J. (2009). Predictors of current mental health service use in a general medical population. *Journal of Clinical Psychology in Medical Settings*, 16, 304-310. doi:10.1007/s10880-009-9171-x

Barnett, M. D., Ledoux, T., **Garcini, L. M.**, & Baker, J. (2009). Type D personality and chronic pain: Construct and concurrent validity of the DS14. *Journal of Clinical Psychology in Medical Settings*, 16, 194-199. doi:10.1007/s10880-009-9152-0

BOOK CHAPTERS

Garcini, L. M., Murray, K., Barnack-Tavlaris, J., & Klonoff, E. A. (2015). Cultural concerns. In F. Andrasik, J. Goodie, & A. Peterson (Eds.), *Biopsychosocial assessment in clinical health psychology* (pages 369-389). New York: The Guilford Press.

ABSTRACT OF THE DISSERTATION

Mental Health of Undocumented Mexican Immigrants Living in High-Risk
Neighborhoods Near the California-Mexico Border

by

Luz M. Garcini

Doctor of Philosophy in Clinical Psychology

San Diego State University, 2016
University of California, San Diego, 2016

Professor Elizabeth A. Klonoff, Chair

Rationale: Undocumented Mexican immigrants (UMIs) and their families make up a considerable proportion of the United States (U.S.) population at-risk for psychological distress. Yet, research to inform the mental health of UMIs is scant and existing studies often lack scientific rigor. This study used the Socio-Ecologic Framework and the Minority Stress Model, as well as context-sensitive methodology and Respondent Driven Sampling (RDS) to identify the prevalence of psychological distress,

mental health disorders, and relevant *Cultural* and *Contextual Concepts of Distress*, among UMIs living in high-risk neighborhoods near the California-Mexico border region.

Design: This study was a multi-stage project that included formative research, pilot testing, and a cross-sectional study that used Respondent Driven Sampling (RDS) as a sampling and data analysis methodology. Data for the RDS study was obtained from clinical interviews with 248 UMI adults of Mexican origin residing in North San Diego County. Primary mental health outcome measures included the Mini International Neuropsychiatric Interview (M.I.N.I.), the Brief Symptom Inventory (BSI-53), and the Bradford Symptom Inventory (^aBSI). An adapted version of the Diagnostic and Statistical Manual for Mental Disorders (DSM) 5th Edition Cultural Formulation Interview (CFI) was used for the assessment of *Cultural* and *Contextual Concepts of Distress*.

Results: Overall, 41% of UMIs met criteria for clinically significant psychological distress, with significant differences found for sex, age, and marital status. Additionally, 22% of UMIs met criteria for one or more mental health disorder based on DSM diagnosis, with the most prevalent disorders being Major Depressive Disorder (MDD: 14%) and Generalized Anxiety Disorder (GAD: 7%). Pertaining to *Cultural Concepts of Distress*, 24% of UMIs reported a lifetime prevalence of *Nervios* and 12% reported a lifetime prevalence of *Ataque de Nervios*, with the most common causal attributions for *Nervios* and *Ataque de Nervios* being family conflict (20%). Moreover, 82% of UMIs reported experiencing significant distress as a result of their undocumented status, which was found to be associated with significant migration-related loss, clinically

significant psychological and somatic symptoms, and a negative effect on identity and self-esteem.

Conclusions: UMIs are a population at risk of psychological distress given the multiple contextual stressors that these immigrants face. Debates on programs and policies pertaining to UMIs are complex and multifaceted, and divisiveness on immigration and welfare reform in the U.S. is long-standing. Tenacious grassroots efforts, both, in Mexico and in the U.S., are necessary to influence policy aimed to allocate funding to increase access to culturally and contextually responsive interventions aimed to address the complex mental health needs of this vulnerable population. It is the responsibility of both Mexico and the U.S. to work collaboratively in the development of programs and policies to prevent the negative consequences of inadequate access and to protect the human rights of Mexican immigrants looking for more promising futures.

CHAPTER 1: INTRODUCTION

A current important issue in the global policy agenda is that of international migration, that is, the movement of people across international boundaries, given its enormous impact on the economy, society, culture and health indicators of countries of origin, transit and destination. According to the World Health Organization (WHO) (2010), international migration is at its all-time-high with more than 230 million people or approximately 3% of the world's population being international migrants. This estimate represents an approximate 34% increase in the international migrant population over the past two decades, with the greatest flow of migration taking place from less developed to more industrialized countries, as migrants cross borders in search of better economic and social opportunities (WHO, 2010). For more than two decades, the United States (U.S.) has been identified as the most popular destination for international migrants, with an average annual immigration growth of 2.8% (WHO, 2010). Recent estimates show that approximately 13% of the U.S. population is foreign-born, with immigrants from Latin America, particularly from Mexico, comprising the majority of the U.S. foreign-born population (53%) (U.S. Census Bureau, 2012). If population trends remain unchanged, it is estimated that nearly one in five Americans will be foreign-born by 2050, with a large proportion being of Mexican origin (Pew Research Center, 2013). The increase in global mobility, advances in communication infrastructure, demand-pull factors in the U.S. (e.g., family unification, economic opportunity) and supply-push factors in sending countries (e.g., poverty, violence), make it likely that Mexicans will continue to migrate to the U.S. at a fast rate. Thus, it is in the best interest of the U.S. and Mexico to increase knowledge about the complex health needs of Mexican immigrants by

putting it at the forefront of policy agendas, public health initiatives, economic planning, and research funding.

1.1 The Foreign-Born Mexican Population in the United States

Of the approximately 21 million foreign-born Latinos in the U.S., 11.7 million or more than half (55%) are of Mexican origin (U.S. Census Bureau, 2012). This means that of the total U.S. foreign-born population, more than 29% were born in Mexico (U.S. Census Bureau, 2012). Also, despite recent increases in foreign-born Mexicans across various U.S. states, California continues to be the state with the largest number of foreign-born Mexicans (Brown & Lopez, 2013). Several counties in Southern California, including those near the California-Mexico border, have been identified as having a rapid growth in their foreign-born Mexican population (Brown & Lopez, 2013). If these population trends continue, the Mexican immigrant population in this region will grow at a faster rate than the population as a whole, in both the U.S. and Mexico (Immigration Policy Center, 2012).

Mexicans in the U.S. vary widely in terms of geographic distribution, demographics, socio-economic position, health status, and immigration-related characteristics. When compared to their U.S.-born counterparts, foreign-born Mexicans differ considerably in demographic and socioeconomic characteristics. For instance, U.S. born Mexicans are almost three times more likely than Mexican foreign-born to have a college degree (15% versus 6% respectively) (Gonzalez-Barrera & Lopez, 2013). Also, approximately 59% of foreign-born Mexicans have a lower than high school education when compared to 21% of their U.S. born counterparts (Gonzalez-Barrera & Lopez, 2013). Socioeconomic disadvantage among foreign-born Mexicans is also evident in

regards to income, homeownership, and poverty status, with those born in Mexico being more likely to live in poverty (29% versus 26%), less likely to own a home (45% versus 53%), and more likely to earn lower income (\$19,000 versus \$22,000) than their U.S. born counterparts (Gonzalez-Barrera & Lopez, 2013). Inequities in health insurance are also evident among Mexicans in the U.S., with those born in Mexico being at a disadvantage (57% versus 20%) (Gonzalez-Barrera & Lopez, 2013). Important to note is that the aforementioned estimates are based on national data not likely to be inclusive of marginalized Mexican immigrant subgroups (i.e., UMIs); thus, it is possible that the previously mentioned inequities among Mexicans in the U.S. may be even larger than reported across foreign-born subgroups.

Health disparities have also been documented between foreign-born Mexicans and their U.S.-born counterparts, with greater advantage found among the foreign-born (Alegria, Canino, Shrout, Woo, Duan, Vila & Meng, 2008). Some potential explanations to the health advantage observed among foreign-born Mexicans when compared to their U.S. born counterparts have been attributed to: (a) better lifestyles before and immediately following migration to the U.S.; (b) extensive social support, and (c) health selection through immigration screening (Cunningham, et al., 2008). Although it is possible that these explanations may be valid for some foreign-born subgroups, it is also likely that these assumptions may not hold truth for the most vulnerable immigrants including the undocumented. Unfortunately, foreign-born Mexicans are often studied as a homogeneous group, without much attention given to within group differences, including variations among those differing in immigration legal status. UMIs, who often immigrate to the U.S. as a result of harsh living conditions in Mexico, must face

distressing and marginalized lifestyles while residing in the U.S. (Garcini, Murray, Zhoe, Klonoff, Myers, & Elder, 2016). Faced with restricted opportunities for legalization and family reunification, the distress experienced by UMIIs often becomes chronic and more severe. Extensive research shows that the health advantage of foreign-born Mexicans, often dissipates over time, with longer time of residence in the U.S. associated with significant deterioration in health status, including mental health (Cunningham, et al., 2008). Research to inform on the health status of vulnerable foreign-born Mexicans, including UMIIs, is needed to elucidate on existing health inequities so that effective interventions and policies may be developed (Vega, Rodriguez, & Gruskin, 2009).

1.2 Undocumented Mexican Immigrants in the United States

A current national political debate is the issue of defining a path towards legalization to address the millions of undocumented immigrants, including UMIIs, in the U.S. It is estimated that only about 29% of foreign-born Latinos are naturalized citizens, with the rest being non-citizens (71%), including legal residents and the undocumented (American Immigration Council, 2012). UMIIs and individuals living in “mixed-status” families, that is, families in which at least one member is undocumented, make up a considerable proportion of the U.S. population. It is estimated that of the foreign-born Mexicans in the U.S., approximately half are undocumented (51%) (Gonzalez-Barrera & Lopez 2013). Moreover, estimates show that UMIIs comprise a considerable proportion of the labor force in states such as California (Passel & Cohn, 2009), with UMIIs comprising a large proportion of jobs in the construction and farming industries (Gonzalez-Barrera & Krogstad, 2015). Unfortunately, most UMIIs and their families experience socioeconomic disadvantage. When compared to the general foreign-born Mexican population, UMIIs

have lower educational attainment and higher poverty rates, and these socioeconomic disparities become even greater when UMIs are compared to the general U.S.-born population (Gonzalez-Barrera & Lopez 2013).

Although some UMIs eventually return to their country of origin, a good proportion stays and establishes permanent residence in the U.S. Most UMIs that make the U.S. their permanent residence include those able to reunite with their families in the U.S., as well as those with U.S.-born children. Estimates show that approximately 43% of undocumented immigrants, including those of Mexican origin, have resided in the U.S. for more than 10 years (Passel & Cohn, 2008). The negative effects on health of socioeconomic disadvantage, stigmatization, marginalization, and demanding work conditions over time are widely documented (Commission on Social Determinants of Health, 2008), as is the economic impact of poor health on the healthcare system. Yet, there is growing proportion of foreign-born Mexicans, particularly UMIs and their U.S.-born children, for whom such negative health effects may become reality over time. Identifying the mental health needs of this immigrant subgroup is needed to ameliorate the negative effects of poverty, marginalization, and harsh living environments, as well as to inform interventions, policy, and needed health services.

CHAPTER 2: BACKGROUND AND SIGNIFICANCE

2.1 Mental Health of Undocumented Immigrants

Immigrant health has been a seriously neglected area of research, although this is gradually changing with a recent increase in studies focusing in quality and use of healthcare among at-risk immigrants, including UMIs. Unfortunately, research to understand the effects of immigration legal status, particularly undocumented status, on physical and mental health is limited. Given that UMIs make up a considerable proportion of the U.S. population and its workforce, facilitating understanding of their wellbeing and mental health challenges is important to decrease inappropriate use of healthcare services, and ensure a healthier workforce and community, as well as to inform the development of interventions and policies.

According to Healthy People 2020, mental health is 1 of 12 leading health indicators given it is essential to a person's wellbeing, quality of life, physical functioning, interpersonal relationships, and productivity (U.S. Department of Health and Human Services). The association between mental health and quality of life is widely documented, with better mental health associated to increased wellbeing. In a study of UMIs from the 2009 San Diego Prevention Research Center (SDPRC) Community survey, depression was found to be the only factor significantly associated with poor quality of wellbeing scores ($\beta = -13.34$, 95% CI = -22.32, -4.36, $p = 0.01$), after controlling for demographic, socioeconomic and migration-related factors, including length of time in the U.S. and language acculturation (Garcini, Renzaho, Molina, & Ayala, under review). The immigration path to the U.S. often presents with multiple stressors and complex challenges at different stages of the migration process, which

increase risk for emotional disturbance and may compromise mental health (Chung, Bernak, Ortiz, & Sandoval-Perez, 2008; Sluzki, 1979; Ornelas & Perreira, 2011). UMIIs are a population at increased risk for psychological distress given the additional complex stressors and harsh living conditions that these population face above and beyond those of documented immigrants (Garcini, et. al., in press; Sullivan & Rehm, 2005).

2.2 Summary and Limitations of Prior Research

Research to explore determinants of health among UMIIs has increased considerably within the past decade; however, a recent systematic review of 23 studies showed that there is very little research to inform the wellbeing and mental health of UMIIs, and that existing studies often lack scientific rigor and are limited in providing prevalence data for mental health disorders and associated risk factors (Garcini et al., 2016). The use of self-report, imprecise measurement, and the limited analysis of mental health outcomes by immigration legal status also make it challenging to identify the prevalence of psychological distress among UMIIs. Among the few studies reporting on prevalence of psychological distress in this population, only one provided actual mental health diagnosis based on the Diagnostic and Statistical Manual for Mental Disorders (DSM) 4th Edition. This study explored the prevalence and predictors of Post-Traumatic Stress Disorder (PTSD) among 212 undocumented Latino immigrants (ULIIs) at their point of entry to the U.S. (Rasmussen, Rosenfeld, Reeves, & Keller, 2007). Results from this study showed that 11% of ULIIs (95% CI = 0.07, 0.16) met criteria for PTSD, with at least 82% of participants reporting having experienced previous trauma. When compared to national estimates using data from the National Latino and Asian American Study (NLAAS) for U.S.-born and foreign-born Latinos, the prevalence of PTSD among ULIIs

was considerably higher (5.9%, 95% CI = 0.04, 0.07 and 4.0%, 95% CI = 0.03, 0.05, respectively) (Alegria, Canido, Shrout, Woo, Duan, Vila, et al., 2008). The aforementioned disparities in the prevalence of PTSD across Latino subgroups suggests that the mental health advantage often reported among foreign-born Latinos, may not accurately reflect that of ULI, including those of Mexican-origin, particularly in regards to psychological distress.

Moreover, although not specifically reported based on DSM diagnosis, research shows that depression is also prevalent among UMI. A preliminary study using data from the 2009 SDPRC Community survey on 397 Mexican immigrants (15% undocumented) showed that 12% of UMI reported moderate to severe levels of depression, with depression identified as a significant predictor of wellbeing after controlling for relevant covariates (Garcini, et al., under review). Likewise, in a study of 90 Mexican-origin immigrant women (67% undocumented), results showed undocumented women not qualifying for amnesty to have significantly higher levels of depression when compared to UMI qualifying for amnesty and legal residents (Rodriguez & DeWolfe, 1990). Various qualitative studies have also render support for depression as a relevant concern among UMI, along with anxiety, somatization, and substance use disorders (Garcini et al., 2016). Additional studies to provide background data on the prevalence of the aforementioned mental health disorders among UMI is needed to inform decision-making and the provision of health services.

2.3 Immigration-Related Risk Factors

Psychological distress has been identified as common to the undocumented experience with stressors varying across different stages of the immigration process

(Garcini et al., 2016). Salient stressors identified as common among UMIs pre-migration include having a sense of failure related to the inability to succeed in the country of origin, as well as history of political/war trauma (Horton, 2009; Paris, 2008; Walter, Bourgois, & Loinaz, 2004). Dangerous border crossing, including exposure to environmental hazards, violence and extortion from immigration authorities and organized crime, witnessing death of others while crossing, and abandonment by border crossing guides or “*coyotes*,” have also been identified as salient stressors experienced in-transit (DeLuca, McEwen, & Keim, 2010; Infante, Idrovo, Sanchez-Dominguez, Vinhas, & Gonzalesz-Vazquez, 2012; McGuire & Georges, 2003; Paris, 2008).

Additionally, multiple post-migration stressors are faced by UMIs upon their arrival to the U.S., which often become chronic stressors over time. A salient contextual stressor often experienced among UMIs is marginalization and isolation. This includes experiencing a restricted existence due to a limited social sphere of activity, isolation from the larger community, separation from family and friends, inability to travel internationally to visit family or during emergencies, and experiencing a sense of voicelessness, invisibility, and “loss of all rights” (Abrego, 2006; Aroian, 1993; Ellis & Chen, 2013; Hass, Dutton, & Orloff, 2000; Hondagnew-Sotelo & Avila, 1997; Horton, 2009; Infante, et al., 2012; Joseph, 2011; McGuire & Georges, 2003; Paris, 2008; Walter, et al., 2004). Fear of deportation and limited resources, including trouble getting employment, financial difficulties, limited access to healthcare, poor housing and unsafe neighborhoods, have also been identified as relevant concerns in this population (Abrego, 2006; Aroian, 1993; Ellis & Chen, 2013; Hass, et al., 2000; Infante, et al., 2012; Joseph, 2011; McGuire & Georges, 2003; Paris, 2008; Walter, et al., 2004). One study identified

food insecurity/hunger as a stressor among ULIs (28%), and a significant predictor of poor mental ($p = .04$) and physical health ($p < .0001$) (Hadley, Galea, Nandi, Nandi, Lopez, Strongarone, et al., 2008). Exploitability and victimization, including working strenuous jobs and demanding work schedules, low wages, working without benefits and enduring silent physical, psychological, and sexual abuse associated to domestic violence for fear of deportation, have also been identified as stressors commonly experience by ULIs post-migration (Aroian, 1993; Hass, et al., 2000; Hondagnew-Sotelo & Avila, 1997; McGuire & Georges, 2003; Sabina, Cuevas, & Sebally, 2013).

Acculturation, that is difficulties transcending cultural differences in terms of beliefs, values, and behaviors, as well as difficulties communicating due to limited English proficiency, have also has been identified as salient difficulties for UMIs post-migration. UMIs with limited English proficiency have been identified as most at-risk for experiencing acculturative stress, as well as those with deficits in stress-coping resources and strong attachments to their families in the country of origin (Miranda & Matheny, 2000; Sanchez, Dillon, Ruffin, & De La Rosa, 2012). Regarding the association between length of time in the U.S. and mental health outcomes, studies have found that longer time lived in the U.S. was associated with increased mental health distress among ULI adults (Hadley, et al., 2008; Santos, Bohon, & Sanchez-Sosa, 1998).

In addition to the aforementioned contextual stressors, UMIs experience various intrapersonal and interpersonal stressors post-migration. Intrapersonal stressors commonly experienced by ULIs include: (a) identity shift related to changes in gender and family roles/expectations, which differ from the immigrant's culture (e.g., from mother/wife in country of origin to laborer/provider in the U.S.) (Hondagnew-Sotelo &

Avila, 1997; Horton, 2009; Paris, 2008; Walter, et al., 2004); (b) variation in self-perception associated with changes in racial classification (e.g., from being perceived as “White” in country of origin (Brazil) to “Latino” in the U.S.) (Joseph, 2011); (c) internalization of the undocumented stereotype, which may be associated to decreased self-esteem, a sense of being burdensome, guilt/shame, and a loss of motivation (Abrego, 2006; Ellis & Chen, 2013); (d) distressing emotions associated with a sense of moral failing for leaving family behind, as well as resentment or guilt among ULIs living in mixed-status families in which some members have documentation and greater access to resources/opportunities not available to undocumented family members (Horton, 2009; Walter, et al., 2004); and (e) deception associated with downward social mobility and limited opportunities, primarily among ULIs with higher educational attainment in their country of origin who settle for jobs in the U.S. secondary markets, as well as for DREAMers who despite excellence in their early academic achievements may not have opportunities to further their studies (Abrego, 2006; Aroian, 1993; Ellis & Chen, 2013; Joseph, 2011). Interpersonal stressors are also common to the undocumented experience. For example, strained family relationships and conflicts resulting from displacement of negative emotions onto others, specifically jealousy and anger toward those with a documented status or towards other ULIs who may represent competition for jobs/resources, have been reported as prevalent (Aroian, 1993; Ellis & Chen, 2013; Hondagnew-Sotelo & Avila, 1997; Horton, 2009; McGuire & Georges, 2003; Paris, 2008; Walter, et al., 2004). Discrimination and stigmatization on the basis of race, language proficiency, and anti-immigrant sentiments are also common (Chavez, 1994; Ellis & Chen, 2013; Infante, et al., 2012; Joseph, 2011).

UMIs are clearly an at-risk population for psychological distress given the many stressors that they faced, which are often experienced over time and endured under harsh living conditions. UMIs represent a marginalized subgroup, for whom access to health services, including mental health services, is restricted and limited; thus, increasing risk for decline in mental health over time. Figure 1 provides a summary of migration related stressors influencing the mental health of ULIs in the U.S. Identifying the mental health needs of this immigrant population is important to inform prevention efforts, public health action, and policy development.

CHAPTER 3: INCORPORATING CULTURE AND CONTEXT TO THE STUDY OF MENTAL HEALTH AMONG UNDOCUMENTED IMMIGRANTS

3.1 Paradigm Shift to the Study of Mental Health among Immigrant Populations

In general, psychological distress in response to migration-related difficulties has traditionally been studied within the context of cognitive-behavioral frameworks and symptoms clusters that are primarily based on a western American and European culture (Hobfoll, 2014). This may be inappropriate for the study of psychological distress in response to migration-related loss among non-western cultures and for populations exposed to contextual environments not representative of the DSM-diagnostic literature. Substantial research suggests that traditional DSM diagnosis may be capturing a limited set of responses to psychological distress that may not accurately capture distress and symptom presentation among non-western cultures (e.g., DeJong & Reis, 2010; Eisenman, Meredith, Rhodes, Green, Kaltman, Cassells, et al., 2008; Hinton & Kirmayer, 2013; Hinton & Lewis-Fernandez, 2011; van Duijl, et al. 2010). Thus, recent trends have called for a paradigm shift that considers “*idioms of distress*” as a culture and context sensitive approach to the study of psychological distress in response to migration-related difficulties and loss across cultures (Hobfoll, 2014). Moreover, this paradigm shift suggests that the study of psychological distress in response to migration-related difficulties requires consideration of a fuller time sequence that considers other events before or after the migration experience in order to develop a more ecologically valid understanding of risk factors. In this way, studying psychological distress in response to the migration experience among UMIs within a broader context, including the expression of symptoms beyond traditional DSM diagnosis and the assessment of loss at different

stages of the migration process, is necessary to better understand the mental health needs of this population, to identify risk factors, and to inform effective prevention, treatment, and policy efforts.

3.2 Culture and Context Sensitive Assessments

According to the American Psychological Association Multicultural Guidelines, investigators should aim to “apply culturally-appropriate skills [and measures] in their research and clinical practice” (APA, 2002, p. 43). This includes incorporating the use of culture and context-sensitive methodologies, as well as assessment measures that are relevant and adapted for use with the target population. The use of culture and context-sensitive assessments is essential to acquire an understanding of the ways in which relevant experiences relate to presenting psychological distress, as well as to avoid misdiagnosis. Thus, additional attention must be given to the study and assessment of *Cultural Concepts of Distress*, previously referred to as *Culture-Bound Syndromes* (American Psychiatric Association, 2013), and their patterns of association to more traditional DSM diagnosis. Likewise, the study of contextual concepts of distress, such as that experienced among marginalized immigrants, including UMIs, is necessary for the development and provision of context-sensitive interventions (Achotegui, 2005).

3.3 Cultural Concepts of Distress among Latinos

According to the DSM 5th edition, *Cultural Concepts of Distress* refer to “ways that cultural groups experience, understand, and communicate suffering, behavioral problems, or troubling thoughts and emotions” (American Psychiatric Association, 2013, p. 758). The DSM 5th edition identifies three different types of cultural concepts needed

to better understand distress among diverse populations (American Psychiatric Association, 2013). These include:

- a. *Cultural syndromes*, which represent “clusters of symptoms and attributions that tend to co-occur among individuals in specific cultural groups, communities, and contexts and that are recognized locally as coherent patterns of experience” (American Psychiatric Association, 2013, p. 758).
- b. *Cultural idioms of distress*, which are “ways of expressing distress that may not involve specific symptoms or syndromes, but that provide collective, shared ways of experiencing and talking about personal or social concerns (e.g., everyday talk about “*Nervios*”) (American Psychiatric Association, 2013, p. 758).
- c. *Cultural explanations* or *perceived causes*, which are “labels, attributions, or features of an explanatory model that indicate culturally recognized meaning or etiology for symptoms, illness, or distress” (American Psychiatric Association, 2013, p. 758).

Research on *Cultural Concepts of Distress* is helpful to integrate cultural and clinical knowledge in a way that it may be feasible to provide “diagnostic universality” and “cultural specificity” (Guarnaccia & Martinez-Pincay, 2005). Nevertheless, although some associations have been suggested between certain psychiatric diagnosis and some *Cultural Concepts of Distress* (e.g., *Ataque de Nervios* and its association to panic attacks), no clear one-to-one relationships have been established. Additional studies are needed to better understand potential associations and/or differences between *Cultural Concepts of Distress* and traditional mental health disorders based on DSM diagnosis. As previously mentioned, this information is necessary for the development of more

appropriate and effective culture-sensitive interventions for vulnerable populations, including UMIs.

Nervios and Ataque de Nervios among Latino Immigrants. Among Latino immigrants, two specific *Cultural Concepts of Distress* that have recently received attention include “*Nervios*” and “*Ataque de Nervios*.” According to DSM 5th edition, *Nervios* refers to “a general state of vulnerability to stressful life experiences and to difficult life circumstances . . . [which is characterized by] a wide range of symptoms of emotional distress, somatic disturbance, and inability to function” (American Psychiatric Association, 2013, p. 835). Some DSM conditions that appear to be related to *Nervios* include Major Depressive Disorder (MDD), dysthymia, Generalized Anxiety Disorder (GAD), Social Anxiety Disorder, and Somatic Symptom Disorder (American Psychiatric Association, 2013). According to DSM 5th edition, *Ataque de Nervios* may be considered as a “normative expressions of acute distress” that is characterized by “symptoms of intense emotional upset, including acute anxiety, anger, or grief; screaming and shouting uncontrollably; attacks of crying; trembling; heat in the chest rising to the head; becoming verbally and physically aggressive [among other symptoms]” (American Psychiatric Association, 2013, p. 833). A generalized feature of *Ataque de Nervios* is a sense of being out of control, and the *Ataques* are often related to a stressful life event, mostly involving the family (e.g., death, family conflict, accidents). Some DSM disorders that have been related to *Ataque de Nervios* include panic attacks, Panic Disorder, Conversion Disorder, unspecified or specified forms of Dissociative Disorders, and Intermittent Explosive Disorder (American Psychiatric Association, 2013). Research has shown that Latinos are likely to refer to psychological distress as *Nervios* and *Ataque de*

Nervios, which are usually contextualized as transitory diffuse *idioms of distress*, which may not require traditional clinical treatment (Gonzales & Gonzales-Ramos, 2005).

Similarly, research shows that Latinos are more likely to express psychological distress through somatic symptoms when compared to non-Latino Whites (Gonzales & Gonzales-Ramos, 2005), and that in many cases symptoms differ from those traditionally reported by the general population (e.g., feeling pins and needles in your hands or feet, feeling heat inside the body, sensations of fluttering in the stomach). Thus, somatic disturbance is an important characteristic of *Nervios* and *Ataque de Nervios* that merits further study.

Among Latino immigrants, including those of Mexican origin, *Nervios* and *Ataque de Nervios* have been identified as prevalent conditions. In a recent study of 422 Latino migrant farmworkers the prevalence of *Nervios* was 22%, with lower income, drug use, higher acculturation and poor housing conditions more likely to be associated with a *Nervios* diagnosis (O'Connor, Stoecklin-Marois, & Schenker, 2013). In addition, *Nervios* has also been found to be significantly associated with poor or fair self-reported health, symptoms of depression, and high-perceived stress (O'Connor, et al., 2013). In regards to *Ataque de Nervios*, a study using data of 2554 Latinos from the NLAAS found the prevalence of *Ataque de Nervios* among Latinos to range between 7-15% varying by Latino subgroups, with Puerto Ricans reporting the highest prevalence (14.9%) and Mexican immigrants the lowest (6.0%) (Guarnnacia, Lewis-Fernandez, Martinez-Pincay, Shrout, Guo, Torres, et al., 2010). In that study, *Ataque de Nervios* was found to be more prevalent among women, those with disrupted marital status, and those with higher acculturation to the U.S. *Ataque de Nervios* was also prevalent among those meeting criteria for anxiety and substance use disorders. Given the association of *Nervios/Ataque*

de Nervios and distress, the high prevalence of *Nervios* among Latino immigrants, including those of Mexican origin, and the multiple and complex distressing events often faced by ULIs, studies are needed to identify the prevalence of *Nervios* and *Ataque de Nervios* among UMIs, as well identify patterns of comorbidity with more traditional DSM diagnosis.

Most information on the clinical description of *Nervios* and *Ataque de Nervios* has been gathered from qualitative data, with fewer studies using quantitative data to define the disorder and identify severity. The use of combined methodologies to the study of *Cultural Concepts of Distress* among at-risk Latino immigrants, including UMIs, is essential to better contextualize the experience of *Nervios* and *Ataque de Nervios* from multiple cultural and contextual perspectives. While quantitative methods may provide a measure for the pervasiveness and severity of *Nervios* and *Ataque de Nervios*, as well as to identify patterns of association to specific risk and protective factors, qualitative information would facilitate an understanding as to why and/or how such associations exist and the range of their effects (Creswell, Klassen, Plano, Clark & Smith, 2011). Additionally, the use of qualitative information to supplement quantitative data is particularly valuable for use with this population given possible variations in the meaning and presentation of clinical symptoms. UMIs vary widely in their ethnic composition (e.g., indigenous versus mestizo); thus, it is possible that variations in symptoms meaning and expression may exist. Consistent with the use of culture and context sensitive methodology (Creswell, Klassen, Plano, Clark & Smith, 2011), this study will assess the prevalence of *Nervios* and *Ataque de Nervios* by using a combination of qualitative open-ended questions, as well as previously validated clinical measures of perceived distress

and somatic symptoms. In doing so, this study aims to provide not only prevalence data, but also descriptive information on the clinical manifestation, severity, and specifiers (e.g., lifetime prevalence, trait, current) of *Nervios* and *Ataque de Nervios* based on DSM description.

3.4 Contextual Concepts of Distress among Undocumented Immigrants

For certain immigrant subgroups, such as UMIs, the immigration experience presents with multiple and chronic stressors, which over time, exceed the immigrant's capacity for adaptation and increase risk for mental health disorders (Achiotequi, 2005). Among UMIs, the distress associated with the undocumented experience is not only chronic, but also complex and in excess to that attributed to typical acculturative stress (Achiotequi, 2002). Unfortunately, there is yet to be a classification within DSM diagnosis, which may best describe and categorize the distress experienced by UMIs from a cultural and contextual perspective. Providing a diagnosis for Adjustment Disorder to this immigrant population is inaccurate and lacking of contextual sensitivity given that Adjustment Disorder is contextualized as a transitional state to life events in which symptoms disappear with removal of the stressor, whereas the distress experienced by UMIs is chronic and unlikely to lead to adaptation, unless the immigrant returns to Mexico. Thus, developing a culture and context sensitive approach to the study of distress among UMIs is needed to: (1) avoid misdiagnosis; (2) reduce stigma associated to psychological distress rooted in contextual influences and for which the immigrant may have little control over (e.g., fear of deportation, restricted access to resources); (3) validate the distress and somatic symptoms experienced by the immigrant as to reduce

marginalization; and (4) develop effective treatments and prevention alternatives by considering the effect of relevant contextual influences.

Ulysses Syndrome. For over a decade, and given the large inflow of undocumented immigrants into Europe, researchers overseas have worked diligently to contextualize the distress experienced by different at-risk immigrant subgroups. Among such efforts has been the study of the *Immigrant Syndrome with Chronic and Multiple Stress* or *Ulysses Syndrome*, named as such in reference to the Greek hero Ulysses, who endured countless adversities and dangers away from his homeland (Achiotequi, 2002). The *Ulysses Syndrome* is defined as a behavioral and emotional “response [experienced by immigrants] when faced with a situation of [chronic and severe] stress, [which] is superior to the adaptation capacities of the [immigrant]” (Achiotequi, 2002). From this perspective, the *Ulysses Syndrome* is a cluster of psychological and somatic symptoms, as well as a prodromal for more severe forms of mental health distress if experienced over time and without access to treatment, support systems, or coping strategies. Specifically, the clinical expression of *Ulysses Syndrome* involves: (1) symptoms of depression, particularly sadness, crying spells, and difficulty concentrating, but not necessarily apathy, low self-esteem or thoughts of death/dying as often characterized in depressive disorders; (2) symptoms of anxiety, for example tension, worry, irritability, and nervousness; (3) somatic symptoms (e.g., headaches, fatigue, body aches); (4) migration-related grief in one or more of seven identified areas including: (a) family and friends left in country of origin; (b) language difficulties; (c) loss/change of cultural values; (d) missing of cultural practices (i.e., food, landscapes); (e) loss of/change in social status; (f) marginalization/discrimination; and (g) threat to physical and/or mental health. Similar

to the research on *Nervios* and *Ataque de Nervios*, most information regarding the conceptualization of *Ulysses Syndrome* comes from qualitative data and assessments. Consistent with the use of culture and context sensitive methodology, and as previously illustrated for the assessment of *Nervios* and *Ataque de Nervios*, this study will assess the prevalence of *Ulysses Syndrome* by using a combination of qualitative open-ended questions, as well as previously validated clinical measures of perceived distress, somatic symptoms and migration-related stressors. As previously mentioned, in using combined assessment measures, this study aims to provide not only prevalence data for *Ulysses Syndrome*, but also a preliminary categorization for the clinical conceptualization of *Ulysses Syndrome* using a cultural and contextual formulation of distress consistent with the CFI of the DSM 5th edition (American Psychiatric Association, 2013).

CHAPTER 4: THEORETICAL FRAMEWORK AND AIMS OF STUDY

4.1. The Socio-Ecologic Framework and the Minority Stress Model

The Socio-Ecologic Framework (Bronfenbrenner & Morris, 2006) and the Minority Stress Model (Meyer, 2003) are used as theoretical frameworks for this study. From a socio-ecological perspective, “the human experience results from reciprocal interactions between individuals and their environments, varying as a function of the individual, his/her context and culture, and over time” (APA, 2012, p. 4) (Bronfenbrenner & Morris, 2006; Dahlgren & Whitehead, 1991; Serdarevic & Chronister, 2005). Along with the socio-ecological model and to better contextualize distress as experienced by UMIs, this study will also use the Minority Stress Model as framework. This model suggests that individuals from stigmatized groups, including UMIs, face chronic stressors imposed by social and cultural structures that require them to exert greater effort to cope with stress, which in turn increase vulnerability for psychological distress (Meyer, 2003). Both of the aforementioned models are useful to explore psychological distress in response to the immigration experience within a broader context and more in line with proposed paradigm shifts to the study of immigration related distress. Figure 2 and figure 3 depict Dahlgren and Whitehead’s (1991) Socio-Ecological Model of Health and the Minority Stress Model respectively.

4.2 Specific Aims of the Present Study

Research to provide population-based estimates on the prevalence of psychological distress and relevant cultural/contextual *concepts of distress* among UMIs is essential to increase understanding of the mental health needs of this vulnerable population, as well as to inform intervention, decision-making, and policy efforts.

Despite the identification of relevant stressors in the literature, there is limited information on the prevalence of psychological distress among UMIs, and existing studies often lack scientific rigor (Garcini et al., 2016). Additionally, an assessment of methodology and findings of existing studies showed that there are salient selection and information biases in this area of research, and that culture and context-sensitive studies are needed to inform the mental health of UMIs. Equally important to identifying salient psychological distress among UMIs is the identification of *Cultural* and *Contextual Concepts of Distress*; thus, consistent with proposed paradigm shifts to the study of immigrant mental health, this study focuses on the assessment of psychological distress beyond traditional DSM diagnosis, including identifying relevant *Cultural* and *Contextual Concepts of Distress*. To our knowledge, this is the first study to evaluate the prevalence of psychological distress and relevant *Cultural* and *Contextual Concepts of Distress* among UMIs. The specific aims of this study were to identify: (1) the prevalence of psychological distress and relevant specific mental health disorders based on DSM diagnosis among UMIs living in high-risk neighborhoods; (2) the prevalence of *Cultural Concepts of Distress*, specifically *Nervios* and *Ataque de Nervios* in this vulnerable subgroup; and (3) the prevalence of *Contextual Concepts of Distress*, specifically *Ulysses Syndrome* in this immigrant community. In addition, this study will identify comorbidity and disparities in the prevalence of the aforementioned mental health disorders between this sample of UMIs and their documented and U.S.-born counterparts.

CHAPTER 5: METHODS

5.1 Formative Research

To inform the present cross-sectional study from a context and culture-sensitive perspective, extensive formative research was conducted using 15 key informant interviews and seven focus groups with members of the target population (Garcini, Gutierrez, Alvarado, Pena, Altamirano, Ulibarri, et al., 2014). Specifically, formative research was conducted to: (a) identify relevant disorders and symptoms of psychological distress in this population and to identify appropriate assessment measures to be used in the cross-sectional study; (b) assess the appropriateness of RDS for the study of psychological distress among UMIs and to make context-sensitive modifications to the research protocol; and (c) identify a representative location for the RDS study. Data obtained from formative research was analyzed through systematic methods outlined by Miles and Huberman (1994). The focus groups and key informant interviews were audiotaped, transcribed, and analyzed by the principal investigator and bilingual research assistants. The data was read and re-read to develop, revise, and summarize themes within the data through a collaborative and iterative process. This qualitative approach is particularly beneficial given this study is exploratory to obtain formative data used to inform the subsequent cross-sectional study. The SDSU/UCSD Institutional Review Board (IRB) provided approval for the formative research part of this study (vIRB number: 1572089).

5.2 Respondent Driven Sampling

Given the hard-to-reach nature of this population, network-based referrals, including Respondent Driven Sampling (RDS), is currently the most effective and safe

method to study UMIs (Cornelius, 1982; Nalven, 1982; Zhang, Hong, Takeuchi, & Mossakowski, 2012). RDS is a methodology based on a mathematical model of the social networks that connect participants in a study (Heckathorn, 1997), and has been previously used to obtain prevalence estimates to inform the health needs of migrant populations, including ULIs in the U.S. (Montealegre, Risser, Selwyn, Sabin & McCurdy, 2011; Tyldum & Johnston, 2014, Zhang, 2012). RDS relies on a structured referral system that uses successive waves of participant recruitment to achieve diversity so that initial samples no longer mirror later samples. To reduce biased estimates, RDS modifies traditional snowball sampling in three ways: (1) to increase the breadth of the social network captured by the sample, recruitment is limited by the use of coupons so participants are only allowed a fixed number of referrals (maximum of three); (2) in using referral coupons, participants do not personally identify referrals to the researcher so that anonymity is maintained; and (3) to make results representative of the target population (and not just respondents with large social networks), a systematic weighting scheme is build into the RDS model. Specifically, weights are based on the respondent's social network size; that is, based on their probability of being captured by this survey technique-as well as other features of their social network, which can affect the referral process. In other words, the probability of selection is based on each participant's probability proportional to the size of his/her social network (degree). In this way, each participant is weighted by the inverse of its probability of selection so that units with small chance of being selected (those with smaller social networks) have more weight, whereas those with larger social networks are assigned less weight in the analyses (Tyldum & Johnson, 2014). Thus, although RDS begins with a convenience sample of

UMIs, a structured process is used in recruitment to obtain unbiased estimates of the undocumented Mexican population in Escondido.

RDS Assumptions. RDS is based on several functional and analytical assumptions based on social science statistics (Heckathorn 2007). First, RDS is based on “reciprocity of ties.” In other words, respondents should know one another as members of the target population so that recruitment ties are reciprocal. Basically, the target population must be socially networked and know (and be able to recruit) persons in that social network who also know them. This is assessed by evaluating closeness between participants and their recruiter. Second, networks should be dense enough to sustain a chain-referral process that allows to meet sample size requirements. This assumption is met by specifying a time window to sustain the referral process (e.g., expiration date on coupons), and it is verified by visually inspecting the wave recruitment process. Third, sample size needs to be small in relation to the population size. If the sample size required to create valid estimates is large and your population size is small, it is possible that achieving the target sample size would be difficult because respondents would not have a large enough pool of eligible individuals in their network to recruit. To meet this assumption, it is important to determine an adequate sample size based on the size of the population estimate. Of note, extensive formative research with the target community prior to the RDS study is necessary to increase the probability of meeting the aforementioned assumptions. Fourth, respondents are recruited from their network at random. In practice, it is difficult to ensure random recruitment in RDS (Gile et al. 2014). The type or amount of incentive, the interview venue, the level of stigma and discrimination towards the target population, and the survey topic can influence whom

respondents choose to recruit (Heckathorn, 2007). Non-random recruitment will not necessarily bias the RDS estimator as long as recruitment is not correlated with any variable important for estimation (Volz & Heckathorn 2008). Random recruitment may be verified empirically by assessing recruitment and population homophily. Homophily is a principle which states that contact between similar people occurs at a higher rate than between dissimilar people. This often results in homogeneity of characteristics (most importantly socio-demographic characteristics) within respondent's personal networks (Volz & Heckathorn 2008). More specifically, population homophily refers to the social ties in the population samples, whereas recruitment homophily refers to the ties in the recruitment chain (Tyldum & Johnston, 2014). Social ties refer to two people who are tied in a social network in the population, also known as a "couple". Population homophily is calculated as the ratio of the expected number of couples who share the characteristic of interest (e.g., both are female) if distribution was random (relative to the actual number of couples who share the same characteristic). Hence values of population homophily greater than one indicate that more than the expected number of "couples" in the population affiliate based on the characteristics of interest, whereas a value of one means that ties are random. A value less than one indicates heterophily, meaning that there are more discordant ties than expected due to chance. Recruitment homophily is calculated as the homophily in regard to a given characteristic in the recruitment chains. It is estimated as the ratio of the number of recruits who share the same characteristic as their recruiter relative to the number we would expect if distribution was random. Fifth, respondents can accurately report their personal network size, defined as the number of acquaintances, relatives, and friends who can be considered members of the target

population. The personal network size is measured through the use of carefully developed RDS questions. The personal network size sets up the probability that an individual will be recruited, and it is used to calculate weights for data analysis. Essentially, those with larger network sizes have more paths that lead to them and are therefore more likely to be recruited than those with smaller networks, so they are assigned smaller weights.

Respondents with small network sizes are assigned larger weights because they have fewer paths that lead to them. Thus, the use of imputed degree is helpful because it takes into account the reported network size by the respondent, as well as that of the person who refer them (Gile, Johnston, & Salganik, 2014). Sixth, each respondent recruits a limited number of peers (no more than three) to reduce biases of differential recruitment and improve variance. This is accomplished by the use of a coupon system for the recruitment of peers. Seventh, the sample should be independent of seeds (Heckathorn 2007). Given that the seeds are purposefully selected, it is expected that characteristics of the respondents in the initial waves of recruitment would be similar to those of the purposefully selected seeds. As a chain accumulates more waves, the bias from the seeds is reduced as new recruits enter the sample. The independence of the sample from the seeds is verified empirically by: 1) assessing for recruitment and population homophily as previously described; 2) achieving an adequate number of recruitment waves; and 3) visual inspection of convergence plots. Convergence or equilibrium is the point at which the sample is no longer biased by the seeds' characteristics and is beginning to match the proportions of the characteristics of the network of the population being sampled.

Equilibrium is a cumulative measure of proportions for a variable for each wave of the sample. Equilibrium is attained when the proportions remain stable, within 2% of the

sample proportion. Finally, given that it may be difficult to meet all of the aforementioned RDS assumptions, the use of the Successive Sampling (SS) estimator is recommended as to reduce biased estimates (Gile 2011). The SS estimator facilitates estimation by using pre-existing knowledge about the size of the hidden population (population count) so that variance in the population can be assessed using a variation of a bootstrap method (Gile, 2011). In other words, numerous resamples (of equal size) of the observed data set are created to produce confidence intervals around the estimator.

5.3 Study Location

Based on results from formative research, this study focuses on UMIs residing in Escondido, California, a medium size city located in the North region of San Diego County, relatively near the California-Mexico border. Escondido has an estimated population size of 147, 095. Of these, it is estimated that 51% is of Latino origin, 39% is White, and 10% is representative of other ethnic or racial groups (San Diego Association of Governments, 2015). Among the Latino population in Escondido, the majority is of Mexican origin (San Diego Association of Governments, 2015). Also, it is estimated that more than 15% of the population in Escondido is undocumented (Hill & Johnson, 2011), with some claims stating that as high as 25% of the population in Escondido may be undocumented (Hall, 2012). As previously mentioned, Escondido was chosen as the setting for this study based on results from formative research, but also given that this city has been listed as among the most conservative cities in the U.S. with strong opposition and punitive actions against UMIs (Bay Area Center for Voting Research, 2005; Hall, 2012).

5.4 Participants

Eligibility criteria. Participants were Latino adults over 18 years of age with current undocumented immigration legal status and not exhibiting psychotic symptoms. For this cross sectional study, only undocumented immigrants of Mexican origin were included. To determine eligibility for participation, a brief screener in Spanish was presented to potential subjects prior to participation. To assess eligibility based on immigration legal status, a rule-out system was used which, asked a series of yes-no questions outlining current legal statuses except undocumented status, so that respondents who answer no to all questions would be coded as UMI. The use of a rule-out system has been previously used in other studies of ULIs, and it is recommended as the preferred method to assess immigration legal status (Marcelli, Holmes, & Estrella, 2009). There were no sex restrictions on enrollment. Given that the interviews were conducted in Spanish, no English language proficiency was required for inclusion. However, Spanish proficiency was required for inclusion.

Protection of Research Participants. All participants provided verbal informed consent prior to participating. Also, to ensure participants of confidentiality, they were informed during the consent process that this study had no association with the Immigration and Naturalization Service (INS) and that none of the information provided would be reviewed by the INS. Interviews were conducted in a private location that was previously identified as convenient and safe. At the end of the interview, all participants were provided with educational materials in Spanish about relevant mental health topics. Also, participants that expressed emotional discomfort during or after the interview were provide with specific referral information for accessible, low cost, and Spanish mental

health services in convenient nearby locations. The SDSU/UCSD Institutional Review Board provided approval for this study (vIRB number: 1730093).

5.5 Procedures

Recruitment. Data collection took place from November 2014 to January 2015. Recruitment for this study began with three previously selected UMIs or “seeds” that were carefully identified during formative research. Given that characteristics of the seeds should be independent of those of the final sample and that diversity of seeds accelerates the rate at which the sample reaches equilibrium (Heckathorn, Semaan, Broadhead, & Huges, 2002), seeds were selected to represent the diversity of the community, including sex, age, place of residence, and relevant immigration characteristics. Table 1 presents a summary of seed characteristics in this study. Each seed was provided with three referral coupons to recruit other UMIs for participation. The next waves of recruits were provided with another set of three referral coupons to recruit additional UMIs for participation in this study. Sampling continued until the desired sample size was reached and “equilibrium” achieved, with a maximum chain length of 10 waves. Equilibrium was verified empirically through the use of RDS Analyst (Handcock, Fellows, & Gile, 2014), which showed that the final subjects recruited no longer had identical characteristics to the initial “seeds.” A network diagram of the sample and recruitment tree is presented in Figure 4. Consistent with RDS methods, as recruitment approached equilibrium and the needed sample size, the number of referral coupons given to participants was reduced until no more coupons were distributed. Each referral coupon was coded to match the recruiter to the respondent and collected by the interviewer from each respondent in order to link respondent to seeds and referral chains.

Figure 5 illustrates the recruitment coupons that were used in this study. Also, each respondent was compensated \$ 30 for participation in the assessment and received \$ 10 (for a maximum total of \$ 30) for each recruited peer who met eligibility criteria and participated in the study. Data was originally collected from 254 participants; however, six participants were not included in the present study due to missing data. This study is based on data from 248 UMIs.

Data collection. Face-to-face clinical interviews were conducted in Spanish by trained Latino staff under direct supervision by doctoral trainees and Master's-level clinicians. Data were collected using a computer assisted personal interviewing system (CAPI) (Questionnaire Development System V. 3.0, 2014), which is useful to minimize data missing, error, and to increase efficiency (Leeuw, Hox, & Snijkers, 1998). Interviews lasted between 1 and 3 hours depending on the extent of psychological distress reported. Information gathered during the interviews included demographic characteristics, immigration history, quality of life data, and information on physical and mental health status. Question about participant's social network were used to assess RDS assumptions and to calculate weighted estimates.

5.6 Pilot Testing

To make the clinical interview culture and context sensitive for the target population, a pilot test of all measures used in this study was conducted among 50 ULIs, 25 men and 25 women, deported from the U.S. to Mexico (Peña, Garcini, Gutierrez, Ulibarri, & Klonoff, in press). Interviews with the deportees were conducted in two migrant shelters in Tijuana, Mexico. In general, these shelters provide deportees from the U.S. with temporary humanitarian assistance (i.e., food and water, shelter, clothing,

access to bathroom, psychosocial, spiritual and basic medical assistance). The specific shelters used in this study were chosen based on results from formative research.

Eligibility for participation in the pilot testing included being 18 years or older, having been recently deported from the U.S. (within one-year), being Latino, and not having an active psychotic episode. None of the participants included in this study were from the same family. Recruitment of participants for the pilot testing was done with the assistance of the collaborating shelters. Staff from the shelters announced the study to the residents and interested residents participated in the study. The SDSU/UCSD Institutional Review Board approved this study (vIRB number: 1730093). A total of 57 potential participants were invited to complete the interviews. Of these, three were ineligible to participate due to active psychosis, one was not of Latino origin, and another three refused to participate due to lack of time, resulting in a total of 50 deportees that consented to participate.

Interviews for the pilot testing took place in various offices at the shelters (e.g., medical office, managerial office). Present during each interview was a Latino research assistant, a Latino clinician, and the participant. Interviews lasted between 1.5 and 3.5 hours depending on the extent of psychological distress reported. All participants provided verbal consent prior to participation, and a monetary incentive of \$ 20 U.S. dollars was provided for compensation. Adaptations and modifications to the clinical interview and psychological measures were done using results from the aforementioned pilot testing.

5.7 Measures

Mental Health Outcomes. Several measures were used to assess for different mental health outcomes. First, overall psychological distress was measured using the Brief Symptom Inventory (BSI) (Derogatis, 2000). In the pilot testing, the BSI-18 (18

items) was used, whereas the BSI-53 (53 items) was used in the RDS study. Both measures are designed to assess psychological distress using symptoms patterns of psychiatric and medical patients, as well as community non-patient respondents. For this study, community non-patient norms were used. Each item of both BSI measures is rated on a five-point scale of psychological distress from 0 to 4, ranging from “not at all” (0) to “extremely” (4). The BSI-18 is scored and profiled in terms of three primary distress symptom dimensions and a global severity index (GSI) of psychological distress. The psychological distress symptom dimensions in the BSI-18 are: (a) somatization, which assesses distress arising from perceptions of bodily dysfunction including pain and physical discomfort; (b) depression, which assesses clinical symptoms of depression; and (c) anxiety, which assesses for symptoms of nervousness, tension, panic and terror, as well as feelings of apprehension. The BSI-53 is scored and profiled in terms of the three aforementioned subscales, plus six additional scales including: (a) obsessive-compulsive, which assesses unwanted thoughts, impulses and actions experienced as unremitting and irresistible; (b) interpersonal sensitivity, which assesses feelings of personal inadequacy and inferiority, including self-deprecation, self-doubt, and discomfort in interpersonal interactions; (c) hostility, which assesses thoughts, feelings or actions characteristic of anger or a negative affective state; (d) phobic anxiety, which assesses persistent responses to fear that is irrational and disproportionate to the stimulus; (e) paranoid ideation; which assesses paranoid behavior as a disordered mode of thinking; and (f) psychoticism, which assesses withdrawn, isolated and/or schizoid lifestyle. The GSI for both scales provides an overall assessment of psychological distress by summing symptoms from all of the clinical scales and dividing them by the total number of

responses. For scoring the BSI in this study, raw scores for each clinical scale and the GSI were converted to standardized T scores (*T score* $M=50$; $SD= 10$) using sex specific community non-patient norms. Consistent with previous research and the standardized use of the BSI, an overall clinical level of psychological distress or a “case for positive diagnosis” is defined as having a GSI T score greater or equal 63 or any two primary dimension scores that have a T score greater or equal to 63. The BSI is a widely used measure of psychological distress and has well-established psychometric properties (Derogatis, 1993). Internal consistency reliability for the BSI has been found to be very good (ranges from .71 to .85) and the measure has good test-retest reliability (Derogatis, 1993). The BSI has also been shown to have excellent convergent, discriminant, and predictive validity (Derogatis, 1993). The BSI has been widely used with diverse populations (Aroian, Patsdaughter, Levin & Gianana, 1995), including Latino immigrants (e.g., Bravo & Roca, 2013; Cervantes, Fisher, Padilla, & Napper, 2015; Hoe & Brekke, 2009). The Spanish version of the BSI was used in this study, and it was pre-tested with members of the target population to ensure appropriateness of the Spanish language. In the pilot testing, the BSI-18 performed extremely well, and internal consistency reliability for all three scales was good (depression $\alpha = .84$; somatization $\alpha = .84$; anxiety $\alpha = .84$). Thus, the use the large version of the measure for the RDS study seemed appropriate to further capture other aspects of psychological distress. In the RDS study, internal consistency reliability for the BSI-53 ranged from good (depression $\alpha = .81$; obsessive compulsive $\alpha = .80$; paranoid ideation $\alpha = .79$; somatization $\alpha = .78$; hostility $\alpha = .72$) to acceptable (psychoticism $\alpha = .69$; anxiety $\alpha = .65$; phobic anxiety $\alpha = .65$) to poor (interpersonal sensitivity $\alpha = .53$).

Second, to assess for the prevalence of relevant mental health disorders the M.I.N.I. International Neuropsychiatric Interview (V. 6.0) was used (Sheehan, Lecrubier, Harnett-Sheehan, Janavs, Weiller, Bonara, et al., 1997; Sheehan, Lecrubier, Harnett-Sheehan, Amorim, Janavs, Weiller, et al., 1998). The M.I.N.I. is a short, structured diagnostic interview used widely in clinical and research settings worldwide to assess for DSM and ICD psychiatric disorders. Specific modules of the M.I.N.I. used in the pilot testing included those which assessed for Somatization Disorder, Hypochondriasis, Major Depressive Disorder (MDD), Agoraphobia, Panic Disorder, Generalized Anxiety Disorder (GAD), Social Anxiety Disorder, Post-Traumatic Stress Disorder (PTSD), Adjustment Disorder, current alcohol dependence or abuse, and current substance dependence or abuse. Given difficulty with item comprehension and/or inability to distinguish between the effect of contextual influences and actual psychopathology, four modules of the M.I.N.I. used in the pilot testing were not included in the subsequent RDS study. These included the modules to assess for Agoraphobia, Social Anxiety Disorder, Hypochondria, and Adjustment Disorder. Thus, specific modules of the M.I.N.I. used in the RDS study included Somatization Disorder, Major Depressive Disorder (MDD), Panic Disorder, Generalized Anxiety Disorder (GAD), Post-Traumatic Stress Disorder (PTSD), current alcohol dependence or abuse, and current substance dependence or abuse. The M.I.N.I. has been validated against the much longer Structured Clinical Interview for DSM diagnosis (SCID) and the Composite International Diagnostic Interview for IDC diagnosis (CIDI) (Lecrubier, Sheehan, Weiller, Amorim, Bonara, Sheehan, et al., 1997; Sheehan, et al., 1997). The M.I.N.I. has been identified as a more time-efficient alternative to the SCID and CIDI given that the interview can be completed

in approximately 15 minutes. The Spanish translations and adaptations of the M.I.N.I. have been conducted in Spain and in the U.S. The sensitivity and specificity of the most common disorders using the Spanish version of the M.I.N.I. were MDD = 94.1 and 62.2, respectively, GAD = 92.3 and 64.6, and social phobia = 100 and 84.2 (Bobes, 1998). The positive and negative predictive values for these disorders were 41.0 and 97.4 for MDD, 34.2 and 97.6 for GAD, and 14.2 and 100 for social phobia. Thus, the Spanish version of the M.I.N.I. is considered to have adequate psychometric properties and it is recommended for use with Latino populations, including those of Mexican origin (Mestre, Rossi, & Torrens, 2013). The Spanish version of the M.I.N.I. was used in this study, and it was pre-tested and modified with members of the target population to ensure appropriateness of the Spanish language.

Third, to assess for *Cultural Concepts of Distress*, specifically *Nervios* and *Ataque de Nervios*, five measures were used. Tables 2 and 3 summarize the measures used to assess for *Nervios* and *Ataque de Nervios*, specific constructs assessed, and the response format and cut off scores used for each measure. Measures used included: (1) Explanatory Model Interview Catalogue (EMIC) for the assessment of *Nervios* and *Ataque de Nervios*. The EMIC is a collection of adapted explanatory semi-structured interviews developed for use in cultural psychiatry to better understand *Cultural Concepts of Distress* from an epidemiological and anthropological perspective (Weiss, 1997). An adapted version of the EMIC is available to assess for the experiencing of *Nervios* and *Ataque de Nervios* among Latino-origin individuals (Guarnaccia, Lewis-Fernandez, & Marano, 2003). As recommended by Guarnaccia et al. (2003), this study will use four modified questions derived from the EMIC approach to assess for lifetime

and current prevalence of “*Nervios*” and “*Ataque de Nervios*” among this sample of UMI. Responses to the aforementioned questions are given in dichotomous format (Yes/No), as well as in a continuous form to denote the number of *Ataque de Nervios* that an individual has had in their lifetime and recently (within the past 12 months). These questions are available in Spanish; (2) *Ataque de Nervios* Module from the NLAAS Questionnaire (Alegría, Vila, Woo, Canino, Takeuchi, Vera, et al., 2004). The NLAAS is a nationwide study funded by the National Institute of Mental Health (NIMH) to estimate the lifetime and current prevalence of mental health disorders and mental health service use among Latino and Asian-origin populations in the U.S. The NLAAS *Ataque de Nervios* Module includes a list of 15 different symptoms that a person may experience during an *Ataque de Nervios* episode (e.g., get dizzy, fall to the floor with a “seizure,” shout a lot, become hysterical). Respondents are considered to meet syndrome criteria if they report having experienced a previous *Ataque de Nervios* (as assessed by the EMIC *Ataque de Nervios* question) and if they responded positively (Yes) to having experienced four or more symptoms during the attack. The cut-off of four or more symptoms was derived statistically using tests of distribution of the responses, as well as previous analysis of reported symptoms in clinical studies (Guarnaccia, Lewis-Fernandez, & Martinez-Pincay, 2010). This measure is available in Spanish and has been validated for use with various Latino populations in the U.S.; (3) The Brief Symptom Inventory (BSI-53), which was used to assess for psychological distress among UMIs acknowledging *Nervios*. As recommended by Derogatis (2000), a T-score of 63 or higher in the general distress scale or a T-score of 63 or higher in at least two of the BSI dimensions was used to meet criteria for clinically significant psychological distress; (4) An adapted version of

the Bradford Somatic Inventory (^aBSI) (23 items), which was used to assess for somatic symptoms among UMIIs acknowledging *Nervios*. The original ^aBSI is a 46-item multi-ethnic questionnaire used to assess a wide range of somatic symptoms in transcultural research (Mumford, Bavington, Bhatnagar, Hussain, Mirza, & Naraghi, 1991). The ^aBSI evaluates whether physical symptoms, including those commonly reported among individuals experiencing *Nervios* (e.g., headaches, stomach disturbances, dizziness, tingling, trembling), have been present in the last month, with possible answers including: 0 = absent, 1 = present less than 15 days in the past month, and 2 = present on more than 15 days in the past month. Test-retest reliability of the ^aBSI administered after a week has been found to be good, with an overall α reliability ranging from 0.86 to 0.92 (Chakraborty, Avasthi, Kumar, & Grover, 2010; Mumford, et al, 1991). The basic construct of the ^aBSI is that the somatic symptoms enlisted are: (1) somewhat “unusual” compared to symptoms that are usually reported in somatic diseases with clear pathophysiology (e.g., fluttering or feeling of something moving in the stomach), or (2) general and/or vague (e.g., headaches), and that the coexistence of a number of symptoms scoring of at least 14 can be used as an index representing the association of symptoms of various types that are not likely based on a common pathophysiology (Chakraborty, et al., 2010). Consistent with previous research, a cutoff score of 14 discriminates between psychiatric cases (somatic symptoms related to psychological conditions) and non-cases (symptoms due to a medical condition), with 0.75 specificity and 0.87 sensitivity (Aragona, Catino, Pucci, Carrer, Colosimo, La-Fuente, et al., 2010). The ^aBSI has been formerly used to assess somatization among different immigrant populations, including UMIIs in Europe (86% of sample was undocumented, of which 46% was of Latino origin)

(Aragona, et al., 2010; Aragona, Monteduro, Colosimo, Maisano, & Geraci, 2008). The ^aBSI has been previously translated into Spanish following translation-back translation methodology (Aragona, et al., 2010); and (5) interference with functional ability due to *Nervios* and *Ataque de Nervios*, which was assessed using a modified question from the NLAAS (Alegria, Vila, Woo, Canino, Takeuchi, Vega, et al., 2004; Center for Multicultural Mental Health Research, 2013). This question asked participants to rate on a scale from 0 = none to 10 = most interference, how much do *Nervios* and how much do *Ataque de Nervios* interfere with household chores, quality of work, and social life/relationships. Individuals rate the level of interference for each of the three identified domains using the aforementioned rating scale. All of the aforementioned measures used to assess for *Nervios* and *Ataque de Nervios* were pre-tested and modified with members of the target population during pilot testing.

To assess for *Contextual Concepts of Distress*, specifically *Ulysses Syndrome*, five measures were used. Table 4 summarizes the measures and questions used to assess for *Ulysses Syndrome*, specific contextual constructs assessed, and the response format and cut off scores used for each measure. Measures used included: (1) Questions adapted from the NLAAS and the DSM-V Cultural Formulation Interview (CFI) (American Psychiatric Association, 2013), which were used to assess for: (a) contextual definition of the undocumented experience as a distressing event, and (b) contextual effect of the undocumented experience on identity. For this purpose, one rating scale, one dichotomous question, and three open-ended questions were used as described in Table 4. For instance, to assess for distress due to context, the question “how much stress do you feel/have for not having a visa?” was used, which was answered using a rating scale from

0 = no stress to 10 = high stress. To assess for the effect of context on identity, the following questions were used: (1) “Do you think that not having a visa affects or changes how you feel or think about yourself?” (response format used for this question was dichotomous Yes/No); and (2) “In what way does not having a visa has affected or changed how you feel or think about yourself?” (response format used for this question was qualitative). To assess for the effect of context on psychological distress, the following questions were used: (1) “How would you describe your experiencing living in the U.S. without having a visa? (response format was qualitative); and (2) “What worries or troubles you most about living in the U.S. without a visa” (response format was qualitative); (2) the BSI, which was used to assess for clinically significant psychological distress. As recommended by Derogatis (2000), a T-score of 63 or higher in the general distress scale or a T-score of 63 or higher in at least two of the BSI dimensions was considered to meet criteria for clinically significant psychological distress based on the use of community norms; (3) the ^aBSI, which was used to assess for somatic disturbance as previously described in the assessment of *Nervios* and *Ataque de Nervios*. Consistent with previous research in immigrant populations, including Latinos in Europe, a cutoff score of 14 discriminates between psychiatric and non-psychiatric cases (Aragona, et al., 2008; 2010); (4) the Multidimensional Loss Scale (MLS), which was used to assess for migration related losses/mourning and distress associated to the loss (Vromans, Schweitzer, & Brough, 2012). The MLS is a 24-item measure used to index experiences of loss and associated distress across multiple domains (cultural, social, material and interpersonal) relevant to immigrant populations (Vromans, Schweitzer, & Brough, 2012). The MLS has been shown to have good internal consistency for the experience of

loss events ($\alpha = .85$) and associated distress ($\alpha = .92$); thus, reflecting a unitary construct of multidimensional loss related to the immigration process (Vromans, et al., 2012).

Results from factor analysis have provided support for a five-factor model structure of this measure: (1) loss of symbolic self (e.g., loss of wealth, traditions, values, language use, life beliefs) ($\alpha = .90$), (2) loss of interdependency (e.g., change in how you are being treated, role or social position) ($\alpha = .75$), (3) loss of home (e.g. leaving your country, home, land, possessions) ($\alpha = .86$), (4) interpersonal loss (e.g., separation from family, death of family/friends) ($\alpha = .71$), and (5) loss of interpersonal integrity (e.g., loss of freedom and autonomy, sense of wellbeing) ($\alpha = .64$). Responses to each loss item are done in two ways: (a) dichotomous answer (Yes/no) depending on whether the loss has been experienced or not, and (b) rating of perceived stress associated to each specific loss including 0 = not at all, 1 = little distressing, 2 = quite distressing, and 3 = extremely distressing. For this study, and based on results from pilot testing and consistent with *Ulysses Syndrome*, seven instead of five subscales of migrant-related loss were used. These included: (1) loss of symbolic self (e.g., loss of wealth, traditions, values, language use, life beliefs); (2) loss of interdependency or social status (e.g., change in how you are being treated, role or social position); (3) loss of home (e.g. leaving your country, home, land, possessions); (4) interpersonal loss or separation from family/loved ones (e.g., separation from family, death of family/friends); (5) loss of belonging; (6) physical risk; and (7) loss of language. All of the aforementioned measures were pre-tested and modified with members of the target population during pilot testing.

Background variables. Demographic questions were modeled from the 2009 San Diego Prevention Research Center (SDPRC) Community Survey and the 2009

Behavioral Risk Factor Surveillance System Questionnaire (CDC, 2009). These questions were available in Spanish and have been previously used in the assessment of UMIs in San Diego. Demographic questions included sex, age, marital status, educational attainment, employment, household size, monthly household income, parental status, and English proficiency. Questions about immigration history were modeled from the 2009 SDPRC Community Survey and from the San Diego Labor Trafficking Survey Questionnaire (Zhang, 2012), and were previously available in Spanish for assessment of the target population. Question about immigration history included state of birth (recoded as Mexican region of birth), country where migrant spent most of his/her life, age of arrival in the U.S., length of time in the U.S., and whether the participant lives in a mixed status family or not. A mixed status family is that in which at least one member of the family is undocumented, but not all members.

RDS questions. Four questions were used exclusively for the purpose of mapping recruitment location and to calculate RDS weights and estimates. These questions included estimated size of the respondent's personal network that are UMIs, relationships to the referral source (person who provided the coupon to the participant), and length of time that the participant has known the referral source. These questions were modeled from the San Diego Labor Trafficking Survey Questionnaire (Zhang, 2012), and were available in Spanish for use with UMIs.

Translation. Measures not available in Spanish for use with Mexican-origin populations, specifically the adapted questions from the DSM-V CFI to assess for *Ulysses Syndrome* and the Multidimensional Loss Scale (MLS), were translated using established methodology (Beaton, Bombardier, Guillemin, & Ferraz, 2002).

5.8 Data Analytic Plan

Power analysis. It is estimated that approximately 13% to 14% of Mexican-origin foreign-born immigrants in the U.S. meet criteria for a mood or anxiety disorder (Guarnaccia, Martinez-Pincay, Alegria, Shrout, Lewis-Fernandez, & Canino, 2004). Unfortunately, estimates for the prevalence of diagnosed mental health disorders among UMI are unknown. Thus, to assess for the prevalence of clinically significant psychological distress in this sample population, the estimate for the most prevalent mental health disorder (anxiety) among Mexican-origin foreign-born immigrants was selected as reference. Table 5 summarizes prevalence rates for relevant mental health disorders among U.S.-born Non-Latino Whites, U.S.-born Latinos, foreign-born Latinos, and Mexican-origin foreign-born based on results from the 2003 NLAAS and the 2003 National Comorbidity Survey Replication (NCS-R), which were used as reference to estimate prevalence rates in this study and for comparison of results. To estimate the need sample size for this study, an *a priori* power analysis was conducted using OpenEpi, Version 3.01 (Dean, Sullivan, & Soe, 2013). In order to detect prevalence at a historical proportion of 0.14 within a 95% confidence interval at 7% precision and with a design effect of 1, it was determined that a sample size of 95 subjects would be needed. This means that based on the historical proportion of mental health disorders among Mexican-origin foreign-born immigrants, approximately 14% of the aforementioned sample would meet criteria for clinically significant psychological distress and/or relevant mental health disorders with a 95% confidence that the prevalence estimate will be within 7% of the true prevalence value. For studies using RDS, it is recommended the use of a sample size at least twice as large as would be needed under simple random sampling (Salganik,

2008). Thus, at least a sample size of 190 subjects was needed for this study, which was met and exceeded (N=248).

RDS assumptions and weighting. For the testing of RDS assumptions, generation of RDS weights, and analysis of population estimates using RDS data, RDS Analyst was used (Handcock, Fellows, & Gile, 2014). A diagnostic testing for RDS assumptions showed that the sample reached equilibrium at the 10th wave of recruitment, showed little homophily bias, and for the most part met basic RDS assumptions. This suggests that the characteristics of the recruited, weighted sample approximated the characteristics of the larger networks of UMIs residing in Escondido, California. Table 6 provides a summary of RDS assumptions as met for this study.

Statistical analyses. For all analyses inferential statistics accounted for design effects and sample weights to produce weighted population estimates for approximately 22,000 UMIs residing in Escondido, California. To address the aims of this study, descriptive statistics were calculated for all study variables, including all mental health outcomes. Weighted frequencies along with 95% confidence intervals were calculated for all background and outcome variables. Chi-square statistics were used for bivariate analysis to assess for differences in mental health outcomes by socio-demographic and immigration characteristics. Significance was determined at a $p \leq .05$. Also, standardized residuals were used in post-hoc comparisons for socio-demographic and immigration variables with more than two categories (Siegel & Castellan, 1988).

CHAPTER 6: RESULTS

6.1 Formative Research

Table 7 and 8 summarize characteristics of participants in formative research, including those in focus groups and key informants. Overall, results from formative research showed a high prevalence of psychological distress primarily associated with symptoms of depression, trauma-related disorders, somatization, and anxiety. *Nervios* was also identified as a prevalent concern. Specific symptoms of depression identified included sadness, loneliness, diminished self-esteem, hopelessness, and fatigue. Specific symptoms of trauma-related disorders included fear, avoidance, and hyper-arousal. Specific somatic symptoms identified included headaches, digestive/abdominal symptoms, and pain. Specific symptoms of anxiety identified included fear, irritability/defensiveness, paranoia, hyper-arousal, panic attacks, worry, general apprehension, social anxiety, obsessive-compulsive behaviors, and anxiety in public places. The following selected quotes exemplify some symptoms of anxiety as reported by participants:

- *“If I am in an environment in which I feel that other people have certain privileges that I don’t have, then I feel vulnerable . . . I don’t know how they would look at me, would they accept me? Would they discriminate against me? Would there be any legal consequences? I think there is definitively that kind of social anxiety.”*
- *“It feels safer to be at home than to be in the street, because home is safe and in the streets you are always in danger. I am always scared.”*

- *“You can see that they are just cleaning way too much, its getting to do many things at once, excessive cleaning . . . is a way to avoid reality, that's one way to numb what we live.”*

Important to note is that no significant loss or impairment in functional ability was identified as symptoms of psychological distress. The following quote may provide insight as to why this may be the case:

“People do not have time to be depressed because they have to work . . . it's something they have to do.”

Moreover, a strong association for the effect of stress of physical health was identified including its effect on obesity, anemia, diabetes, heart disease, and sleep disorders. The following quotes provide an example of the aforementioned association:

- *“The women have a very high level of stress, and [that] can trigger heart issues, diabetes . . . sometimes there is a lot of anxiety and they don't eat. There is also also sleep problems. I think we have a lot of this.”*
- *“All undocumented women I know are overweight and it can be a matter of stress, a hormonal issue . . . that's where you can see the big effect of stress in these women.”*

Furthermore, results of formative research also helped identify the relevance of subgroup differences in symptom presentation that are important to consider. These included differences in symptoms by age, gender, length of time in the U.S., age of arrival to the U.S., community setting, country of origin, and immigration journey. Table 9 provides a summary of how symptoms may differ by the aforementioned ULI subgroups. Of note is the high prevalence of stigma associated with mental health; thus, a preference to use

terms such as wellbeing or stress was recommended when attempting to address mental health issues within this community.

6.2 Pilot Testing

Psychological distress. Sample characteristics for deportees in the pilot study are described in Table 10. Results from pilot testing showed a high prevalence of clinically significant psychological distress among deportees (50%). Specifically, when compared to people in the community and of their same sex, 54% of deportees met criteria for clinically significant symptoms of depression, 38% met criteria for clinically significant symptoms of anxiety, and 34% met criteria for clinically significant symptoms of somatization. Also, 50% of participants reported T scores greater or equal than 63 for the GSI.

Mental Health Disorders. Based on results from the M.I.N.I., 50% of deportees met criteria for one or more of the assessed disorders. Specifically, the most prevalent disorders were Agoraphobia (38%), MDD (30%), GAD (18%), Panic Disorder (12%), and PTSD (10%). Less prevalent disorders included Social Anxiety Disorder (6%), Adjustment Disorder (2%), and Hypochondria (2%). Moreover, 18% of participants met criteria for a substance use disorder. Specifically, 12 % of deportees met criteria for drug dependence, 5% met criteria for drug abuse, 2% met criteria for alcohol dependence; and 4% met criteria for alcohol abuse.

Nervios and Ataque de Nervios. Overall, 40% of deportees reported a lifetime prevalence of *Nervios*. Among deportees with a lifetime prevalence of *Nervios*, 85% reported a current prevalence of *Nervios*. Among deportees in this pilot test, 50% reported being a *nervous* person, with 65% of these acknowledging being *nervous* since

childhood. Pertaining to *Ataque de Nervios*, lifetime prevalence was found to be 26%. Among deportees with a lifetime prevalence of *Ataque de Nervios*, 69% reported having experience at least one or more *Ataque de Nervios* within the past 12 months. On average, the frequency of *Ataque de Nervios* within the past twelve months was 9.8 ($SD = 13.6$), and the frequency of *Ataque de Nervios* among deportees ranged from 1 to 36 (Median = 2; Mode = 1).

Ulysses Syndrome as a contextual syndrome. Of deportees in the pilot study, 88% reported experiencing significant distress as a result of having being undocumented. Among deportees reporting their undocumented experience to be distressing experience, 57% met criteria for clinically significant psychological distress as measured by the BSI-18 and 43.2% met criteria for significant somatic symptoms as measured by the ^aBSI. Also, among deportees reporting distress due to undocumented status, 88% reported their undocumented legal status to have had a negative or undesirable effect on their sense of identity. Specifically, the most prevalent negative effects on identity reported included feeling worthless/inferior/without value (34%), loss of sense of self/confusion (43%), being ashamed of self (34%), and feeling guilty (46%). Moreover, qualitative descriptions of the effect of undocumented legal status on identity among deportees also included lack of confidence/self-doubt, feeling “incomplete,” and a sense of incompetence. Moreover, regarding greatest worries or concerns reported by deportees due to deportation, these included primarily family separation (64%) and work concerns (25%). To a lesser extent, other concerns expressed due to deportation included danger in Mexico (9%); financial difficulty (7%), lack of shelter (5%); and imprisonment (2%). Furthermore, overall there was a high migration-related loss among deportees who

reported experiencing significant distress as a result of deportation. Prevalent migration-related losses due to undocumented experience and/or deportation included loss of home/shelter (100%); loss of social status (100%); family loss (100%), loss of symbolic self/culture (98%); loss of belonging (96%); loss of physical wellbeing (55%); and loss of language (9%). On average, mean distress for the aforementioned losses ranged from “a little” to “quite a bit.” Greatest mean distress experienced due to migration-related loss was reported for loss of home/shelter ($M (SD) = 2.2 (0.9)$); family loss ($M (SD) = 1.8 (0.7)$), loss of belonging ($M (SD) = 1.6 (0.9)$), and loss of social status ($M (SD) = 1.6 (0.8)$).

6.3 Participant Characteristics in RDS Study

Sample characteristics for the RDS study are described in Table 11. Participants ranged in age from 18 to 74, with the majority of participants being middle age (54%). The average age was 38 years ($SD = 11.2$). The majority of the sample was female, married, had children, had low educational attainment, and lived on a monthly household income less than \$ 2000. Also, the majority of participants worked in the household, in cleaning and maintenance occupations, or in construction related jobs. Most spoke none or little English, and were originally from Central and South regions in Mexico, specifically Mexican states where poverty and violence are prevalent. Years spent living in the U.S. ranged from less than one year to 54 years, with the majority having lived in the U.S. for more than 10 years $M (SD) = 16 \text{ years } (7.9)$. Most participants immigrated to the U.S. between the ages of 11 and 30 years, and most have lived most of their lives in Mexico. Most participants live in mixed status families, and most continue providing financial support for at least one family member in Mexico.

6.4 Prevalence of Psychological Distress in RDS Study

Overall, results showed that almost half of UMIs met criteria for clinically significant psychological distress (41%). Specifically, when compared to people in the community and of their same sex, the most prevalent symptoms of psychological distress at a clinical level were in the domains of interpersonal sensitivity (37%); paranoid ideation (31%); psychoticism (26%); depression (21%) and phobic anxiety (20%). Table 12 provides a summary of population based estimates for psychological distress and related symptom subscales among UMIs in Escondido by socio-demographic and immigration characteristics. Overall, significant differences in clinically significant psychological distress were found for sex, age, and marital status. Specifically, when compared to men, a higher number of women met criteria for overall clinically significant psychological distress, although no specific significant differences were found across any of the nine symptom subscales. Regarding age, when compared to other age groups, a higher number of UMIs ages 18 to 25 met criteria for overall clinically significant psychological distress, with significant differences also found for five out of the nine symptom subscales. Specifically, when compared to UMIs in other age groups, a higher number of UMIs in the age range of 18 to 25 met criteria for clinically significant symptoms of somatization, obsessive-compulsive behaviors, interpersonal sensitivity, hostility, and psychoticism. Also, when compared to UMIs that reported being married or living as married, a higher number of those reporting being single met criteria for overall clinically significant psychological distress, with differences observed in three out of the nine symptom scales. Specifically, when compared to UMIs who reported being married or living as married, a higher number of single UMIs met criteria for clinically significant

symptoms of depression, paranoid ideation, and psychoticism. Moreover, although no significant differences in overall clinically significant psychological distress were observed by place where the UMIs had lived most of his/her life, significant differences were found for two of the symptom subscales. Specifically, when compared to UMIs that reported living in Mexico most of their life, a higher number of UMIs that reported living most of their life in the U.S. met criteria for clinically significant symptoms of hostility. Likewise, when compared to UMIs that reported living in Mexico most of their life, a higher number of UMIs that reported living most of their life in the U.S. or half of their life in Mexico and half in the U.S., met criteria for clinically significant symptoms of psychoticism. It is important to note is that overall, when results for clinically significant psychological distress were assessed using outpatient norms, the prevalence of overall clinically significant psychological distress dropped to a low 1%, with symptom subscales ranging from 4% for paranoid ideation to no cases for the anxiety subscale.

6.5 Prevalence of Mental Health Disorders in RDS Study

Pertaining to specific mental health disorders based on results from the M.I.N.I., 22% of UMIs met criteria for one or more of the assessed disorders. Table 13 provides a summary of population based estimates for mental health disorders based on DSM diagnosis among among UMIs in Escondido by socio-demographic and immigration characteristics. Specifically, the most prevalent disorders were MDD (14%), GAD (7%), and panic disorder (5%). Less prevalent disorders included PTSD (3%) and somatization (< 1%). Moreover, 4% of UMIs met criteria for a substance use disorder. Specifically, 2 % of UMIs met criteria for alcohol abuse, 1% for alcohol dependence, and less than 1% for drug abuse and drug dependence. Overall, significant differences in meeting criteria

for any of the mental health disorders assessed were found for age and place where the UMI had spent most of his/her life. Specifically, when compared to other age groups, a higher number of UMIs ages 18 to 25 met criteria for having any of the mental health disorders assessed. Of note, significant differences were found in drug abuse, with a greater number of UMIs age 18 to 25 reporting higher drug use when compared to any of the other age groups. Regarding significant differences in meeting criteria for any of the mental health disorders assessed by place spent most of their life, a higher number of participants that reported having spent most of their life in the U.S. met criteria for having a mental health disorder when compared to those that reported having spent most of their life in Mexico or half their life in Mexico and half in the U.S. Moreover, although no significant differences in meeting criteria for any of the mental health disorders assessed, significant differences were found in meeting criteria for panic disorder and GAD by marital status, with a greater number of singles meeting criteria for panic disorder and GAD when compared to UMIs that reported being married or living as married.

Furthermore, comorbidity was found among specific mental health disorders. Specifically, a high comorbidity between MDD, GAD and panic disorder was reported. Also, there was comorbidity between PTSD, MDD, panic disorder, and GAD. Meeting criteria for any substance use disorder was found to be comorbid with MDD.

6.6 Prevalence of *Nervios* and *Ataque de Nervios* in RDS Study

***Nervios* as a cultural syndrome.** Overall, 24% of UMIs reported a lifetime prevalence of *Nervios*. Among UMIs with a lifetime prevalence of *Nervios*, 68% reported a current prevalence of *Nervios*. Table 14 provides a summary of population based

estimates for lifetime and current *Nervios* among UMIs in Escondido by socio-demographic and immigration characteristics. Among UMIs currently reporting *Nervios*, only approximately 6% met criteria for clinical somatic symptoms likely associated to psychological distress as measured by the ^aBSI, with the most prevalent somatic symptoms reported being tension in the neck and shoulders; headaches, lack of energy/weakness/fatigue; sleep difficulties; heavy sensation in the head; dry mouth; frequent urination; stomach discomfort; fluttering sensations in the stomach; constipation; and body aches and pains. Also, among UMIs reporting current *Nervios*, 63% met criteria for clinically significant psychological distress as measured by the BSI-53. Moreover, UMIs with current *Nervios*, participants reported a low to moderate interference of *Nervios* with work $M (SD) = 3.3 (3.7)$; social relationships $M (SD) = 3.5 (3.6)$; and/or household chores $M (SD) = 4.3 (3.2)$.

Nervios as a cultural idiom of distress. Among UMIs in this study, 34% reported being a *Nervous* person, with 63% of these UMIs acknowledging being *Nervous* since childhood. To describe *Nervios*, participants used cognitive, behavioral, emotional, and somatic symptoms to describe their experience. Cognitive symptoms used to describe *Nervios* included worry (14%); indecisiveness/insecurity (6%); sense of lack of control (2%); forgetfulness (2%); and “scary” thinking (2%). Behavioral symptoms used to describe *Nervios* included sense of wanting to flee from a place (“take off running”) (6%); trouble sleeping (6%); paralyzing sensation (6%); irritability (2%); nervous laugh (2%); nail biting (2%); impulsivity (2%); restlessness (2%); isolation (2%); and rushing to get things done (2%). Emotional symptoms used to describe *Nervios* included feeling anxious (18%); fearfulness (14%); despair (10%); uneasiness (6%); guilt (2%); anger

(2%); impatience (2%); and hysteria/panic (2%). Somatic symptoms used to describe *Nervios* included feeling shaky/shakiness (16%); sweating (4%); feeling physically ill (2%); tension (2%); headache (2%); and palpitations (2%).

Causal explanation for *Nervios*. Among UMIs reporting a lifetime prevalence of *Nervios*, the most common causal attributions for *Nervios* included family conflict/problems (20%); loss of control/inability to resolve conflict (12%); anxiety/stress/worry about the future (12%); work/financial trouble (10%); social situations (6%); and deportation/fear of deportation (6%). Other less prevalent causal attributions for *Nervios* included family death/loss (4%); physical illness (4%); accidents (4%); past substance use (4%); spiritual turmoil (4%); unexpected situations (4%); loneliness (2%); and imagination (2%).

Ataque de Nervios as a cultural syndrome. Overall, 12% of UMIs reported a lifetime prevalence of *Ataque de Nervios*. Among UMIs with a lifetime prevalence of *Ataque de Nervios*, 39% reported having experience at least one or more *Ataque de Nervios* within the past 12 months. Table 14 provides a summary of population based estimates for lifetime and current *Ataque de Nervios* among UMIs in Escondido by socio-demographic and immigration characteristics. On average, the frequency of *Ataque de Nervios* within the past twelve months was 4.9 ($SD=5.3$), and the frequency of *Ataque de Nervios* among UMIs ranged from 1 to 20 (Median = 3; Mode = 3). Somatic symptoms associated with the experiencing of *Ataque de Nervios* among UMIs with a lifetime history of *Ataque de Nervios* were palpitations (84%); shakiness (74%); tightness in chest (68%); fainting (29%); dizziness (22%); loss of memory/amnesia (19%); and other symptoms to a lesser extent including sweating (3%); nausea (3%); exhaustion (3%);

headache (3%); and itching (3%). Emotional symptoms associated with the experiencing of *Ataque de Nervios* among participants with a lifetime history of *Ataque de Nervios* were anger/*coraje* (81%); depersonalization (81%); fear/*susto* (74%); hysteria (65%); and despair (3%). Behavioral symptoms associated with the experiencing of *Ataque de Nervios* among participants with a lifetime history of *Ataque de Nervios* were crying spells (77%); yelling/screaming (51%); aggression/breaking things (39%); self-injurious behavior/suicidal ideation (13%); and other symptoms to a lesser extent including wanting to take off running (4%) and pulling hair (3%). None of the participants reported convulsions as a symptom of *Ataque de Nervios*. Moreover, among UMIs that reported experiencing one or more *Ataque de Nervios* within the past 12 months, these reported low interference of *Ataque de Nervios* with work $M (SD) = 1.7 (3.1)$; social relationships $M (SD) = 1.3 (2.6)$; and/or household chores $M (SD) = 1.9 (3.1)$.

Causal explanation for *Ataque de Nervios*. Among UMIs reporting a lifetime prevalence of *Ataque de Nervios*, the most common causal attributions for *Ataque de Nervios* included accident/attack/trauma (35%); family conflict (35%); worry/financial trouble (10%); and drugs (10%). To a lesser extent, arguments with others (7%); stress (3%); spiritual life (3%); deportation (3%); rejection from others (3%); and illness (3%) were also identified as causal attributions for *Ataque de Nervios*.

6.7 Prevalence of *Ulysses Syndrome* in RDS Study

***Ulysses Syndrome* as a contextual syndrome.** Of UMIs in this study, 82% reported experiencing significant distress as a result of their undocumented status. Among these, 46% met criteria for clinically significant psychological distress as measured by the BSI-53, and 21% met criteria for significant somatic symptoms as

measured by the ^aBSI. Also, among UMIs reporting distress due to their undocumented status, 70% reported their legal status to have a negative or undesirable effect on their identity.

Ulysses Syndrome as a cultural idiom of distress. Among UMIs reporting their undocumented status to have a negative effect on their identity, the most prevalent effects reported included lack of confidence/self-doubt (51%), feeling worthless/inferior/without value (47%), loss of sense of self/confusion (36%), being ashamed of self (28%), and feeling guilty (19%). Moreover, qualitative descriptions on the effect of undocumented legal status on identity also included feeling limited/incapacitated, feeling powerless, and feeling trapped. Also, several themes emerged pertaining to describing life as an undocumented immigrant. These included: 1) life without freedom; 2) living in fear; 3) life as unsatisfactory/frustrating; 4) high-risk life; 5) poor quality of life/stressful; 6) life of isolation, segregation and/or discrimination; 7) lack of opportunity/limited social mobility; and 8) lack of stability/constant uncertainty. Also, some participants reported a preference to avoid “thinking about [their undocumented status],” as a way of coping with distress. Moreover, regarding greatest worries or concerns reported by UMIs due to their undocumented status, these included fear of deportation (34%); inability to visit family abroad (29%); family separation (20%); difficulty getting work or finding better job (15%); limited access to healthcare (7%); financial instability (2%); and inability to go to college (2%). Other less prevalent concerns included inability to help family in Mexico, difficulty with transportation, and lack of retirement benefits/inability to retire.

Contextual explanation/loss for *Ulysses Syndrome*. Overall there was a high migration-related loss among UMIs that reported experiencing significant distress as a

result of their undocumented status. Table 15 provides population-based estimates for migration-related loss among UMIs reporting their undocumented status as distressing. Prevalent migration-related losses among UMIs were home/shelter (99%); social status (99%); family loss (98%), symbolic self/culture (93%); belonging (92%); physical wellbeing (34%); and language (3%). On average, mean distress for the aforementioned losses ranged from “a little” to “quite a bit.” Greatest mean distress experienced due to loss was reported for family loss ($M (SD) = 1.7 (0.8)$); loss of home/shelter ($M (SD) = 1.6 (0.9)$); belonging ($M (SD) = 1.4 (0.8)$); and loss of social status ($M (SD) = 1.1 (0.8)$).

CHAPTER 7: DISCUSSION

Consistent with proposed paradigm shifts to the study of immigrant mental health, the present study used culture and context-sensitive methodology to identify the mental health needs of UMIIs living in a high-risk area near the California-Mexico border. First, this project aimed to identify the prevalence of psychological distress and relevant DSM mental health disorders among this vulnerable subgroup, which included identifying comorbidity patterns and disparities in the prevalence of mental health disorders between UMIIs and other Latino and non-Latino subgroups in the U.S. Second, this project aimed to identify the prevalence of *Cultural Concepts of Distress*, specifically *Nervios* and *Ataque de Nervios* in this immigrant community. Third, this study aimed to identify the prevalence of a *Contextual Concept of Distress*, specifically the *Ulysses Syndrome*, in this population. To my knowledge, this is the first study to provide population-based estimates for the prevalence of psychological distress, mental health disorders, and relevant *Cultural and Contextual Concepts of Distress* among UMIIs in the U.S.

7.1 Prevalence of Psychological Distress

Overall, when compared to people in the community and of the same sex, results showed that almost half of UMIIs met criteria for clinically significant psychological distress across socio-demographic and immigration characteristics. Of note, is that an assessment of the different symptom subscales on the BSI-53 showed that the most prevalent symptoms of distress reported pertained to domains likely to be context-dependent given the undocumented status of these immigrants. For instance, a high prevalence of symptoms in the interpersonal sensitivity subscale, which includes items such as “feeling that people are unfriendly or dislike you,” “feeling inferior to others,” or

“feeling very self-conscious” was reported. Likewise, a high prevalence of symptoms in the paranoid ideation and psychoticism subscales, which include items such as “feeling that you are being watched or talked about by others,” “feeling that people will take advantage of you if you let them,” “feeling lonely even when you are with people,” or “never feeling close to another person,” was reported. The aforementioned results are consistent with previous research and findings from formative research, which showed psychological distress, particularly distress experienced in the form of the aforementioned symptoms, as a common experience among undocumented Latino immigrants in the U.S. (Garcini et al., 2016; Garcini, Gutierrez, Pena, Alvarado, Altamirano, Ulibarri, & Klonoff, 2014). To a lesser extent, symptoms of depression, anxiety-related symptoms, and somatization were also reported in this community. Of note, it is important to emphasize that when clinical significance for psychological distress was assessed using outpatient norms instead of community norms, the overall prevalence of clinically significant psychological distress in this community was low (1.2%). UMIIs are a highly stigmatized population that is often perceived as a threat to the safety of the American society and a burden to social and health services (Chavez, 2013). In contrast to this negative portray of UMIIs, results from this study provide evidence to support UMIIs as a resilient community in distress as a result of contextual influences, and not a mentally ill population. Nevertheless, important to emphasize is the need for prevention interventions to facilitate the development of coping strategies to ameliorate distress and the negative effect of contextual influences on the mental health of this immigrant community.

Another important finding in this study is that consistent with results from formative research, significant differences in the prevalence of clinically significant psychological distress was observed among certain subgroups (Garcini, et al., 2014). For instance, when compared to women, a higher number of men met criteria for clinically significant psychological distress. This is particularly important for the development of interventions given normative cultural factors (e.g., *machismo*) among Mexican-origin men, which often influence self-presentation, underreporting of mental health symptoms, and avoidance for seeking mental health services (Garcini, et al., 2014; Hopwood, Flato, Ambwani, Garland & Morey, 2009). Attending to sex differences in the development and delivery of prevention interventions and mental health services for UMI is necessary to increase effectiveness of prevention and treatment efforts. Another subgroup identified to be at risk of psychological distress is that of UMIs ages 18 to 25 who reported higher prevalence of clinically significant psychological distress when compared to other age groups. This age group is particularly representative of the DREAMers, who are educated undocumented young adults that were brought to the U.S. as children and who meet the general requirements of the Development Relief and Education for Alien Minors (DREAM) Act (Civil Impulse, 2015). Under this act, DREAMers are given a time-limited conditional permit to remain in the U.S. and pursue an education, with the caveat of facing constant institutional and societal exclusion and rejection due to their undocumented status (e.g., restricted access to financial support, limited employment opportunities, risk of deportation at any time) (Abrego, 2006; Ellis & Chen, 2013). Previous research shows that this “double standard” of living, in addition to feelings of shame, loneliness, frustration and loss of self-identity increases risk of psychological

distress in this young immigrant subgroup (Perez, Cortes, Ramos & Coronado, 2010; Perez, Espinoza, Ramos, Coronado, & Cortes, 2009). The development of prevention interventions aimed to target distress experienced by DREAMers as a result of the unique contextual influences faced by this subgroup is essential to reduce existing inequities and mental health risk among UMIs. Moreover, singles were also identified as another undocumented subgroup at risk for psychological distress. Specifically, a higher number of UMI singles met criteria for clinically significant psychological distress when compared to those who are married or reported living as married. This is consistent with the relevance of *familismo* to the Mexican community, which refers to a strong sense of identification with, loyalty to, and belonging to, nuclear and extended family (Ayón, Marsiglia, and Bermudez-Parsai, 2010). Previous research has found *familismo* to be associated with decreased mental health symptomatology among Latino immigrants, including the undocumented, by providing a support system that helps immigrants cope and confront social inequities and hardship faced in the U.S. (Ayón, Marsiglia, and Bermudez-Parsai, 2010). Assisting UMI singles to develop stronger emotional and instrumental support systems within the undocumented community could be helpful to reduce distress and increase a sense of companionship among singles, which may buffer the negative health effects of a harsh life in the U.S. Finally, although no significant differences were found in meeting criteria for overall clinically significant psychological distress by place where the UMI has lived most of his/her life, significant differences were found in two of the nice clinical subscales, which are important to emphasize. Specifically, when compared to UMIs who have lived most of their life in Mexico, a greater number of UMIs who have lived most of their life in the U.S. met criteria for

clinically significant symptoms of hostility and paranoia. This is consistent with results from pilot testing, which showed the U.S. to provide a hostile and unsafe environment for UMI; which over time may likely increase defensiveness and distrust among this immigrant community (Garcini, Gutierrez, Pena, & Galvan, 2016). Moreover, the current political climate and anti-immigrant policies prevalent in high-risk areas (i.e., Escondido) are also likely to increase distress and distrust among UMI who have live most of their life in the U.S. (Bay Area Center for Voting Research, 2005; Hall, 2012). Developing policies aimed to reduce discriminatory practices and increase safety in high-risk areas where this immigrant community resides are needed to protect the mental health of this immigrant subgroup and their U.S. born families.

7.2 Prevalence of Mental Health Disorders Based on DSM Criteria

Overall, the prevalence rate for having a mental health disorder based on DSM diagnosis among this immigrant community was slightly lower than estimates for foreign-born Latinos, including those of Mexican origin, based on data from the 2003 National Latino and Asian American Study (NLAAS) (22% for UMI; 24% for foreign-born Mexicans; 25% for foreign-born Latinos) (Alegría, et al., 2008). Pertaining to specific disorders, the prevalence rate for PTSD was similar in this population when compared to that for foreign-born Mexicans based on 2003 NLAAS data (3% for UMI and 4% for foreign-born Mexicans). This is surprising given the high prevalence of exposure to traumatic events that was reported among UMI as part of formative research, pilot testing, and results from the RDS study not included in this report (Garcini, et al., 2014; Garcini, et al., 2016; Pena, et al., in press). For instance, results from pilot testing showed that nearly all of the participating deportees reported having

experienced at least one or more traumatic events in their life (98%), with the majority of deportees (81%) having experienced five or more serious traumatic events. Similarly, results from this RDS study showed 82% of UMIs reported a lifetime history of traumatic events, with 41% of these immigrants meeting criteria for clinically significant psychological distress based on BSI-53 scores (Garcini, Pena, Gutierrez, Lyndsay, Lemus, & Klonoff, in preparation). Thus, given the low prevalence of PTSD in this study, it is possible that: (a) the M.I.N.I. may not have adequately captured distress related to trauma exposure in this population; (b) consistent with paradigm shifts to the study of immigrant mental health and trauma (Hobfoll, 2014), distress related to trauma among UMIs may present in a different way other than PTSD as conceptualized by DSM diagnosis; and/or (c) this population may underreport distress related trauma as an avoidant coping strategy (Farley, Galves, Dickinson, & Perez, 2005). Additional research is needed to further explore distress and symptom presentation related to trauma among UMIs in order to inform the development of assessment measures and context-sensitive interventions.

Another important finding from this study is that differences were found in the prevalence of depression, anxiety-related disorders, and substance use disorders between UMIs and other Latino populations in the U.S., including foreign-born Mexicans, based on data from the 2003 National Latino and Asian American Study (NLAAS) (Alegría, et al., 2008). For instance, a slightly higher prevalence of MDD was found in this study when compared to foreign-born Latinos, including foreign-born Mexicans, based on 2003 NLAAS data (14% for UMIs; 13% for foreign-born Latinos; 12% for foreign-born Mexicans). Likewise, prevalence estimates for panic disorder (5% for UMIs versus 3%

for foreign-born Latinos, including those of Mexican origin) and GAD (7% for UMIs versus 5% for foreign-born Latinos, including those of Mexican origin) were slightly higher among UMIs when compared to their documented foreign-born counterparts. Noteworthy, is that in contrast to their documented foreign-born counterparts, prevalence rates for all substance use disorders were considerably lower among UMIs (e.g., alcohol abuse: 2% for UMIs versus 4% for foreign-born Mexicans; alcohol dependence: 1% for UMIs versus 3% for foreign-born Mexicans; drug abuse: less than 1% for UMIs versus 2% for foreign-born Mexicans; drug dependence: less than 1% for UMIs versus 2% for foreign-born Mexicans) (Alegría, et al., 2008). The aforementioned inequities in substance use disorders are even greater when comparing rates for UMIs with those for U.S. born Latinos, with the U.S. born showing a much higher prevalence for all substance use disorders (see Table 5). This is consistent with results from formative research that showed substance use to increase risk of deportation; thus, making it less likely for UMIs to engage in substance use when compared to their documented counterparts (Garcini, et al., 2014). As previously mentioned, this finding is particularly important to emphasize given widespread stigma that portrays UMIs as “criminals,” “drug users,” and a threat to the safety of the American society (Chavez, 2013; Warner, 2006). Based on the aforementioned results, substance use is not common in this undocumented community; thus, defying existing stereotypes. Instead, this results show that efforts should focus on developing strategies to reduce risk for depression and anxiety-related disorders in this population, which over time and without access to treatment may increase risk for substance use disorders.

Another important finding consistent with results for psychological distress is that significant differences in the prevalence of mental health disorders was observed across age groups, marital status, and place where the UMI has lived most of his/her life. Specifically, UMIs ages 18 to 25 were found to meet criteria for a mental health disorder more so than any other age group, particularly in regards to drug abuse. For this subgroup, prevalence rates for drug abuse were similar to those of their U.S. born Latino counterparts (6 % for UMIs versus 6% U.S. born Latinos). This is not surprising and is consistent with the negative effect of acculturation on substance use, including drug abuse, given that this subgroup is likely representative of undocumented young adults who were brought to the U.S. as children and are likely acculturated the U.S. culture (Lara, Gamboa, Kahramanian, Morales, & Hayes, 2005; Ortega, Rosenheck, Alegria, & Desai, 2000). Although overall, drug abuse was found not to be common in this undocumented community, DREAMers remain an at-risk population and efforts should be made to provide this young subgroup with access to prevention and treatment interventions. Moreover, a higher number of UMI singles met criteria for anxiety-related disorders, specifically panic disorder and GAD, when compared to their married counterparts. As previously mentioned, it is likely that *familismo* may be a protective factor for UMIs who are married or living as married (Ayón, Marsiglia, and Bermudez-Parsai, 2010). Thus, as previously mentioned assisting UMI singles to develop stronger support systems within the community is necessary to protect their mental health. Finally, significant differences in meeting criteria for a mental health disorder were found between UMIs who have lived most of their life in Mexico when compared to those who have lived most of their life in the U.S., with those having lived most of their life in

Mexico showing a considerably lower prevalence of having a mental health disorder. This finding highlights that the difficulties faced by this immigrant community after living most of their life in the U.S. may eventually take a toll on their mental health, particularly given their limited access to prevention and mental health services.

7.3 Prevalence of *Nervios* and *Ataque de Nervios*

Consistent with APA multicultural guidelines, which highlight the relevance of *Cultural Concepts of Distress* to culturally sensitive research and practice (APA, 2002), the second aim of this study was to identify the prevalence of *Nervios* and *Ataque de Nervios* among UMIs. Results from this study showed that about a third of the population reported a lifetime prevalence of *Nervios*, with *Ataque de Nervios* being less prevalent. The prevalence estimates of *Nervios* and *Ataque de Nervios* in this study are slightly higher when compared those previously reported among Mexican-origin immigrants based on results from the Mexican Immigration to California: Agricultural Safety and Acculturation Study (MICASA) (*Nervios*: 29% for UMIs versus 22% Mexican-origin immigrants) and the NLAAS (*Ataque de Nervios*: 12% for UMIs versus 10% foreign-born Mexicans) (O'Connor, Stoecklin-Marios, & Schenker, 2015; Guarnaccia, Lewis-Fernandez, Pincay, Shrout, Guo, Torres, & Alegria, 2009). The aforementioned estimates provide evidence for the need to include the assessment and treatment of *Nervios* and *Ataque de Nervios* in the provision of culture sensitive mental health services to this community.

Pertaining to clinical presentation, results showed that *Nervios* in this population is often perceived as a trait rather than as a state, which manifests as a combination of somatic, cognitive, emotional and behavioral symptoms most similar to symptoms

characteristic of anxiety-related disorders. Similarly, *Ataque de Nervios* was identified as manifesting through a combination of somatic, cognitive, emotional and behavioral symptoms similar, but not identical to panic attacks. For instance, although somatic symptoms of *Ataque de Nervios* may be similar to those in panic attacks, behavioral symptoms often present in an externalizing manner (e.g., crying spells, yelling) and within a sociocultural context (e.g., in the presence of others) most likely as a result of anger/*coraje* and/or fear/*susto*. The aforementioned findings in the clinical presentation of *Nervios* and *Ataque de Nervios* are consistent with previously proposed diagnostic criteria and descriptions for these *Cultural Concept of Distress* (Baer, Weller, De Alba Garcia, Glazer, Trotter, Pachter, et al., 2003; Oquendo, Horwath, & Martinez, 1992). Of note, results also showed that *Nervios* and *Ataque de Nervios* do not often interfere with daily functioning, and that interference with level of functioning needs not to be present to be indicative of distress. This is consistent with results from formative research, which emphasized that distress may be often experienced independent of loss in functional ability (Garcini, et al., 2014). Also important to highlight is that the primary contextual attribution to *Nervios* and *Ataque de Nervios* was family conflict or distress, which is consistent with the relevance of *familismo* as an important cultural value to this community (Ayón, Marsiglia, and Bermudez-Parsai, 2010). Additional research to inform the development of culture-sensitive assessment measures and interventions for *Nervios* and *Ataque de Nervios* among UMI is warranted.

7.4 Prevalence of *Ulysses Syndrome*

Finally, the third aim of this study was to identify the prevalence of a *Contextual Concept of Distress*, specifically the *Ulysses Syndrome* among UMIs living in a high-risk

area. Results showed that undocumented status is a highly distressing experience for the majority of UMIs, which is associated with significant migration-related loss, clinically significant psychological and somatic symptoms, and a negative effect on identity and self-esteem. Also, consistent with findings from formative research and previous research on the *Ulysses Syndrome* with undocumented immigrants in Europe, symptoms of distress in this immigrant community often present without loss of social and occupational activity, apathy, or thoughts of self-harm (Achotegui, 2014; Garcini, et al., 2014). Moreover, important to note is that the aforementioned symptoms do not fit criteria for Adjustment Disorder based on DSM diagnosis given that the symptoms in *Ulysses Syndrome* are a natural response to chronic multiple stressors faced by these immigrants, which are beyond what can be considered adaptive (Achotegui, 2014). Moreover, the symptoms in *Ulysses Syndrome* are due to “objective adversities that overwhelm the human capacity for adaptation (Achotegui, 2014, p. 67);” yet UMIs continue to display resilience and retain level of functioning. Thus, incorporating the study and assessment of *Ulysses Syndrome* into prevention efforts is necessary to: 1) avoid stigmatizing this already marginalized population as mentally ill; and 2) reduce risk for ignoring, denying, or dismissing the effect of migratory grief and loss on mental health, which over time and if untreated, may increase risk for mental illness. Addressing the mental health needs of UMIs from the perspective of the *Ulysses Syndrome* facilitates the framing of “a reactive profile of stress [and a reversible process] located in the area of mental health, not in the area of mental illness” (Achotegui, 2014, p. 73). Also, incorporating the *Ulysses Syndrome* to the study of mental health and the development of

interventions among UMIs is necessary for culture and context-sensitive research and practice.

7.5 Inequities in Mental Health between UMIs and Deportees

Although not a specific aim of this study, inequities in the mental health of UMIs and deportees were found when comparing results from pilot testing and the RDS study. For instance, prevalence estimates for psychological distress were higher among recent deportees in Tijuana when compared to UMIs in Escondido (50% for deportees versus 41% for UMIs). This was consistent for all three BSI symptom subscales used in the pilot testing and RDS study (depression: 54% for deportees versus 21% for UMIs; anxiety: 38% for deportees versus 15% for UMIs; somatization: 34% for deportees versus 14% for UMIs). Likewise, prevalence estimates for any mental health disorder were considerably higher among recent deportees in Tijuana when compared to UMIs in Escondido (50% for deportees versus 22% for UMIs), including any substance use disorder (19% for deportees versus 4% for UMIs). This was consistent for all disorders assessed in both studies. Thus, the aforementioned results provide insight as to the potentially negative effect of deportation on mental health. Nevertheless, given the disparities found in drug abuse and dependence between UMIs and deportees, it is also possible that these two immigrant subgroups may have very different backgrounds and mental health needs. Additional research is needed to further identify and understand inequities among subgroups of undocumented immigrants, including deportees.

7.6 Summary

In summary, results from this study provide evidence that UMIs are a resilient; yet vulnerable population at high risk for psychological distress given multiple and

chronic stressors faced as a result of contextual experiences, high prevalence of migration-related loss, criminalization of the undocumented immigrant, and social and structural exclusion including lack of access to health services. The Affordable Care Act (ACA) intends to expand mental health benefits and parity protections by making mental health services more accessible and affordable to the U.S. population (PPACA 2015). Unfortunately, the undocumented are not allowed to shop for coverage in the insurance marketplace, even at their own expense (Wallace et al. 2013). As a result, most UMIs and their families rely on cash to pay for health services or neglect their use due to cost (Wallace et al. 2013). Revisions to current health policies and the development of new alternatives to facilitate purchasing of health insurance for undocumented immigrants, including access to prevention and mental health services, is necessary to protect the mental health of this immigrant community and their families. Also, advocacy efforts aimed to increase the allocation of funding to support safety-net providers in high-density Latino immigrant communities, and the development of immigration policies to reduce discriminatory practices and increase safety, is needed to protect the human rights of these at-risk immigrants.

Improving the mental health of this immigrant population and their U.S. born families requires the development of culture and context sensitive assessments and prevention interventions. Based on results from this study, recommendations for culture and context-sensitive interventions with UMIs include: 1) develop interventions within a *Ulysses Syndrome* framework as to reduce stigma and address migration-related loss and the grief process; 2) focus on the development of value-based strategies rooted in *familismo*, cultural pride, and spirituality, which may facilitate exploration and

restoration of identity-related issues; 3) facilitate the development of strategies to identify, cope, and overcome discrimination and stigmatization; 4) provide psycho-education on trauma, including identification of symptoms and treatment; 5) incorporate the assessment and treatment of *Cultural Concepts of Distress* and other possibly relevant culture-specific idioms (e.g., *coraje*, *susto*); 6) emphasize the body-mind-spirit connection to reduce stigma and address somatic concerns; 7) provide resources to facilitate integration and building of social networks within and outside the community; 8) address within group differences and tailor interventions appropriately (e.g., DREAMers, gender specific, deportees); and 9) consider non-traditional modes of service delivery catering to the needs of UMIIs (i.e., faith based organizations, advocacy organizations, safety net providers, groups versus individual interventions; community health worker (CHW) approaches) (Garcini, et al., 2014). The aforementioned recommendations provide an initial step to develop interventions aimed to protect the mental health of this immigrant community at risk.

7.7 Limitations

First, the sample population included UMIIs residing in a high-risk community near the California-Mexico border region. It is possible that levels of psychological distress and mental health disorders in this Mexican immigrant community may be different to those of UMIIs from other U.S. regions and other UIs from other Latin American countries. Nevertheless, results from this study provide unique and valuable data regarding the prevalence of psychological distress and mental health disorders, including relevant *Cultural* and *Contextual Concepts of Distress* among this hard-to-reach population in order to inform future studies, methodology, and the development of

culture and context sensitive assessments and interventions. Also, measures were based on self-report and retrospective reporting, which may lead to information biases.

However, trained professionals using clinical assessments and judgment conducted the clinical interviews to reduce risk of biases. Finally, given the cross-sectional nature of the study, causation cannot be inferred.

7.8 Directions for Future Research

The present study makes a significant contribution to inform the mental health of UMI, including providing the first population-based estimates to identify the prevalence of psychological distress and mental health disorders, as well as relevant *Cultural* and *Conceptual Concepts of Distress* in this hard-to-reach population. Future research is needed to inform the development of culture and context sensitive assessments and interventions, including: (a) further identifying symptom presentation and specific aspects of psychological distress relevant to this population; (b) explore symptom presentation across subgroups of UMIs; (c) identify protective factors to the mental health of this immigrant community; and (d) conduct replication studies in other areas of the U.S. and with other undocumented Latino populations to identifying existing inequities. Also, important to emphasize is that advancing and improving the study of mental health among UMIs requires improvement in research methodology (Garcini, et al., 2015). Based on lessons learned from the present study, improving the quality of health research with UMIs requires: 1) adopting a multi-stage process approach, including extensive formative research, pilot testing, and if possible randomized designs; 2) adopt a Community Based Participatory Research (CBPR) model to the integration of the research team and to the dynamics of the project at all levels of the research process,

including development of study, recruitment, use and dissemination of results, and planning of future studies; 3) fostering interdisciplinary collaboration; 4) incorporating the use of mixed-methods and multiple assessment measures; and 5) adopt a global approach that the study undocumented immigration that transcends boundaries. Figure 6 provides a summary of basic recommendations to improve the quality of mental health research with UMIs.

7.9 Conclusions

Consistent with the minority stress model, UMIs are a population at risk of psychological distress. The difficult immigration journey, the many migration-related losses, and the hardship experienced while living in the U.S., pose tremendous risk for psychological distress for millions of UMIs in their pursuit of safety and better economic opportunities. Debates on programs and policies pertaining to UMIs are complex and multifaceted, and divisiveness on immigration and welfare reform in the U.S. is long-standing. Once in the U.S., there are significant public health implications for restricting access to mental health services, including prevention and treatment efforts, for UMIs and the broader community (Kullgren, 2003). Thus, tenacious grassroots efforts, both, in Mexico and in the U.S., are necessary to influence policy aimed to allocate funding to increase access to healthcare, including culturally and contextually responsive interventions aimed to address the complex mental health needs of this vulnerable population. It is the responsibility of both Mexico and the U.S. to work collaboratively in the development of programs and policies to prevent the negative consequences of inadequate access to healthcare and to protect the human rights of Mexican immigrants looking for more promising futures.

REFERENCES

- Abrego, L. J. (2006). "I can't go to college because I don't have papers": Incorporation patterns of Latino undocumented youth." *Latino Studies*, 4(3): 212-231.
doi:10.1057/palgrave.lst.8600200
- Achotegui, J. (2002). *La Depresión en los Imigrantes: una Perspectiva Transcultural*. Barcelona, Espana: Editorial Mayo.
- Achotegui, J. (2005). Estres limite y salud mental: El síndrome del inmigrante con estres cronico y multiple: Síndrome de Ulises. *Revista Norte de Salud Mental de la Sociedad Española de Neuropsiquiatria*, 21, 39-53.
- Achotegui, J. (2014). The Ulysses Syndrome: The Immigrant Syndrome of Chronic and Multiple Stress. *El mundo de la mente*, Llanca, España.
- Alegria, M., Canino, G., Shrout, P. E., Woo, M., Duan, N., Vila, D., & Meng, X.L. (2008). Prevalence of mental illness in immigrant and non-immigrant U.S. Latino groups. *American Journal of Psychiatry*, 165, 3, 356-369.
- Alegria, M., Vila, D., Woo, M., Canino, G., Takeuchi, D., Vera, M., Febo, V., Guarnaccia, P., Aguilar-Gaxiola, S., & Shrout, P. (2004). Cultural relevance and equivalence in the NLAAS instrument: Integrating etic and emic in the development of cross-cultural measures for a psychiatric epidemiology and services study of Latinos. *International Journal of Methods in Psychiatric Research*, 13,4, 270-288.
- American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.
- American Psychiatric Association. (2000). *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.). Arlington, VA: American Psychiatric Publishing.
- American Psychological Association. (2002). *Guidelines on Multicultural Education, Training, Education, Research, Practice, and Organizational Change for Psychologist*. Washington, DC: American Psychological Association. Retrieved November 20, 2013 from <http://www.apa.org/pi/oema/resources/policy/multicultural-guideline.pdf>
- American Psychological Association. (2012). Crossroads: The psychology of immigration in the new century. Report of the APA Presidential Task Force on Immigration. Retrieved November 10, 2013, from <http://www.apa.org/topics/immigration/executive-summary.pdf>
- Aragona, M., Catino, E., Pucci, D., Carrer, S., Colosimo, F., Lafuente, M., Mazzetti, M., Maisano, B., & Geraci, S. (2010). The relationship between somatization and posttraumatic symptoms among immigrants receiving primary care services. *Journal of*

Trauma & Stress, 23, 615-22.

Aragona, M., Monteduro, M.D., Colosimo, F., Maisano, B., & Geraci, S. (2008). Effect of gender and marital status on somatization symptoms of immigrants from various ethnic groups attending a primary care service. *German Journal of Psychiatry*, 11, 64-72.

Aroian, K. (1993). Mental health risks and problems encountered by illegal immigrants. *Issues in Mental Health Nursing*, 14,4, 379-397.

Aroian, K. J., Patsdaughter, C. A., Levin, A., & Gianan, M. E. (1995). Use of the Brief Symptom Inventory to assess psychological distress in three immigrant groups. *International Journal of Social Psychiatry*, 41(1), 31-46.

Ayón, C., Marsiglia, F. F., & Bermudez-Parsai, M. (2010). Latino family mental health: Exploring the role of discrimination and familismo. *Journal of Community Psychology*, 38, 6, 742-756.

Baer, R. D., Weller, S. C., de Alba Garcia, J. G., Glazer, M., Trotter, R., Pachter, L., & Klein, R. E. (2003). A cross-cultural approach to the study of the folk illness nervios. *Culture, Medicine and Psychiatry*, 27(3), 315-337.

Bay Area Center for Voting Research . (2005). The most conservative and liberal cities in the United States. Retrieved September, 2015 from <http://alt.coxnewsweb.com/statesman/metro/081205libs.pdf>

Beaton, D.E., Bombardier, C., Guillemin, F., & Ferraz, M.B. (2002). *Recommendations for the Cross-Cultural Adaptation of Health Status Measures*. Rosemont, IL: American Academy of Orthopedic Surgeons. Retrieved from October 10, 2013, from http://med.umn.edu/ortho/prod/groups/med/@pub/@med/@ortho/documents/asset/med_asset_360072.pdf

Bravo, I. M., & Roca, C. S. (2013). Assessing somatoform disorders with the Hispanic client. In L. T. Benuto, L. T. Benuto (Eds.) , *Guide to psychological assessment with Hispanics* (pp. 293-307). New York, NY, US: Springer Science + Business Media.

Brewin, C. R., Andrews, B., & Gotlib, I. H. (1993). Psychopathology and early experience: A reappraisal of retrospective reports. *Psychology Bulletin*, 113, 82-98.

Bobes, J. (1998). A Spanish validation study of the MINI international psychiatric interview. *European Psychiatry*, 13, 198-199.

Bronfenbrenner, U., & Morris, P.A. (2006). The bioecological model of human development. In W. Damon & R. M. Lerner (Eds.), *Handbook of child psychology: Vol.*

1. Theoretical models of human development (6th ed., pp. 993-1023). Hoboken, NJ: Wiley.

Brown, A. & Lopez, M. H. (2013). Mapping the Latino population by state, county, and city. Retrieved November 15, 2013, from <http://www.pewhispanic.org/2013/08/29/mapping-the-latino-population-by-state-county-and-city/>

Center for Disease Control and Prevention. Behavioral Risk Factor Surveillance System Questionnaire, (2009). Retrieved from <http://www.cdc.gov/brfss/questionnaires/pdf-ques/2009brfss.pdf>, accessed on April 25, 2015.

Center for Multicultural Mental Health Research. (2013). *National Latino and Asian American Survey*. Retrieved October 26, 2013 from <http://www.multiculturalmentalhealth.org/NLAASdocuments.asp#Spanish>

Cervantes, R. C., Fisher, D. G., Padilla, A. M., & Napper, L. E. (2015). The Hispanic Stress Inventory Version 2: Improving the Assessment of Acculturation Stress. *Psychological Assessment*, 7.

Chakraborty, K., Avasthi, A., Kumar, S., & Grover, S. (2010). Psychological and clinical correlates of functional somatic complaints in depression. *International Journal of Psychiatry*, Online publication, 1-9. doi:10.1177/0020764010387065.

Chavez, L. R. (2013). *The Latino threat: Constructing immigrants, citizens, and the nation*. Stanford University Press.

Chavez, L. R. (1994). The power of the imagined community: The settlement of undocumented Mexicans and Central Americans in the United States. *American Anthropologist*, 96(1), 52-73. doi:10.1525/aa.1994.96.1.02a00030

Chung, R. C. Y., Bernak, F., Ortiz, D. P., & Sandoval-Perez, P. A. (2008). Promoting the Mental Health of Immigrants: A Multicultural/Social Justice Perspective. *Journal of Counseling & Development*, 86(3), 310-317.

Civic Impulse. (2015). H.R. 1751 — 111th Congress: American Dream Act. Retrieved from <https://www.govtrack.us/congress/bills/111/hr1751>

Cornelius, W. A. (1982). Interviewing undocumented immigrants: Methodological reflections based on fieldwork in Mexico and the U.S. *International Migration Review*, 16, 2, 378-411.

Creswell, J. W., Klassen, A. C., Plano-Clark, V. L., Smith, K. C. (2011). *Best practices for mixed methods research in the health sciences*. Retrieved November 14, 2013, from

http://obssr.od.nih.gov/mixed_methods_research/

Commission on Social Determinants of Health. (2008). Closing the gap in a generation: health equity through action on the social determinants of health. Final Report of the Commission on Social Determinants of Health. Geneva, World Health Organization.

Dahlgren, G., & Whitehead, M. (1991). *Policies and strategies to promote social equity in health*. Stockholm. Institute for Future Studies.

Dean, A.G., Sullivan, K.M., & Soe, M.M. (2013). OpenEpi: Open Source Epidemiologic Statistics for Public Health, Version. 3.01. Retrieved November 15, 2013, from www.OpenEpi.com.

Dejong, J. T. V., & Reis, R. (2010). Kiyang-yang, a West African postwar idiom of distress. *Culture, Medicine & Psychiatry*, 34, 2, 301-321.

DeLuca, L., McEwen, M., & Keim, S. (2010). United States-Mexico border crossing: experiences and risk perceptions of undocumented male immigrants. *Journal of Immigrant and Minority Health / Center for Minority Public Health*, 12, 1, 113-123. doi:10.1007/s10903-008-9197-4.

Derogatis, L.R. (2000). *The Brief Symptom Inventory-18 (BSI-18): Administration, Scoring and Procedures Manual*. Minneapolis, MN: National Computer Systems.

Eisenman, D. P., Meredith, L. S., Rhodes, H., Green, B. L., Kaltman, S., Cassells, A., Tobin, J. N. (2008). PTSD in Latino patients: Illness beliefs, treatment preferences and implications for care. *Journal of General Internal Medicine*, 23,9, 1386-1392.

Ellis, L., & Chen, E. (2013). Negotiating identity development among undocumented immigrant college students: A grounded theory study. *Journal of Counseling Psychology*, 60, 2, 251-264. doi:10.1037/a0031350

Farley, T., Galves, A. L., Dickinson, L. M., & Perez, M. D. J. D. (2005). Stress, coping, and health: a comparison of Mexican immigrants, Mexican-Americans, and non-Hispanic whites. *Journal of Immigrant Health*, 7(3), 213-220.

Garcini, L.M., Gutierrez, A., Pena, J., & Galvan, T. (October, 2016). Trauma and Psychological Distress among Undocumented Mexican Immigrants and Deportees: Prevalence, Context, and Policy Implications. Symposium to be presented at the Annual National Latino Psychological Association.

Garcini, L.M., Gutierrez, A., Pena, J., Alvarado, K., Altamirano, El, Ulibarri, M., & Klonoff, E.A. (2014, September). Mental health of undocumented Latino immigrants in the United States. Paper presented at the XVI World Congress of Psychiatry, Madrid, Spain.

Garcini, L. M., Murray, K., Zhoe, A., Klonoff, E. A., Myers, M., & Elder, J. P. (in press). Mental health of undocumented immigrants in the United States: A systematic review of methodology and findings. *Journal of Immigrant and Refugee Studies*, 14(1), 1-25.

Garcini, L.M., Renzaho, A.M.N., Molina, M., & Ayala, G.X. (under review). *The influence of migration factors and health on quality of life among Latinos in the US: Does Legal Status Matter?* Paper to be presented at the 5th European Conference on Migrant and Ethnic Minority Health, Spain.

Gile, K. J. (2011). Improved Inference for Respondent-Driven Sampling Data with Application to HIV Prevalence Estimation.” *Journal of the American Statistical Association*, 106, 135–146.

Gile, K. J., Johnston, L. G., & Salganik, M. J. (2014). Diagnostics for respondent-driven sampling. *Journal of the Royal Statistics Society: Series A (Statistics in Society)*, 178, 241-269.

Gonzales, M.J., & Gonzales-Ramos, G. (2005). *Mental Health Care for New Hispanic Immigrants: Innovative approaches in Contemporary Clinical Practice*. Binghamton, NY: The Haworth Social Work Practice Press.

Gonzales-Barrera, A., & Kroftstad, J. M. (2015). What we know about illegal immigration from Mexico. Retrieved on February 25, 2016 from <http://www.pewresearch.org/fact-tank/2015/11/20/what-we-know-about-illegal-immigration-from-mexico/>

Gonzales-Barrera, A., & Lopez, M.H. (2013). A demographic profile of Mexican origin Hispanics in the United States. Retrieved on February 25, 2016 from http://www.pewhispanic.org/files/2013/05/2013-04_Demographic-Portrait-of-Mexicans-in-the-US.pdf

Guarnaccia, P.J., Lewis-Fernandez, R., Marano, M.R. (2003). Toward a Puerto Rican popular nosology: *Nervios* and *Ataque de Nervios*. *Culture, Medicine and Psychiatry*, 27, 339-366.

Guarnaccia, P.J., Lewis-Fernandez, R., & Martinez-Pincay, I. (2010). *Ataque de Nervios* as a marker of social and psychiatric vulnerability: Results from the NLAAS. *International Journal of Social Psychiatry*, 56, 3, 298-309. doi:10.1177/0020764008101636.

Guarnaccia, P.J., Lewis-Fernandez, R., Martinez-Pincay, I., Shrout, P., Guo, J., Torres, M., Canino, G., Alegria, M. (2010). *Ataque de Nervios* as a marker of social and psychiatric vulnerability: Results from the NLLAS. *International Journal of Social Psychiatry*, 56, 298-309. doi:10.1177/0020764008101636

Guarnaccia, P., & Martinez-Pincay, I. (2005). Culture-specific diagnosis and their relationship to mood disorders. In S. Loue & M. Sajatovic (Eds), *Diversity Issues in the diagnosis, treatment, and research of mood disorders*. New York, NY: Oxford University Press, pp.32- 53.

Guarnaccia, P., Martinez-Pincay, I., Alegria, M., Shrout, P., Lewis-Fernandez, R., & Canino, G. (2004). Assessing diversity among Latinos: Results from the NLAAS. *Hispanic Journal of Behavioral Sciences*, 29,4, 510-534.

Hadley, C., Galea, S., Nandi, V., Nandi, A., Lopez, G., Strongarone, S., & Ompad, D. (2008). Hunger and health among undocumented Mexican migrants in a US urban area. *Public Health Nutrition*, 11(2), 151-158.

Hall, M. T. (June 26, 2012). Escondido chief explains city's illegal immigration policy. San Diego Union Tribune. Retrieved September, 2015 from <http://www.sandiegouniontribune.com/news/2012/Jun/26/chief-aim-of-escondidos-illegal-immigration-polic/>

Handcock, M. S., Fellows, I. E., & Gile, K. J., (2014). RDS Analyst: Software for the analysis of Respondent-Driven Sampling data. Version 0.42. Retrieved September 2015 from <http://hpmrg.org>

Hass, G., Dutton, M., & Orloff, L. E. (2000). Lifetime prevalence of violence against Latina immigrants: Legal and policy implications. *International Review of Victimology*, 7,1-3, 93-113.

Heckathorn, D. D. (1997). Respondent Driven Sampling: A new approach to the study of hidden populations. *Social Problems*, 44,2, 174-199.

Heckathorn, D. D., Semaan, S., Broadhead, R.S., & Huges, J. J. (2002). Extensions of respondent-driven sampling: A new approach to the study of injection drug users aged 18-25. *AIDS and Behavior*, 6, 55-67.

Hill, L.E., & Johnson, H.P. (2011). Unauthorized immigrants in California: Estimates of counties. Public Policy Institute of California. Retrieved September 2015 from http://www.ppic.org/main/publication_show.asp?i=818

Hinton, D. E., & Kirmayer, L. J. (2013). Local responses to trauma: Symptoms, affect and healing. *Transcultural Psychiatry*, 50, 5, 607-621.

Hinton, D. E., & Lewis-Fernandez, R. (2011). The cross-cultural validity of posttraumatic stress disorder: Implications for DSM-5. *Depression & Anxiety*, 28, 9, 783-801.

Hobfoll, S. (2014). Resource caravans and resource caravan passages: A new paradigm for trauma responding. *Intervention, 12*, 21=32.

Hoe, M., & Brekke, J. (2009). Testing the cross-ethnic construct validity of the Brief Symptom Inventory. *Research On Social Work Practice, 19*(1), 93-103.

Hondagneu-Sotelo, P., & Avila, E. (1997). 'I'm here, but I'm there': The meanings of Latina transnational motherhood. *Gender & Society, 11*,5, 548-571.
doi:10.1177/089124397011005003

Hopwood, C.J., Flato, C.G., Ambwani, S., Garland, B.H., & Morey, L.C. (2009). A comparison of Latino and Anglo socially desirable responding. *Journal of Clinical Psychology, 65*,7, 769-780. doi: 10.1002/jclp.20584

Horton, S. (2009). A mother's heart is weighted down with stones :a phenomenological approach to the experience of transnational motherhood. *Culture, Medicine and Psychiatry, 33*,1, 21-40.

Immigration Policy Center. (2012). American Immigration Council: Latinos in America: A demographic overview. Washington, DC. Retrieved November 15, 2013, from <http://www.immigrationpolicy.org/just-facts/latinos-america-demographic-overview>

Infante, C., Idrovo, A. J., Sánchez-Domínguez, M. S., Vinhas, S., & González Vázquez, T. (2012). Violence committed against migrants in transit: Experiences on the northern Mexican border. *Journal of Immigrant and Minority Health, 14*,3, 449-459.
doi:10.1007/s10903-011-9489-y

Joseph, T. D. (2011). “My life was filled with constant anxiety”: Anti-immigrant discrimination, undocumented status, and their mental health implications for Brazilian immigrants. *Race and Social Problems, 3*,3, 170-181. doi:10.1007/s12552-011-9054-2

Lara, M., Gamboa, C., Kahramanian, M. I., Morales, L. S., & Hayes Bautista, D. E. (2005). Acculturation and Latino health in the United States: a review of the literature and its sociopolitical context. *Annual Review of Public Health, 26*, 367-397.

Lecrubier, Y., Sheehan, D., Weiller, E., Amorim, P., Bonora, I., Sheehan, K. H., Janavs, J., Dunbar, G. C. (1997). The M.I.N.I. International Neuropsychiatric Interview (M.I.N.I.) A Short Diagnostic Structured Interview: Reliability and Validity According to the CIDI. *European Psychiatry, 12*, 224-231.

Leeuw, E.D.; Hox, J.; Snijders, G. (1998). "The effect of computer-assisted interviewing on data quality. A review." In Blyth, B. *Market Research and Information Technology*. ESOMAR Monograph. pp. 173–198.

Marcelli, E.A., Holmes, L., & Estella, D. (2009). *(In)Visible (Im)Migrants: The Health*

and Socio-economic Integration of Brazilians in Metropolitan Boston. San Diego, CA: Center for Behavioral and Community Health Studies, San Diego State University.

McGuire, S., & Georges, J. (2003). Undocumentedness and liminality as health variables. *Advances in Nursing Science*, 26,3, 185-195.

Mestre, J.I., Rossi, P.C., & Torrens, T. (2013). The assessment interview: A review of structured and semi-structured clinical interviews available for use with Hispanic clients. In L.T. Benuto (Ed) *Guide to Psychological Assessment with Hispanics*. New York, NY: Springer, p. 33-48.

Meyer, I. H. (2003). Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: conceptual issues and research evidence. *Psychological bulletin*, 129, 5, 674.

Miles, M.B., & Huberman, A.M. (1994). *Qualitative data analysis* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Miranda, A. O., & Matheny, K. B. (2000). Socio-Psychological Predictors of Acculturative Stress among Latino Adults. *Journal of Mental Health Counseling*, 22,4, 306.

Montealegre, J. R., J.M. Risser, B.J. Selwyn, K. Sabin & S.A. McCurdy. 2011. HIV Testing Behaviors among Undocumented Central American Women in Houston, Texas. *Journal of Immigrant and Minority Health* 14(1):116-123

Mumford, D.B., Bavington, J.T., Bhatnagar, K.S., Hussain, Y., Mirza, S., & Naraghi, M.N. (1991). The Bradford Somatic Inventory: A multi-ethnic inventory of somatic symptoms reported by anxious and depressed patients in Britain and the Indo-Pakistan subcontinent. *The British Journal of Psychiatry*, 158, 379-396. doi:10.1192/bjp.158.3.379

Nalven, J. (1982). Health research on undocumented Mexicans. *The Social Science Journal*, 19, 2, 81-84.

O'Connor, K., Stoecklin-Marois, M., & Schenker, M.B. (2013). Examining *nervios* among immigrant male farmworkers in the MICASA study: Sociodemographics, housing conditions and psychosocial factors. *Journal of Immigrant & Minority Health*. Online. doi:10.1007/s10903-013-9859-8

Oquendo, M., Horwath, E., & Martinez, A. (1992). Ataques de nervios: proposed diagnostic criteria for a culture specific syndrome. *Culture, medicine and psychiatry*, 16(3), 367-376.

Ornelas, I., & Perreira, K. (2011). The role of migration in the development of depressive symptoms among Latino immigrant parents in the USA. *Social Science & Medicine*, 73,8, 1169-1177. doi:10.1016/j.socscimed.2011.07.002

Ortega, A. N., Rosenheck, R., Alegria, M., & Desai, R. A. (2000). Acculturation and the lifetime risk of psychiatric and substance use disorders among Hispanics. *The Journal of nervous and mental disease*, 188(11), 728-735.

Paris, R. (2008). "For the dream of being here, one sacrifices...": voices of immigrant mothers in a home visiting program. *The American Journal of Orthopsychiatry*, 78,2, 141-151. doi:10.1037/0002-9432.78.2.141

Passel, J., & Cohn, D. (2008, October). *Trends in Unauthorized Immigration; Undocumented Inflow Now Trails Legal Inflow*. Washington, DC: Pew Research Center. Retrieved November 15, 2013, from <http://www.pewhispanic.org/2008/10/02/trends-in-unauthorized-immigration/>

Peña, J.M., Garcini, L.M., Gutierrez, A.P., Ulibarri, M.D., & Klonoff, E.A. (in press). Traumatic Events and Symptoms among Mexican Deportees in a Border Community *Journal of Immigrant & Refugee Studies*.

Perez, W., Cortes, R. D., Ramos, K., & Coronado, H. (2010). "Cursed and blessed": Examining the socioemotional and academic experienced of undocumented Latina and Latino college students. *New Directions for Student Services*, 2010, 131, 35-51.

Perez, W., Espinoza, R., Ramos, K., Coronado, H. M., & Cortes, R. (2009). Academic resilience among undocumented Latino students. *Hispanic Journal of Behavioral Sciences*, 31, 2, 149-181.

Pew Research Center. (2013). *A nation of immigrants: A portrait of the 40 million, including 11 million unauthorized*. Washington, DC: January. Retrieved October 12, 2013, from <http://www.pewhispanic.org/2013/01/29/a-nation-of-immigrants/>

PPACA. (The Patient Protection and Affordable Care Act) 2010. United States (Pub. L. No. 111-148, 124 stat. 119).

Questionnaire Development System V. 3.0 (2014). Nova Research Company. <http://www.novaresearch.com/Products/index.cfm>

Rasmussen, A., Rosenfeld, B., Reeves, K., & Keller, A.S. (2007). The subjective experience of trauma and subsequent PTSD in a sample of undocumented immigrants. *Journal of Nervous Mental Disorders*, 195, 137-143.

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, 5, 548-553. doi:10.1037/0022-006X.58.5.548

Sabina, C., Cuevas, C. A., & Schally, J. L. (2013). The effect of immigration and acculturation on victimization among a national sample of Latino women. *Cultural Diversity and Ethnic Minority Psychology*, 19,1, 13-26. doi:10.1037/a0030500

Salganik, M. J. (2008). Variance estimation, design effects, and sample size calculations for respondent-driven sampling. *Journal of Urban Health*, 83, 98-112.

San Diego Association of Governments (SANDAG). (2015). Demographic and other data. Retrieved September 2015 from <http://www.sandag.org/index.asp?classid=26&fuseaction=home.classshom>

Sanchez, M., Dillon, F., Ruffin, B., & De La Rosa, Mario. (2012). The Influence of Religious Coping on the Acculturative Stress of Recent Latino Immigrants. *Journal of Ethnic & Cultural Diversity in Social Work*, 21,3, 171-194. doi:10.1080/15313204.2012.700443

Santos, S. J., Bohon, L. M., & Sánchez-Sosa, J. (1998). Childhood family relationships, marital and work conflict, and mental health distress in Mexican immigrants. *Journal of Community Psychology*, 26,5, 491-508.

Serdarevic, M., & Chronister, K.M. (2005). Research with immigrant populations: The application of an ecological framework to mental health research with immigrant populations. *The International Journal of Mental Health Promotion*, 7, 2, 24-34.

Siegel, S. & Castellan, N.J. (1988). *Non parametric statistics for the behavioral sciences* (2nd Ed.). New York: McGraw-Hill.

Sheehan, D. V., Lecrubier, Y., Sheehan, K. H., Janavs, J., Weiller, E., Keskiner, A., Schinka, J., Knapp, E., Sheehan, M. F., Dunbar, G. C. (1997). Reliability and Validity of the M.I.N.I. International Neuropsychiatric Interview (M.I.N.I.): According to the SCID-P and its reliability. *European Psychiatry*, 12, 232-241.

Sheehan, D. V., Lecrubier, Y., Sheehan, K. H., Amorim, P., Janavs, J., Weiller, E., Herqueta, T., Baker, R., Dunbar, G. C. (1998). The M.I.N.I. International Neuropsychiatric Interview (M.I.N.I.): The Development and Validation of a Structured Diagnostic Psychiatric Interview. *Journal of Clinical Psychiatry*, 59, 20, 22-33.

Sluzki, C. (1979). Migration and family conflict. *Family Process*, 18(4), 379-390. doi:10.1111/j.1545-5300.1979.00379.x

Sullivan, M., & Rehm, R. (2005). Mental health of undocumented Mexican immigrants: a review of the literature. *ANS. Advances in Nursing Science*, 28,3, 240-251.

Tyldum, G., & Johnston, L. G. (2014). Applying Respondent Driven Sampling to Migrant Populations: Lessons from the Field. Palgrave MacMillan

U.S. Census Bureau. (2012). 2012 Census Data. Retrieved October 14, 2013 from <http://2012.census.gov/2012census/>

U.S. Department of Health and Human Services. Office of Disease Prevention and Health Promotion. Healthy People 2020. Washington, DC. Retrieved November 29, 2013, from <http://www.healthypeople.gov/2020/topicsobjectives2020/default.aspx>

VanDuijl, M., Nijenhuis, E., Komprose, I. H., Germaat, H.B., & deJong, J. T. (2010). Dissociative symptoms and reported trauma among patients with spirit possession and matched healthy controls in Uganda. *Culture, Medicine and Psychiatry*, 34, 2, 380-400.

Volz, E., & Heckathorn, D. D. (2008). Probability based estimation theory for respondent driven sampling. *Journal of Official Statistics*, 24, 79.

Vromans, L., Schweitzer, R.D., & Brough, M. (2012). The Multidimensional Loss Scale: Validating a cross-cultural instrument for measuring loss. *Journal of Nervous Mental Disorders*, 200, 349-357. doi:10.1097/NMD.0b013e31824cc458

Wallace, S.P., Torres, J.M., Norabi, T.Z., & Pourat, N. (2013). Undocumented and Uninsured: Barriers to Affordable Care for Immigrant Populations. UCLA Center for Health Policy Research. <http://www.commonwealthfund.org/publications/fund-reports/2013/aug/undocumented-and-uninsured>. Accessed May 25, 2015.

Walter, N., Bourgois, P., & Loinaz, H. (2004). Masculinity and undocumented labor migration: Injured Latino day laborers in San Francisco. *Social Science & Medicine*, 59,6, 1159-1168. doi:10.1016/j.socscimed.2003.12.013

Warner, J. A. (2006). The social construction of the criminal alien in immigration law, enforcement practice and statistical enumeration: Consequences for immigrant stereotyping. *Journal of Social and Ecological Boundaries*, 1, 56-80.

Weiss, M. (1997). Explanatory Model Interview Catalog (EMIC): Framework for comparative study of illness. *Transcultural Psychiatry*, 34, 205-263. doi:10.1177/136346159703400204.

World Health Organization. (2010). Health of Migrants: The way forward. Retrieved November 14, 2013 from http://www.who.int/hac/events/consultation_report_health_migrants_colour_web.pdf

Zhang, S.X. (2012). *Trafficking of migrant laborers in San Diego County: Looking for a hidden population*. San Diego, CA: San Diego State University.

Zhang, W., Hong, S., Takeuchi, D.T., & Mossakowski, K.N. (2012). Limited English proficiency and psychological distress among Latinos and Asian Americans. *Social Science & Medicine*, 75, 6, 1008-1014.

FIGURES

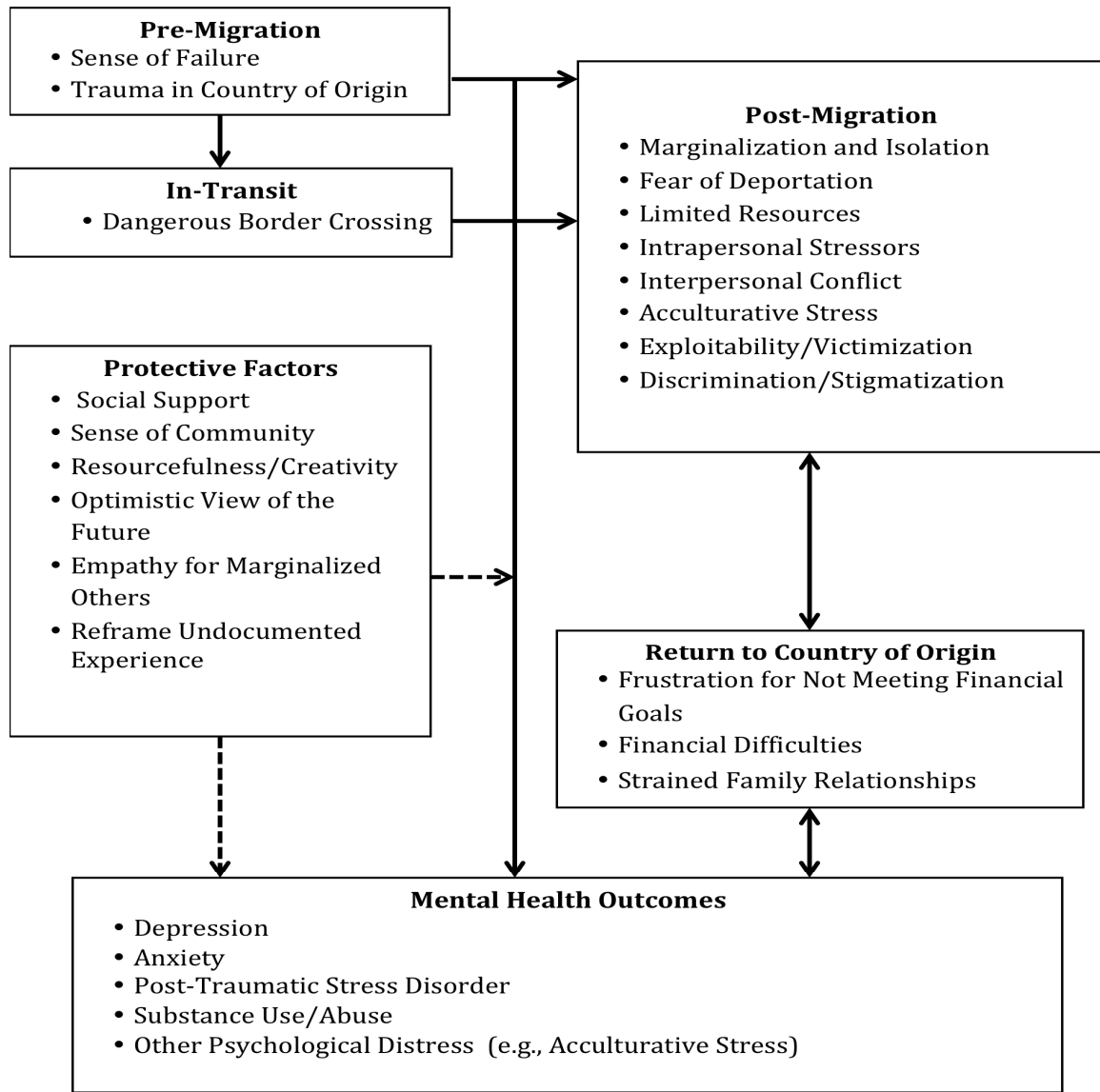


Figure 1. Migration related stressors influencing the mental health of ULIs in the U.S.



Figure 2. The Socio-ecological Model of Health.

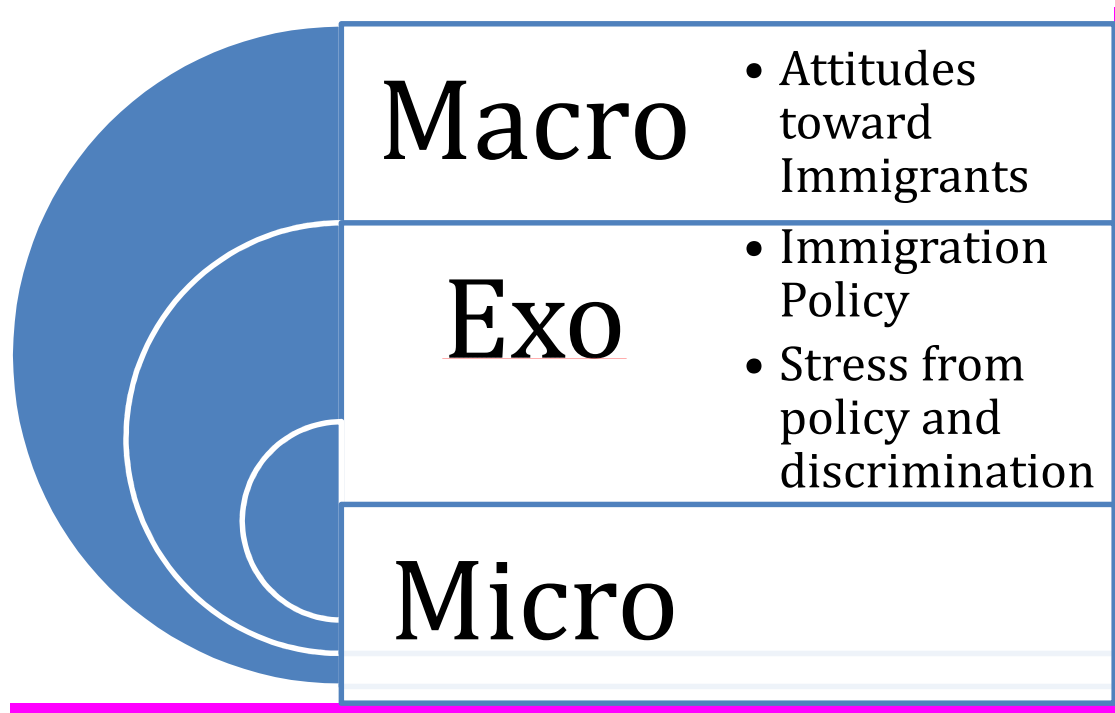


Figure 3. The Minority Stress Model.

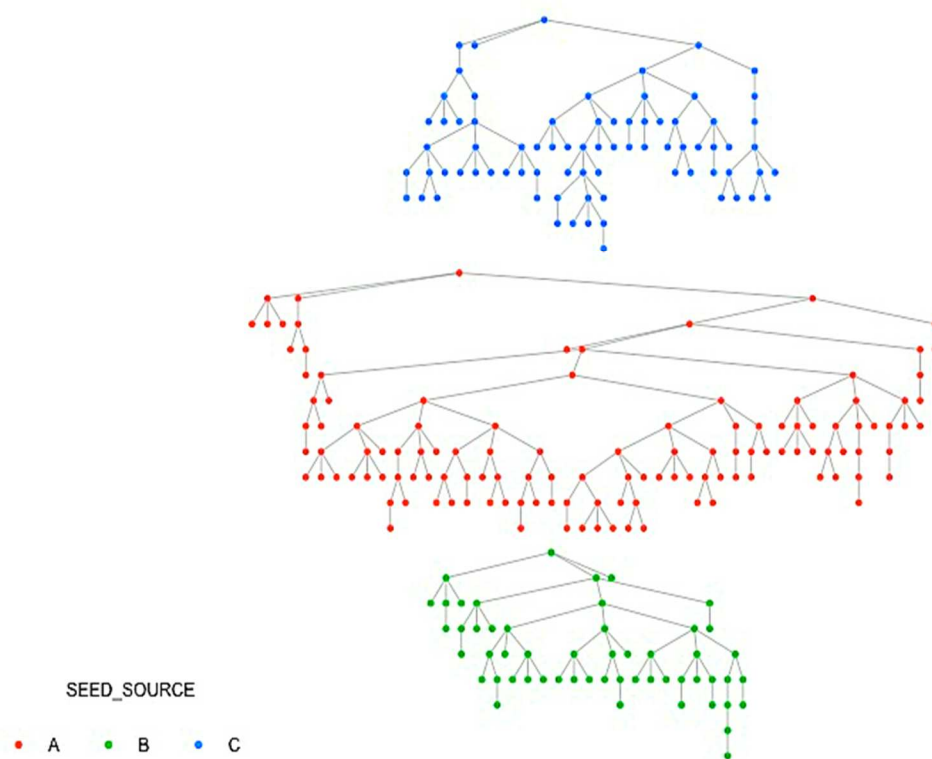
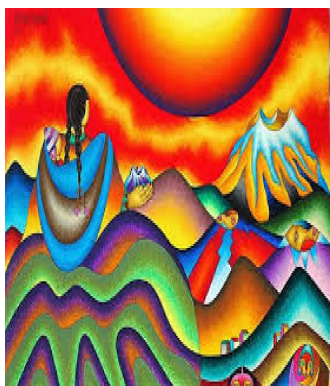


Figure 4. Recruitment tree.

Invitación # _____

PROYECTO VOCES



Dirección: 964 N. Escondido Blvd, Escondido

Días: Lunes, Martes, Miércoles Horas: Por cita
Días: Jueves, Viernes Horas: 10 A.M. to 7 P.M.
Días: Sábado, Domingo Horas: Por cita

Visítenos o llámenos para hacer una cita

Teléfono: (619) 371-6884

Pregunte por Luz

Citas disponibles todo el día

**POR FAVOR
TRAIGA ESTA INVITACIÓN
PARA PODER PARTICIPAR**

Fecha de expiración: ____ / ____ / 2014

PROYECTO VOCES

Por favor, no olvide traer con usted ésta invitación a su entrevista.
Si califica para participar, recibirá \$ 30.00 en compensación
por su tiempo al completar la entrevista.

Esta invitación NO puede ser aceptada si:

- Su visita es después de la fecha de expiración
- El número de invitación no se ve porque la invitación ha sido dañada.
- Usted ya participó anteriormente en esta entrevista.

NO OLVIDE TRAER ESTA INVITACIÓN CON ÚSTED

Si tiene cualquier pregunta ó quiere hacer una cita,
favor de llamar a Luz al (619) 371-6884

Gracias por su ayuda!

Figure 5. Recruitment coupon for RDS study.

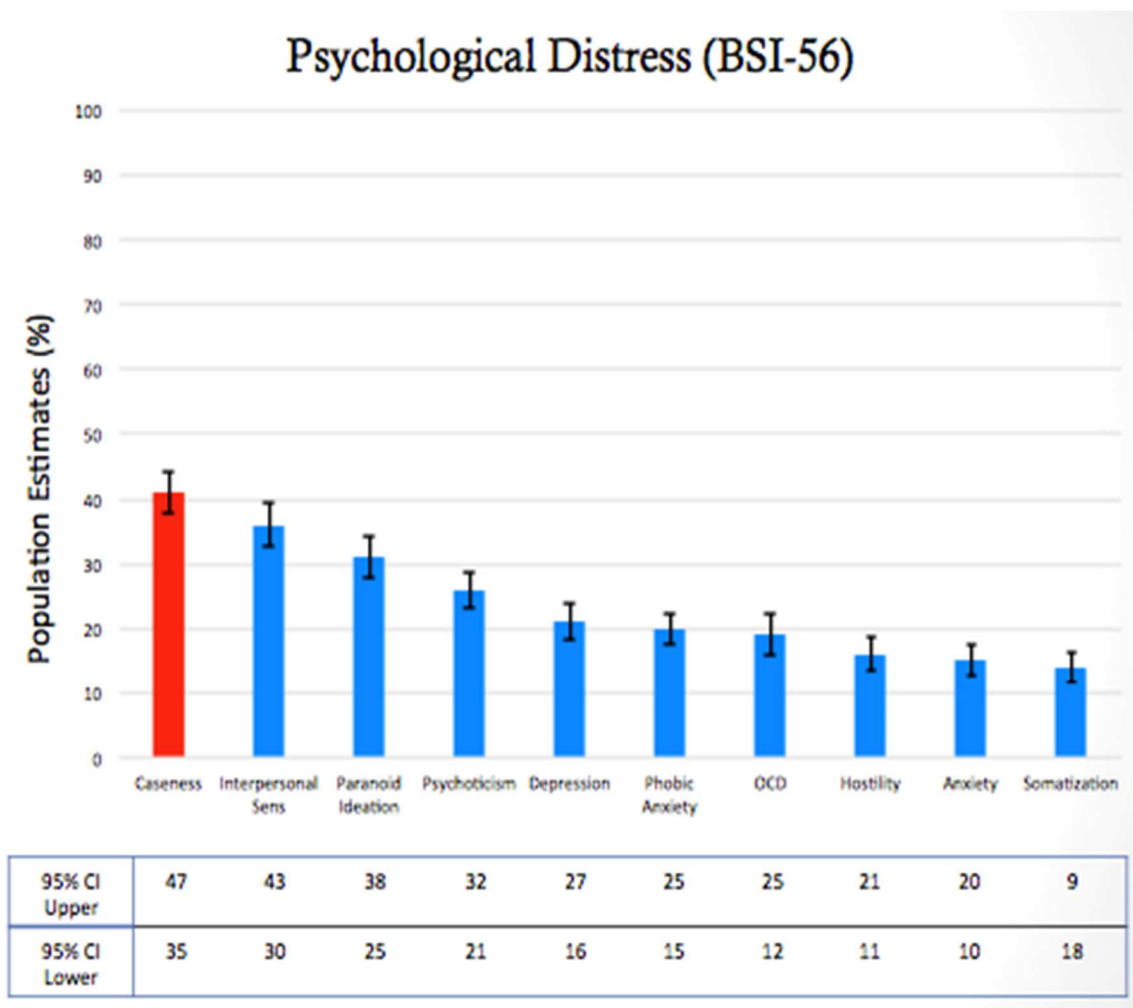


Figure 6. Psychological distress among UMIs in RDS study.

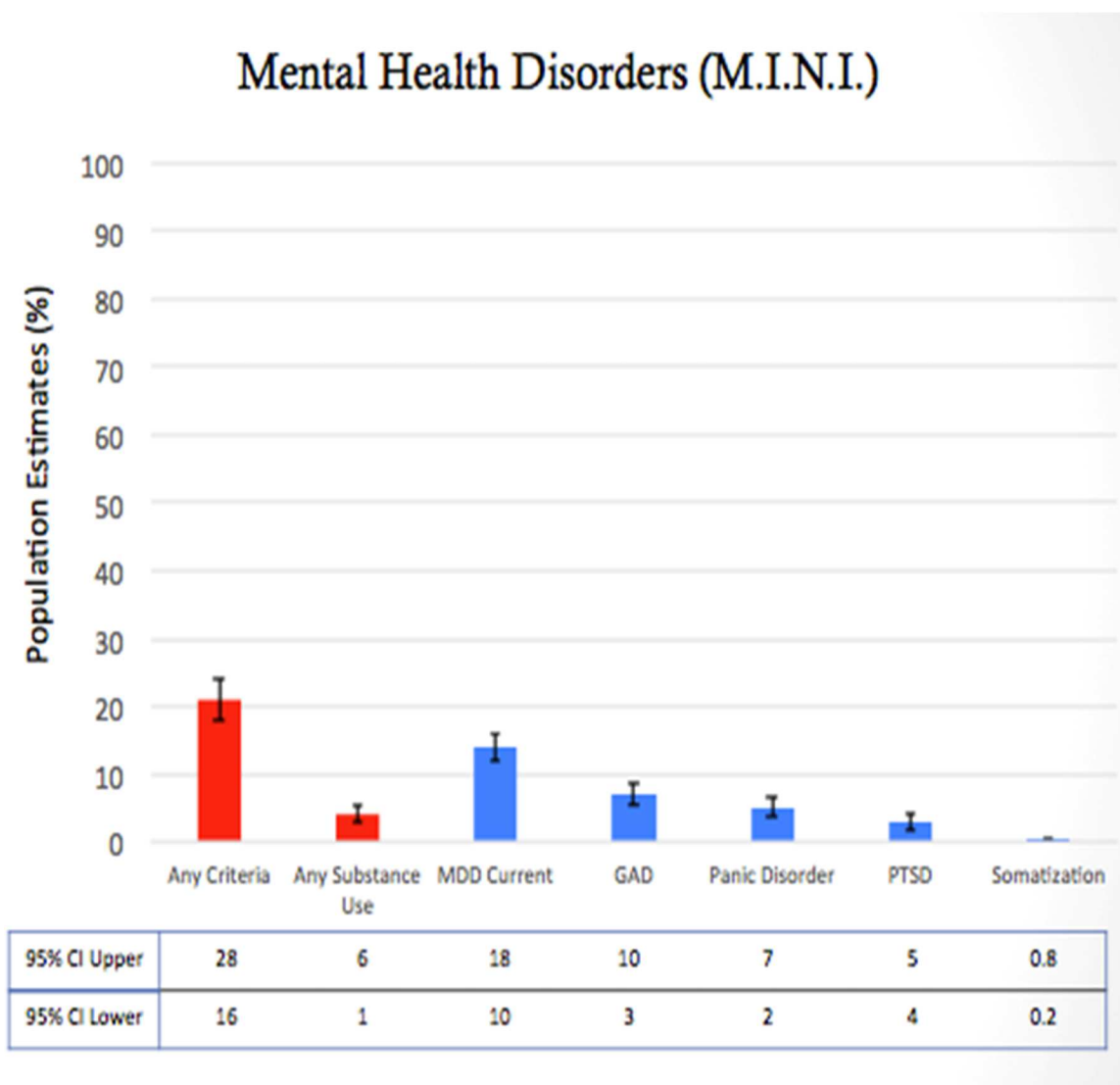


Figure 7. Mental health disorders among UMIs in RDS study.

Intended Research Model to Improve Quality



Figure 8. Model to improve quality of health research among UMIs.

TABLES

Table 1. Seed characteristics ($N=3$)

	Seed 1	Seed 2	Seed 3
Sex	Female	Female	Male
Age	52	27	37
Age category	46 – 55 years	26 – 35 years	36 to 45 years
Marital status	Single/Divorced	Living as married	Married
Education	$\geq$ High school	< High School	$\geq$ High school
Work	Part-time	Not working	Full time
Type of work	Sales	Homemaker	Construction
Household income	$\leq$ \$500	\$2001 - \$3000	$\geq$ \$3001
Household size	2	5	3
English proficiency	Little	None	Good
Age of arrival to U.S.	27 years	15 years	23 years
Age of arrival category	21 to 30 years	11 to 15 years	21 to 30 years
Years living in U.S.	25 years	12 years	14 years
Years in U.S. category	> 20 years	11 to 20 years	11 to 20 years

Table 2. Measures used in the assessment of *Nervios*

Construct	Criteria	Measure	Scoring/Criteria
1. Cultural Syndrome <i>Nervios</i>	a. Acknowledgement	Explanatory Model	
		Interview Catalogue (EMIC)	
		1. Have you ever suffered from <i>Nervios</i> ?	No = 0; Yes = 1
		2. Do you suffer from <i>Nervios</i> now or in the past 12 months?	No = 0; Yes = 1
		Bradford Somatic Inventory (^a BSI)	Total score $\geq$ 14
	b. Somatic symptoms	Brief symptom inventory (BSI-53)	GSI $\geq$ 63 or T _{2DIM} $\geq$ 63
	c. Psychological distress	Adapted from NLAAS:	
		How much <i>nervios</i> interferes with	Rating Scale: 0= None
	d. Functional limitation	1. Household chores	10= High
		2. Quality of work	Criteria $\geq$ 5
		3. Social life/relationships	

Table 2: Continued

Construct	Criteria	Measure	Scoring/Criteria
1. Cultural Idiom		Explanatory Model	
<i>Nervios</i>		Interview Catalogue (EMIC)	
	a. <i>Nervios</i> as a trait	1. Are you a nervous person?	No = 0; Yes = 1
	b. Life time Trait	2. Have you been nervous since childhood?	No = 0; Yes = 1
	c. Cultural expression	How do you describe your experiencing of <i>Nervios</i> ?	Qualitative
3. Cultural Explanation			Qualitative
<i>Nervios</i>	a. Causal explanation	What the most probable cause of your <i>Nervios</i> ?	

Note. NLAAS= National Latino and Asian American Study

Table 3. Measures used in the assessment of *Ataque de Nervios*

Construct	Criteria	Measure	Scoring/Criteria
1. Cultural		EMIC	
Syndrome		1. Have you ever had an <i>Ataque de Nervios</i> ?	
	a. Acknowledgement	2. Have you had an <i>Ataque de Nervios</i> within the past 12 months?	No = 0; Yes = 1
	b. Frequency	1. How many <i>Ataque de Nervios</i> had you had within the past 12 months?	No = 0; Yes = 1
		NLAAS <i>Ataque de Nervios</i> Module (S)	Frequency
	c. Distress symptoms	Adapted from NLAAS: How much <i>Ataque de Nervios</i> interferes with:	No = 0; Yes = 1
	d. Functional limitation	1. Household chores 2. Quality of work 3. Social life/relationships	Rating Scale: 0= None 10= High Criteria ≥ 5
2. Cultural		NLAAS <i>Ataque de Nervios</i> Module (C)	No = 0; Yes = 1
Explanation	a. Causal explanation		
<i>Ataque de Nervios</i>			

Table 4. Measures used in the assessment of *Ulysses Syndrome*

Construct	Criteria	Measure	Scoring/Criteria
1. Contextual Syndrome	a. Distress due to context	How much stress do you have for not having a visa?	Rating Scale: 0= None 10= High Criteria ≥ 5
	b. Somatic symptoms	Bradford Somatic Inventory (^a BSI)	Total score ≥ 14
	c. Psychological distress	Brief symptom inventory (BSI-53)	GSI ≥ 63 or T _{2DIM} ≥ 63
	d. Effects of context on identity	Adapted from DSM-V CFI: 1. Does not having a visa affects or changes how you feel/think about yourself?	No = 0; Yes = 1

Table 4: Continued

Construct	Criteria	Measure	Scoring/Criteria
1. Contextual Idiom of Distress	a. Effect of context on identity	Adapted from DSM-V CFI: 1. In what way does not having a visa changes how you think about yourself?	Qualitative
	b. Contextual expression of distress	Adapted from DSM-V CFI: 1. How would you describe your experience living in the U.S. without a visa? 2. What worries/troubles you most about living in the U.S. without a visa?	Qualitative No = 0; Yes = 1
Contextual Considerations	a. Contextual effect of migration-related loss	Multidimensional Loss Scale (MLS) a. Migration-related losses across 7 domains b. Distress associated to losses per domain	Mean distress score

Table 5. Lifetime prevalence of mental health disorders among Latinos (Alegría et al., 2008)

Mental Disorder	^a Non-Latino	^b US Latino (<i>N</i> = 2,554)		
	US-born	US-born	Foreign-born	Mexican-Origin
	Non-Latino	Latinos	Latinos	Foreign-born
	White			
	(<i>N</i> = 4,088)	(<i>n</i> = 924)	(<i>n</i> = 1,630)	(<i>n</i> = 498)
	%	%	%	%
Any MH disorder	52.5	37.1	24.9	23.9
MDD	26.9	18.6	13.4	11.8
GAD	10.0	4.4	4.7	4.8
Panic Disorder	6.0	4.5	3.4	3.4
PTSD	9.5	5.9	4.0	3.5
Any SU Disorder	26.4	20.4	7.0	7.0
Alcohol Abuse	12.1	9.3	3.5	3.5
Alcohol	10.1	6.9	2.8	2.8
Dependence				
Drug Abuse	7.7	6.1	2.8	2.0
Drug Dependence	6.4	5.1	1.7	1.7

Note. MDD: Major Depressive Disorder; GAD: Generalized Anxiety Disorder; PTSD:

Post-Traumatic Stress Disorder; SU: Substance Use.

^aData drawn from the 2003 National Comorbidity Survey Replication (NCS-R)

^bData drawn from the 2003 National Latino and Asian American Study (NLAAS)

Table 6. RDS assumptions

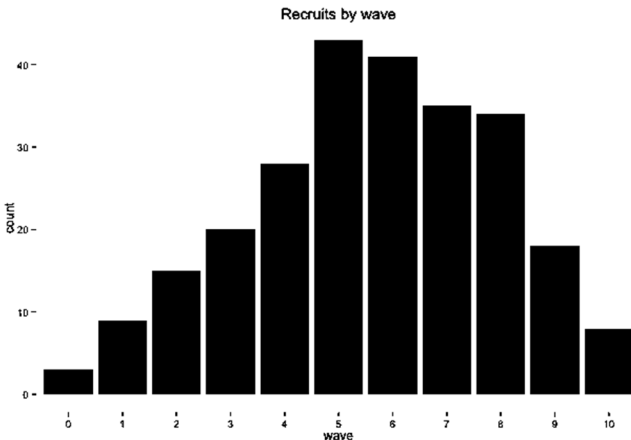
RDS Assumption	Diagnostics	
1. Reciprocity of ties	1.6% strangers to the recruiter	
	2.4% not close to the recruiter	
	5.4% has contact with recruiter < than once a month	
	1.6% know recruiter for ≤ a month	
2. Sustainability of chain referral process	Number of referral/recruitment waves: 10	
	Recruits by wave:	
		
3. Sampling occurs with replacement	Population Estimate	Sample size
	$N = 22,000$	$n = 254$

Table 6: Continued

RDS Assumption		Diagnostics
4. Random recruitment	1. Recruitment homophily ^a	2. Population homophily ^a
	Sex = 1.02	Sex = 1.01
	Age = 1.40*	Age range = 0.93 - 1.72
	^b Education = 1.1	^a Education = 1.17
	^b Employment = 1.02	^a Employment = 1.11
	Income = 1.12	Income ranged = 0.81 -1.17
	Marital status = 1.13*	Marital status = 1.22
	Parental status = 1.03	Parental status = 0.90
	English = 1.10	English range = 0.95 - 1.35
	Region of origin = 1.48*	Region of origin range =1.21 - 1.54
	Age of arrival = 1.34*	Age of arrival range = 0.97 - 1.25
	Time in U.S. = 1.07	Time in U.S. range = 0.95 - 1.08
	Place live most life = 1.02	Place of living range = 0.98 - 1.32
	Mixed status family = 1.14*	Mixed status family = 1.28

Table 6: Continued

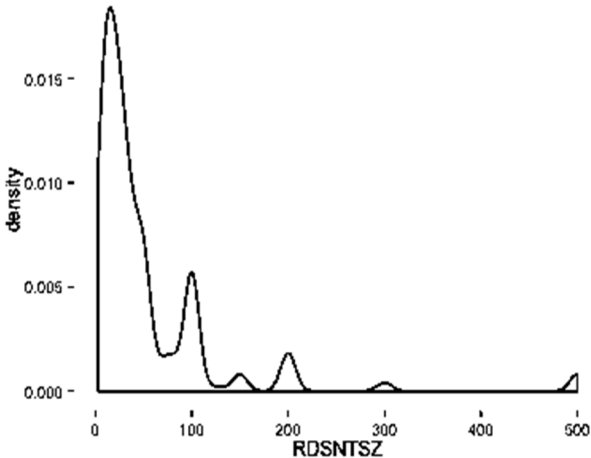
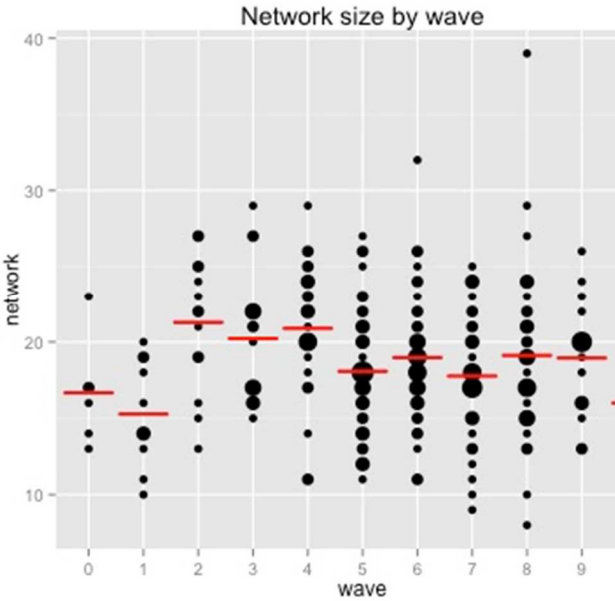
RDS Assumption	Diagnostics
5. Size of social network	Median = 30; Mean = 53.4 (SD = 75.5) Min. = 3 (<i>n</i> = 1); Max. = 500 (<i>n</i> = 4) Density plot for size of social network  

Table 6: Continued

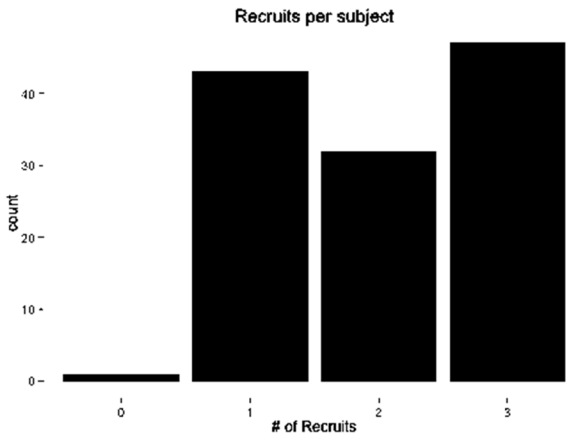
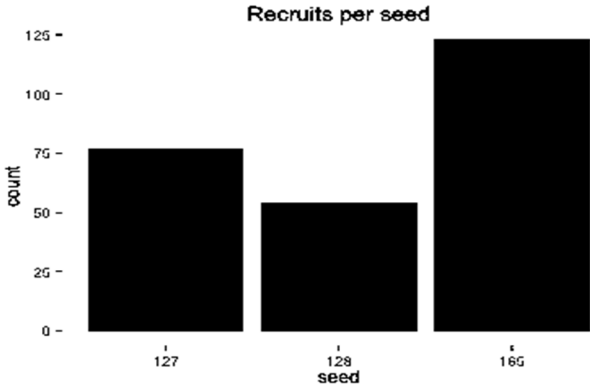
RDS Assumption	Diagnostics																		
6. Differential recruitment	Recruits per subject  <table border="1"><thead><tr><th># of Recruits</th><th>count</th></tr></thead><tbody><tr><td>0</td><td>1</td></tr><tr><td>1</td><td>43</td></tr><tr><td>2</td><td>32</td></tr><tr><td>3</td><td>48</td></tr></tbody></table> Recruits per seed  <table border="1"><thead><tr><th>seed</th><th>count</th></tr></thead><tbody><tr><td>127</td><td>75</td></tr><tr><td>128</td><td>55</td></tr><tr><td>166</td><td>120</td></tr></tbody></table>	# of Recruits	count	0	1	1	43	2	32	3	48	seed	count	127	75	128	55	166	120
# of Recruits	count																		
0	1																		
1	43																		
2	32																		
3	48																		
seed	count																		
127	75																		
128	55																		
166	120																		

Table 6: Continued

RDS Assumption	Diagnostics
7. Independence from seeds	Example of convergence/equilibrium plot (sex)

Convergence plot of SEX=Male

This line plot shows the estimated proportion of males over 250 observations. The y-axis is labeled 'Estimated SEX=Male' and ranges from 0.00 to 1.00. The x-axis is labeled '# of Observations' and ranges from 0 to 250. A solid black line starts at approximately 0.35, drops sharply to about 0.25 by the 10th observation, and then gradually rises to stabilize around 0.30. A horizontal dashed line is drawn at approximately 0.30.

SEX=Male

This plot shows the convergence of three different seeds (127, 128, and 165) for the estimate of the proportion of males. The y-axis is labeled 'Estimate' and ranges from 0.00 to 1.00. The x-axis is labeled '# of Observations' and ranges from 0 to 125. A legend on the right indicates the colors for each seed: Seed 127 is blue, Seed 128 is orange, and Seed 165 is green. All three lines start at different points (Seed 127 at ~0.95, Seed 128 at ~0.25, Seed 165 at ~0.05) and converge to a common value of approximately 0.30 by the 50th observation.

* $p < .05$

^aValues = 1 denote random recruitment; values > 1 denote homophily; values < 1 denote heterophily; ^bVariables were dichotomized for parsimony

Table 7. Characteristics of participants in focus groups during formative research

Factor	Focus Groups = 7 (<i>n</i> = 20)
Sex	
% Women	74
% Men	26
Age (<i>M, SD</i>)	43.5, 12.5
Marital Status	
% Single	21
% Married/all other	79
Education	
% Below HS	54
% HS and above	46
Employment	
% Working	49
Birth Abroad	
% Yes (Mexico)	97
Age of Arrival to the U.S. (<i>M, SD</i>)	22.2, 9.1
Years in the U.S. (<i>M, SD</i>)	21.4, 9.9
Knowledge of undocumented community	
% Social network that is undocumented	59%
Days per week participant interacts with UIs (<i>M, SD</i>)	6, 1.6

Table 8. Characteristics of key informants during formative research

Factor	(<i>n</i> = 15)
Sex	
% Women	50
% Men	50
Age (<i>M, SD</i>)	42.0, 12.9
Marital Status	
% Single	35
% Married/all other	65
Education	
% Below HS	15
% HS and above	85
Key informant role/work	
% Research	20.0
% Health service provider (CHW)	6.7
% Mental health provider	20.0
% Spiritual/religious leader	20.0
% Indigenous leader	6.7
% Legal/Political expert	13.3
% Employer	6.7
% Community activist	6.7

Table 8: Continued

Factor	(<i>n</i> = 15)
Knowledge of undocumented community	
Years serving the undocumented community (<i>M</i> , <i>SD</i>)	13, 11
Days per week informant interacts with UIs (<i>M</i> , <i>SD</i>)	5, 1.5
% of people served by informant that is UI	73%

Table 9. Variations in mental health symptom presentation across ULI subgroups

Subgroups	Differences
Age	> Disorderly/externalizing behaviour among younger UIs > Somatization among older UIs
Gender	> Depression symptoms among women > Anxiety symptoms among men Mental health provider: <i>“It was more generalized anxiety among the men because as “good men” they feel that they have to provide for their families and they face many obstacles for being undocumented, so they felt they had no control . . . for women, it's more like hopelessness . . . It's more like depression.”</i>
Length of time in U.S.	> Externalizing symptoms with longer time in U.S. > Internalizing symptoms with less time in U.S. Legal expert: <i>“The longer they are here the more they start to have externalizing problems like physical aggression, gang involvement and things like that. The ones that are more recent tend to be more internalizing anxiety or depression.”</i>
Age of arrival to U.S.	> Identity conflict with younger age of arrival to the U.S.
Community setting	> Anxiety symptoms in anti-immigrant communities > Depression symptoms in isolated communities

Table 9: Continued

Subgroups	Differences
Country of origin	> Trauma-related symptoms among UIs from Central America
Immigration journey	> Trauma-related symptoms among UIs who crossed undocumented versus those overstaying a visa.

Table 10. Participant characteristics for pilot test study

Factor	Sample ($n = 50$)	
	n	%
Socio-demographics		
Sex		
Women	25	50.0
Men	25	50.0
Age (years)		
18 – 25	5	10.0
26 – 35	17	34.0
36 – 45	18	36.0
≥ 46	10	20.0
Education		
None	3	6.0
Elementary/MS	31	62.0
HS (no graduation)	10	20.0
$\geq$ HS graduate	6	12.0
Employment		
Not working	38	76.0
Working	12	24.0

Table 10: Continued

Factor	Sample	
	<i>(n = 50)</i>	
	<i>n</i>	%
Marital Status		
Married	23	46
Single	27	54
Time in U.S.		
≤ 10 years	17	34
11 – 20 years	17	34
> 20 years	16	32
Place spent most of life		
Country of origin	32	64
U.S.	14	28
Both	4	8

Table 11. Participant characteristics for RDS study

Factor	Sample		Population		
	(n = 248)		(N = 22,000)		
	n	%	%	95% CI	
Socio-demographics					
Sex					
Women	172	69.4	69.4	63.2	75.5
Men	76	30.6	30.6	24.5	36.8
Age (years)					
18 – 25	35	14.1	14.1	8.9	19.3
26 – 35	61	24.6	25.5	19.3	31.8
36 – 45	103	41.5	40.2	31.9	48.2
≥ 46	49	19.8	20.3	14.6	26.0
Education					
None	14	5.6	5.7	2.5	8.9
Elementary/MS	147	59.3	57.7	50.1	65.1
HS (no graduation)	31	12.5	12.9	8.3	17.5
≥ HS graduate	56	22.6	23.8	17.7	29.8
Employment					
Not working	121	48.8	48.1	41.1	54.9
Cleaning/maintenance	55	22.2	22.1	16.0	28.2
Construction	29	11.7	11.4	7.4	15.4

Table 11: Continued

Factor	Sample (<i>n</i> = 248)		Population (<i>N</i> = 22,000)		
	<i>n</i>	%	%	95% CI	
Other	43	17.3	18.4	12.7	21.0
Monthly house income					
≤ \$500	19	7.7	8.0	4.2	11.7
\$501 - \$1000	33	13.3	13.7	9.5	18.1
\$1001 - \$2000	141	56.9	55.8	48.7	62.9
\$2001 - \$3000	44	17.7	18.7	12.8	24.4
≥ \$3000	11	4.4	3.9	1.3	6.4
Household size					
1 person	18	7.3	7.8	4.4	11.2
2 people	20	8.1	8.1	4.4	11.8
3 to 5 people	157	63.3	62.5	55.5	69.6
≥ 6 people	53	21.4	21.6	15.9	27.2
Marital status					
Married	169	68.1	68.0	61.1	74.8
Single	79	31.9	32.0	25.2	38.9
Parental status					
No children	35	14.1	14.7	9.5	19.9
≥ 1 child	213	85.9	85.3	80.1	90.5

Table 11: Continued

Factor	Sample		Population		
	(n = 248)		(N = 22,000)		
	n	%	%	95% CI	
English proficiency					
None	53	45.3	46.9	38.5	55.4
A little	41	35.0	33.4	26.3	40.5
Good/excellent	23	19.7	19.7	11.9	27.5
Immigration Factors					
Region of origin					
Northern Mexico	48	19.4	18.3	11.0	25.7
Central Mexico	133	53.6	55.6	47.4	63.8
South Mexico	67	27.0	26.1	18.4	33.8
Age of arrival to U.S.					
0 – 10 years	29	11.8	12.5	6.8	18.2
11 – 20 years	90	36.6	36.6	29.5	43.8
21 – 30 years	90	36.6	35.5	27.7	43.3
31 – 40 years	27	11.0	11.1	6.6	15.6
> 40 years	10	4.1	4.2	0.8	7.6
Time in U.S.					
≤ 10 years	55	22.4	21.8	16.1	27.4
11 – 20 years	125	50.8	50.8	44.7	57.0

Table 11: Continued

Factor	Sample (n = 248)		Population (N = 22,000)		
	n	%	%	95% CI	
> 20 years	66	28	27.5	20.5	34.3
Place spent most of life					
Mexico	162	65.6	65.5	60.6	70.4
U.S.	76	30.8	30.6	26.4	34.8
Both	9	3.6	3.9	1.2	6.7
Mixed status family					
Yes	180	72.6	71.2	64.5	77.9
No	68	27.4	28.8	22.1	35.5
Household size outside					
U.S.					
None	113	45.6	46.3	39.1	53.3
1 person	53	21.4	20.4	14.9	25.9
2 people	50	20.2	20.2	14.8	25.8
≥ 3 people	32	12.9	13.0	8.2	17.9
Deportation					
Yes	53	21.4	20.9	15.8	26.3
No	195	78.6	79.1	73.7	84.2

Note. ^aOther type of work includes farming, factory production, food industry and sales

Table 12. Population estimates for psychological distress among UMIs ($N = 22,000$)

Factor	Population ($N = 22,000$)										
	Global Indices		Symptom Dimensions								
	Caseness	GSI	SOM	O-C	I-S	DEP	ANX	HOS	PHOB	PAR	PSY
	%	%	%	%	%	%	%	%	%	%	%
Total	41.0	22.4	13.9	18.6	36.5	21.2	15.1	15.8	20.4	31.1	26.2
Sex											
Women	36.4*	19.8	11.7	18.8	35.5	18.1	12.9	15.3	20.1	28.5	24.7
Men	51.4	28.0	19.0	18.2	38.5	28.4	20.2	17.3	21.1	36.9	29.9
Age (years)											
18 – 25	63.0***	37.7*	23.6*	32.8*	49.5*	33.0	24.3	29.5*	35.7	46.2	43.5*
26 – 35	25.5	14.9	4.1	14.3	21.9	16.0	8.0	10.5	16.3	26.5	15.6
36 – 45	38.3	20.1	15.7	13.8	37.6	17.2	18.4	12.8	21.2	27.5	23.7
≥ 46	50.7	25.3	16.2	23.5	43.2	27.6	11.4	19.1	13.1	33.4	32.7

Table 12: Continued

Factor	Population ($N = 22,000$)										
	Global Indices		Symptom Dimensions								
	Caseness	GSI	SOM	O-C	I-S	DEP	ANX	HOS	PHOB	PAR	PSY
	%	%	%	%	%	%	%	%	%	%	%
Education											
None	29.9	11.7	10.8	16.7	24.5	22.1	6.3	11.8	11.2	37.6	25.9
Elementary/MS	38.3	21.8	13.3	14.7	36.8	17.0	15.7	15.6	20.0	28.7	22.2
HS (no graduation)	43.5	23.7	16.3	22.1	28.0	21.8	13.5	14.8	20.5	30.4	30.7
$\geq$ HS graduate	48.6	25.3	14.8	26.3	42.9	30.9	16.5	17.5	23.2	35.5	33.7
Employment											
Not working	35.7	19.2	14.3	17.2	31.1	18.7	14.1	16.9	23.5	27.8	23.4
Working	45.8	26.2	13.7	19.8	41.3	23.6	16.0	14.8	17.6	34.0	28.7
Marital status											
Single	49.8*	32.9*	18.2	25.3	40.5	30.4**	17.8	17.7	25.3	38.6*	34.0*
Married	36.9	17.8	11.9	15.5	34.5	16.9	13.9	14.9	18.0	27.5	22.6

Table 12: Continued

Factor	Population (<i>N</i> = 22,000)										
	Global Indices		Symptom Dimensions								
	Caseness	GSI	SOM	O-C	I-S	DEP	ANX	HOS	PHOB	PAR	PSY
	%	%	%	%	%	%	%	%	%	%	%
Time in U.S.											
≤ 10 years	31.7	20.2	10.6	15.7	29.8	18.6	13.5	15.0	18.5	29.9	21.9
11 – 20 years	44.4	22.3	13.8	22.1	39.2	23.2	16.3	16.9	21.2	29.2	29.6
> 20 years	43.1	24.7	17.2	14.9	37.6	20.1	14.5	14.7	21.1	36.5	22.9
Place spent most life											
Mexico	38.4	18.3	13.2	17.0	34.0	18.8	13.4	12.5*	21.1	25.5*	24.3
U.S.	46.8	28.8	16.4	23.0	41.3	26.4	19.9	25.1	20.5	40.6	32.5
Both	44.0	33.3	9.1	13.0	44.0	24.3	9.2	0.0	9.5	54.1	12.9

Note. GSI: General Severity Index; SOM: Somatization; O-C: Obsessive Compulsive; I-S: Interpersonal Sensitivity; DEP:

Depression; ANX: Anxiety; HOS: Hostility; PHOB: Phobic Anxiety; PAR: Paranoid Ideation; PSY: Psychoticism.

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 13. Population estimates for mental health disorders among UMIs (*N* = 22,000)

Factor	Any Mental	Mental Health Disorders					Any SU	Substance Use Disorders			
	Disorder						Disorder				
		MDD	SOM	PD	GAD	PTSD		ALC- A	ALC- D	DRG- A	DRG- D
	%	%	%	%	%	%	%	%	%	%	%
Total	21.7	14.4	0.3	4.6	6.6	3.0	3.7	1.6	1.3	0.8	0.4
Sex											
Women	21.5	8.9	0.0	4.2	7.5	1.5	7.0	1.3	3.0	2.6	1.3
Men	21.8	16.8	0.4	4.8	6.2	3.6	2.2	1.7	0.6	0.0	0.0
Age (years)											
18 – 25	34.5*	18.7	0.0	11.1	7.0	7.8	11.4	2.8	5.5	5.7**	0.0
26 – 35	10.7	6.3	0.0	1.9	4.6	0.0	4.5	2.9	0.0	0.0	1.5
36 – 45	21.8	17.9	0.7	4.3	6.0	2.8	1.4	0.0	1.4	0.0	0.0
≥ 46	26.4	14.6	0.0	4.3	9.9	3.6	1.9	1.9	0.0	0.0	0.0

Table 13: Continued

Factor	Any Mental Disorder	Mental Health Disorders					Any SU Disorder	Substance Use Disorders			
		MDD	SOM	PD	GAD	PTSD		ALC-A	ALC-D	DRG-A	DRG-D
	%	%	%	%	%	%	%	%	%	%	%
Education											
None	33.3	20.6	0.0	6.2	12.7	0.0	0.0	0.0	0.0	0.0	0.0
Elementary/MS	17.8	11.9	0.5	3.0	4.9	3.2	3.1	2.0	0.5	0.0	0.7
HS (no graduation)	26.4	15.6	0.0	3.1	10.4	5.1	5.7	0.0	2.2	3.4	0.0
≥ HS graduate	25.9	18.1	0.0	9.1	7.0	1.9	4.9	1.7	3.3	1.5	0.0
Employment											
Not working	22.5	16.6	0.0	4.4	5.2	2.7	2.5	1.7	0.9	0.0	0.0
Working	20.9	12.3	0.5	4.9	7.8	3.2	4.7	1.4	1.7	1.5	0.7

Table 13: Continued

Factor	Any Mental Disorder	Mental Health Disorders					Any SU Disorder	Substance Use Disorders			
		MDD	SOM	PD	GAD	PTSD		ALC-A	ALC-D	DRG-A	DRG-D
	%	%	%	%	%	%	%	%	%	%	%
Marital status											
Single	28.3	15.0	0.8	8.8*	12.0**	5.3	4.7	0.0	3.3	2.5	0.0
Married	18.6	14.1	0.0	2.7	4.0	1.8	3.2	2.3	0.4	0.0	0.6
Time in U.S.											
≤ 10 years	18.2	9.3	0.0	5.9	5.3	2.1	3.8	1.8	1.9	0.0	0.0
11 – 20 years	22.6	16.3	0.5	3.6	9.0	1.8	4.2	1.5	1.8	1.6	0.0
> 20 years	23.6	15.3	0.0	5.6	3.4	5.9	2.9	1.5	0.0	0.0	1.5

Table 13: Continued

Factor	Any Mental	Mental Health Disorders					Any SU	Substance Use Disorders			
	Disorder						Disorder				
		MDD	SOM	PD	GAD	PTSD		ALC-A	ALC-D	DRG-A	DRG-D
	%	%	%	%	%	%	%	%	%	%	%
Place spent most life											
Mexico	18.2*	11.9	0.4	3.1	7.1	1.6	2.1	0.6	1.5	0.0	0.0
U.S.	30.7	19.9	0.0	7.1	6.4	6.3	7.7	3.8	1.2	2.7	1.3
Both	12.9	12.9	0.0	12.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deportation											
Yes	27.2	15.6	1.3	1.3	10.5	1.3	6.9	3.8	1.2	0.0	1.9
No	20.3	14.0	0.0	5.5	5.6	3.4	2.9	0.9	1.3	1.0	0.0

SU: Substance Use; MDD: Major Depressive Disorder; SOM: Somatization; PD: Panic Disorder; GAD: Generalized Anxiety Disorder; PTSD: Post-Traumatic Stress Disorder; ALC-A: Alcohol Abuse (Current); ALC-D: Alcohol Dependence (Current); DRG-A: Drug Abuse (Current); DRG-D: Drug Dependence (Current).

$p < .05$; ** $p < .01$; *** $p < .001$.

Table 14: Comorbidity of mental health disorders among UMIs ($N = 22,000$)

Mental Health Disorder	MDD	SOM	PD	GAD	PTSD	Any SU
	% (<i>n</i>)	% (<i>n</i>)	% (<i>n</i>)	% (<i>n</i>)	% (<i>n</i>)	% (<i>n</i>)
Major Depression						
No	-	0.0 (0)	1.2 (2)	4.4 (9)	1.2 (3)	3.2 (7)
Yes	-	1.9 (1)	25.4 (9)	19.9 (7)	13.3 (5)	6.9 (3)
Somatization						
No	14.1(35)	-	4.4 (10)	6.3 (15)	2.7 (7)	3.7 (10)
Yes	100.0 (1)	-	100.0 (1)	100.0 (1)	100.0 (1)	0.0 (0)
Panic Disorder						
No	11.2 (27)	0.0 (0)	-	5.7 (13)	1.4 (4)	3.9 (10)
Yes	78.5 (9)	5.7 (1)	-	24.4 (3)	34.9 (4)	0.0 (0)
Generalized Anxiety						
No	12.3 (29)	0.0 (0)	3.8 (8)	-	2.2 (5)	3.6 (9)
Yes	43.3 (7)	4.1 (1)	17.3 (3)	-	14.2 (3)	5.4 (1)

Table 14: Continued

Mental Health Disorder	MDD	SOM	PD	GAD	PTSD	Any SU
	% (<i>n</i>)	% (<i>n</i>)	% (<i>n</i>)	% (<i>n</i>)	% (<i>n</i>)	% (<i>n</i>)
Post-Traumatic Stress						
No	12.9 (31)	0.0 (0)	3.2 (7)	5.8 (13)	-	3.8 (10)
Yes	64.5 (5)	9.0 (1)	53.3 (4)	31.6 (3)	-	0.0 (0)
Any Substance Use						
No	13.8 (33)	0.3 (1)	4.8 (11)	6.5 (15)	3.1 (8)	-
Yes	27.0 (3)	0.0 (0)	0.0 (0)	9.7 (1)	0.0 (0)	-

SU: Substance Use; MDD: Major Depressive Disorder; SOM: Somatization; PD: Panic Disorder; GAD: Generalized Anxiety

Disorder; PTSD: Post-Traumatic Stress Disorder.

Table 15. Population estimates for *Nervios* and *Ataque de Nervios* among UMIIs ($N = 22,000$)

Factor	Lifetime <i>Nervios</i> %	Current <i>Nervios</i> %	Lifetime <i>Ataque de Nervios</i> %	<i>Ataque de Nervios</i> (past 12 months) %
Total	29.1	20.3	12.2	5.0
Sex				
Women	27.7	19.6	13.7	5.1
Men	32.2	22.0	9.0	4.7
Age (years)				
18 – 25	41.5	28.3	20.4	8.9
26 – 35	24.2	16.9	5.2	3.0
36 – 45	28.3	18.8	12.0	5.8
≥ 46	28.1	22.5	15.9	3.2

Table 15: Continued

Factor	Lifetime <i>Nervios</i> %	Current <i>Nervios</i> %	Lifetime <i>Ataque de Nervios</i> %	<i>Ataque de Nervios</i> (past 12 months) %
Education				
None	24.7	11.9	18.1	6.2
Elementary/MS	27.6	19.1	12.7	5.2
HS (no graduation)	28.6	16.8	9.5	3.0
≥ HS graduate	34.0	27.5	11.2	5.2
Employment				
Not working	27.3	19.7	14.2	5.0
Working	30.8	20.9	10.5	5.0
Marital status				
Single	35.4	20.2	18.3	6.8
Married	26.1	20.4	20.4	4.1

Table 15: Continued

Factor	Lifetime <i>Nervios</i> %	Current <i>Nervios</i> %	Lifetime <i>Ataque de Nervios</i> %	<i>Ataque de Nervios</i> (past 12 months) %
Time in U.S.				
≤ 10 years	31.9	16.3	11.0	7.2
11 – 20 years	28.8	20.6	12.3	5.7
20 years	25.2	21.9	12.0	2.0
Place spent most life				
Mexico	26.7	16.9	11.9	6.1
U.S.	32.2	24.6	14.6	3.2
Both	35.3	35.3	0.0	0.0
Deportation				
Yes	30.6	19.1	9.9	1.9
No	28.6	20.7	12.9	5.8

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 16. Migration-related loss among UMIs ($N = 22,000$)

Factor	Migration Related Loss						
	Family Loss	Language	Symbolic Self/Culture	Home	Social Status	Belonging	Physical Wellbeing
	%	%	%	%	%	%	%
Total	97.7	3.4	90.0	98.6	98.6	88.5	34.0%
Sex							
Women	97.2	2.7	90.5	98.5	98.5	86.6	36.0
Men	98.8	5.0	89.1	98.8	98.7	92.6	30.7
Age (years)							
18 – 25	86.4	2.7	86.1	94.7	94.7	81.3	25.6*
26 – 35	100.0	5.3	94.6	100.0	98.4	83.4	22.1
36 – 45	99.0	4.2	88.3	99.3	99.3	88.9	36.2
≥ 46	100.0	0.0	90.4	98.2	100.0	86.4	52.1

Table 16: Continued

Factor	Migration Related Loss						
	Family Loss	Language	Symbolic Self/Culture	Home	Social Status	Belonging	Physical Wellbeing
	%	%	%	%	%	%	%
Education							
None	100.0*	0.0	92.2	100.0	100.0	83.2	39.9
Elementary/MS	99.3	2.5	89.4	98.9	98.8	90.2	35.8
HS (no graduation)	91.5	2.9	88.1	97.3	79.9	79.9	31.1
≥ HS graduate	96.5	6.8	92.3	98.3	90.4	90.4	31.6
Employment							
Not working	97.5	2.9	92.0	98.5	100.0	88.5	40.9
Working	97.9	3.9	88.3	98.7	97.3	88.6	28.6
Marital status							
Single	96.7	2.6	87.5	97.7	97.7	78.7**	34.4
Married	98.2	3.8	91.3	99.0	99.0	93.2	34.5

Table 16: Continued

Factor	Migration Related Loss						
	Family Loss	Language	Symbolic Self/Culture	Home	Social Status	Belonging	Physical Wellbeing
	%	%	%	%	%	%	%
Time in U.S.							
≤ 10 years	98.0	4.7	93.7	100.0	98.2	98.3*	23.6*
11 – 20 years	97.0	3.4	89.5	98.5	98.5	86.4	32.6
20 years	98.6	2.4	88.0	97.6	99.0	84.6	47.0
Place spent most life							
Mexico	98.9	4.1	92.5	99.4	99.4	92.3**	31.9
U.S.	94.9	2.3	85.0	96.9	96.9	83.2	40.0
Both	100.0	0.0	88.6	100.0	100.0	67.0	36.4

* $p < .05$; ** $p < .01$; *** $p < .001$